

19th Science Council of Asia Conference(2019), Special Issue 2020



19th Science Council of Asia Conference
3-5 December, 2019, Nay Pyi Taw

**RESEARCH AND INNOVATION
FOR SUSTAINABLE DEVELOPMENT IN ASIA**

SUB-THEME II

**Promote Skills Development
for Economic Growth**

19th Science Council of Asia Conference
3-5 December, 2019, Nay Pyi Taw

SUB-THEME II

Promote Skills Development for Economic Growth

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FOREWORD

We would like to thank His Excellency Dr. Myo Thein Gyi, Hon'ble Union Minister for Education, for delivering the inaugural address at the Opening Ceremony of the 19th Science Council of Asia Conference, and for the support His Excellency had given for holding this international conference, for the first time, in Myanmar. We are also indebted to express our heartfelt gratitude to His Excellency Dr Wang Xi, Vice Minister, Ministry of Science and Technology of China, President, Science Council of Asia, and Vice President, China Association for Science and Technology (CAST) for his presence at this opening ceremony. We would also like to extend our gratitude to Professor Dr Hiroshi YOSHINO, the Secretary General/Treasurer of SCA. Special thanks would go to Dr Juichi Yamagiwa, the President of SCJ and to all distinguished guests and scholars from SCA member academies who, in one way or the other, contributed to the success of this conference.

MAAS owes its apology to all participants for the delay in producing the papers presented at SCA-19 Conference. The responsibility of opinions, statements, comments, etc. expressed in the papers lie with those of the authors. The views expressed in the papers presented at the conference did not reflect that of MAAS.

Dr Thet Lwin

President, Myanmar Academy of Arts and Science

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Message



It is a great pleasure and inspiring experience to host the 19th Science Council of Asia Conference, held with the theme "Research and Innovation for Sustainable Development in Asia" in Nay Pyi Taw, Myanmar.

This conference is particularly timely as all Member States are unanimously supporting research and innovation to achieve the Sustainable Development Goals (SDGs) of the United Nations 2030 Agenda.

A comprehensive range of the conference sessions reflects a very topical agenda as it provides a wonderful platform and opportunity for several experts, academia, scholars and researchers to exchange their break-through ideas, profound knowledge and invaluable experiences.

I sincerely hope this conference will help to identify ways to bring forward the transformative sustainability agenda and better align research and innovation policies with the SDGs, as set out in the United Nations Agenda 2030 for sustainable development.

To all delegates, I would like to suggest that we adopt innovation in science, technology, engineering and mathematics as integral elements of the strategies for SDGs. I would like to request you to produce action-oriented outcomes of the conference and keep supporting research and innovation for sustainable development in Asia.

Before I conclude, I wish all delegates and participants an enjoyable stay in Myanmar.

Thank you.

Dr Myo Thein Gyi
Union Minister for Education, Myanmar

Message



It is my great pleasure to welcome you all on behalf of Science Council of Asia(SCA) to the 19th SCA conference that brings together experts of scientific organizations to discuss " Research and Innovation for Sustainable Development in Asia". I thank all the local conference hosts in Myanmar and the SCA Secretariat. Thanks to their excellent effort, the SCA19 is organized jointly and successfully.

To a large extent, Asia's rapid economic development and subsequently booming consumption have prompted critical challenge for environment sustainability. Recently, Oxford Dictionaries and Cambridge Dictionary have named "climate emergency" and "upcycling" as their Word of the Year 2019, respectively. Change is necessary.

The 2030 Agenda, adopted at the United Nations Sustainable Development Summit in September 2015, positioned Science, Technology and Innovation as key means of implementation of the SDGs. Also with a new perspective of economic growth, there is a clear shift towards appreciating the adoption of sustainability standards, which has a positive correlation with increased profit as demand for products with sustainable credentials grows.

Many Asian countries have signed up to the SDGs, made growing commitment to address poverty, clean energy and pollution. New science and technology achievements have been applied to solve specific issues, new approaches have been used towards more sustainable activities.

SCA provides such a collaborative platform for member organizations to promote scientific exchange and cooperation, and to reach mutual understanding. We will continue to play a central role to face the common challenges for sustainable development in Asia and lead to a bright future.

Wishing you all a fruitful and joyful stay in Nay Pyi Taw and looking forward to your active participation in the Conference.

With best regards,

Prof. Dr. WANG Xi
President, Science Council of Asia

Message



Millennium Development Goals (MDGs) came to an end in December 2015; certain agenda of MDGs had been left unfinished. In 2015, UN General Assembly adopted the post 2015 Development Agenda and set Sustainable Development Goals (SDGs). The 2030 Global Development Agenda came into effect on 1st January, 2016 with the prospect of covering the five aspects: People, Planet, Prosperity, Peace and Prosperity. The approach to SDGs can be initiated through a different angle. For instance, People: End Poverty and Hunger in all forms and ensure dignity and equality; Planet: Protect our planet's natural resources and climate for future generations; Peace: Foster peaceful, just and inclusive societies; Prosperity: Ensure prosperous and fulfilling lives in harmony with nature.

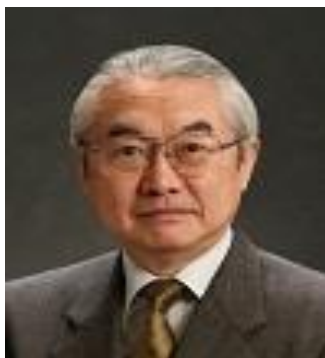
Living beings inherited the earth, the only planet in the solar system, in which all known life forms can flourish. Human beings are the most intelligent species on earth. Throughout history, they try to change their environment to suit their needs and satisfy their desires. Among the continents, Asia happens to be the most populous region in the world. China and India, each with one billion plus population, have emerged as economic powers. Japan, Korea, Taiwan, and ASEAN TEN too witnessed economic growth. Inventions and innovations contributed to industrial revolutions. The fourth forthcoming inventions of IT and AI are expected to change traditional modes of manufacturing, transportation and urban amenities.

In 21st century, research across various countries in Asia highlight inter-linkages between natural resources and sustainable development goals along with the impact of climate change. The human society is seeking ways to safeguard human's wellbeing and to guarantee the sustainable use of resources. At the same time, it also tries to conserve the environment from natural calamities like floods, earthquakes, volcanic eruptions, drought, etc. so that our future generations will be inherited with green and peaceful environment.

I, on behalf of Myanmar Academy of Arts and Science, would like to express my deep appreciation to all those involved in making the conference a success. Special mention needs to be made to SCJ which co-hosted the SCA19 conference with MAAS for their guidance, support, co-operation and coordination. We fervently believe that the conference will provide our guests a cordial atmosphere for sharing experiences and exchanging views. The deliberations from this conference are expected to bring into light, effective means and ways for resolving common issues people are currently facing in Asia and elsewhere.

Dr. Thet Lwin
President of MAAS

Message



I am pleased to announce that the 19th Science Council of Asia (SCA) Conference is held in Nay Pyi Taw, Myanmar. First of all, I would like to express my sincere gratitude to Myanmar Academy of Arts and Science (MAAS) for its enormous efforts to prepare for this Conference. I also would like to express my deep appreciation to Member Organizations and SCA Secretariat for their cooperation and contribution in organizing this Conference and all the people who support it.

The theme of the 19th SCA Conference is “Research and Innovation for Sustainable Development in Asia”. As you might already know, the purpose of SCA established in 2000 is “to facilitate scientific cooperation in Asia towards the progress in science and sustainable development of the region”. With this purpose, SCA has contributed to society through the collaboration with academies in the region. Under such circumstances, “Transforming our world: the 2030 Agenda for Sustainable Development” with the 17 Sustainable Development Goals (SDGs) and 169 targets was adopted at the UN General Assembly in 2015. Since then, the efforts to realize the sustainable development in which a key principle is “no one will be left behind” have started at global level. We must continuously and collaboratively address a wide range of issues facing us since they are so challenging in the sense that human beings have never experienced them before.

The 19th SCA Conference is held for 3 days and nearly 180 presentations (oral and poster) are scheduled. I am delighted to know that we have received many applications exceeding our expectation. It indicates a high level of interest in this Conference’s theme, “Research and Innovation for Sustainable Development in Asia”. In the Conference, there are four (4) sub-themes that are discussed in their respective sessions. The main theme and sub-themes of the Conference have been carefully selected in order to inspire scholars and researchers in Asia to undertake interdisciplinary researches in partnership to contribute to the realization of the 17 SDGs.

This Conference is an advantageous opportunity to build a network of scholars in and outside the country. I am sure that there would be abundant outstanding discussions at this Conference.

Professor Hiroshi Yoshino
Secretary General / Treasurer of SCA

A Study on Attitude towards Science and Achievement of Grade 8 Students from Chanayetharzan Township

Ohnmar Win¹

Abstract

The main purpose of this study is to investigate the attitude towards science and achievement of Grade 8 students from Chanayetharzan Township, Mandalay Region. Descriptive Survey method and quantitative approach were used. The students in this study were selected by using simple random sampling technique. A total of 543 Grade 8 students (223 males and 320 females) from selected schools participated. As research instrument, questionnaire of Test of Science-Related Attitude (TOSRA) developed by B. J. Fraser (1981) was used. According to the result findings, the level of attitude towards science was satisfactory. There were significant differences in attitude towards science and science achievement by gender and school. Moreover, based on the results, attitude towards science was found to be significantly and positively correlated with their science achievement ($r = .406, p < .01$). As a result, attitude towards science is really important for students. Research findings proved that science attitude have an effect on science achievement and it is necessary to improve science attitude among students.

Keywords: Attitude, Science, Achievement

1. Introduction

In the present technology dominated world, science subject is among the crucial subject of the school curricula in terms of preparing educated human power for the overall development. Studying science play a very important role in developing human thinking more creative, reasonable, and able to analyze problems and to forecast future. Hence, quality of science education would be at the heart of quality education assurance endeavors around the globe. Performance of students in sciences subject highly implicated towards their overall cognitive development and performance in other subjects.

Attitude is related to coping with and management of the emotions occurring during learning process, and they play an important role in directing human behaviour. Whether attitudes occurring as part of a system of values and beliefs are positive or negative affects learning process in a direct manner and influences future lives of individuals (Seferoglu, 2004). And attitudes are the best predictor for estimation of students' success (Hendrickson, 1997).

Expected achievement is factor that heavily influenced by attitudes towards science. As would be expected, positive attitude towards science lead to better results on achievement measures of science capability (Weinburgh, 1998). A student's attitude towards science is more likely to influence achievement in science than achievement influencing attitude (Schibeci & Riley, 1986). There were strong positive relationships between attitude towards science and science achievement. According to this fact, it is an interesting thing whether the students' academic achievement depends on their attitudes towards that subject or not. Hence, the study about the correlation between students' science attitude and their science achievement is also one of the essential studies for promoting the students' attitude related with their lessons and their educational benefits.

¹ Lecturer, Department of Educational Psychology, Sagaing University of Education, linnlattedu@ gmail.com,

This study can also provide the essential supports for students' learning science. And then, the students' academic achievement in science will be improved and then carried out the welfare of the society as much as possible. So, it is obvious that the investigation of middle school students' attitude towards science is significantly important for the basic education sector in Myanmar.

1.1 Aim of the Study

The main aim of the study is to investigate the attitude towards science and achievement of middle school students (Grade 8 students) in Chanayetharzan Township. The specific objectives are:

1. to study the differences in attitude towards science and achievement by gender
2. to investigate the differences in attitude towards science and achievement by school
3. to explore where there is relationship between attitude towards science and achievement of Grade 8 students

1.2 Research Hypotheses

1. There is no significant difference in attitude towards science and achievement by gender.
2. There is no significant different in attitude towards science and achievement by school.
3. There is no significant relationship between attitude towards science and achievement of Grade 8 students.

2. Methods

2.1 Sampling

By using simple random sampling technique, the schools and students were selected from Chanayetharzan Township, Mandalay Region. Total five State High schools and five State Middle schools were selected. A total of 543 students participated in this study. The sample of Grade 8 students included 223 males and 320 females.

2.2 Research Method

Quantitative approach was used in this study. Survey method and descriptive research design were employed.

2.3 Instrumentation

The instrument used in this study was Test Of Science-Related Attitude (TOSRA) questionnaire developed by B. J. Fraser (1981). The science attitude were categorized into seven dimensions, which are social implication of science, normality to scientists, attitude to scientific inquiry, adoption of scientific attitudes, enjoyment of science lessons, leisure interest in science, career interest in science. Cronbach's alpha of the whole scale of science attitude was 0.852. Science achievement of Grade 8 students in this study was assessed by the students' score on science subject in first semester examination.

3. Results and Discussion

Table 1 Descriptive Statistics of Attitude towards Science

Variable	N	Minimum	Maximum	Mean	Standard Deviation
Attitude towards science	543	48	137	105.45	12.779

Table 1 indicated that the total mean score (105.45) was higher than the theoretical mean score (87.5). Therefore, the students' attitude towards sciences was somewhat satisfactory.

Table 2 Descriptive Statistics of Attitude towards Sciences by Subscales

Variable	N	Minimum	Maximum	Mean	Standard Deviation
Social Implications of Science	543	5	20	16.71	2.133
Normality to Scientists	543	5	20	12.79	2.433
Attitude to Scientific Inquiry	543	7	20	16.36	2.537
Adoption of Scientific Attitudes	543	5	20	14.68	2.252
Enjoyment of science Lessons	543	5	20	15.91	3.051
Leisure Interest in Science	543	5	20	15.15	3.111
Career Interest in Science	543	5	20	13.85	3.211

According to the Table 2, students have the highest in the first subscale (social implication of science) and the lowest in the second subscale (normality to scientists).

Table 3 Result of Independent Sample t-test for Attitude towards Science by Gender

Variable	Gender	N	Mean	SD	MD	t	df	p
Attitude towards Science	Male	223	103.63	13.961	-3.097	-2.796**	541	.005
	Female	320	106.73	11.742				

Note: **The mean difference is significant at .01 level.

According to the Table 3, the results mentioned that there were significant differences between male and female students in attitude towards science at .01 level. And, it can be concluded that female students had significantly higher than male students in attitude towards sciences ($p < .01$).

Table 4 Results of ANOVA for Attitude towards Science by Schools

Variable		Sum of squares	df	Mean Square	F	p
Attitude towards Science	Between Group	3210.083	9	356.676	2.229*	0.019
	Within Group	85304.469	533	160.046		
	Total	88514.552	542			

Note: * The mean difference is significant at .05 level.

Table 4 revealed that there was significant difference in students' attitude towards science according to schools at .05 level.

Table 5 Descriptive Statistics of Science Achievement

Variable	N	Minimum	Maximum	Mean	Standard Deviation
Science Achievement	543	4	97	69.31	17.656

According to the results of Table 5, the average mean score of the Grade 8 students' achievement was 69.31 while the minimum and maximum score were 4 and 97. Therefore, Grade 8 students' academic achievement in the present study was somewhat satisfactory.

Table 6 Result of Independent Sample t-test for Science Achievement by Gender

Variable	Gender	N	Mean	SD	MD	t	df	p
Science Achievement	Male	223	65.23	18.998	-6.914	-4.571***	541	.000
	Female	320	72.15	16.088				

Note: ***The mean difference is significant at .001 level.

According to the Table 6, the results mentioned that there were significant differences between male and female students in science achievement at .001 level. And, it can be concluded that female students were significantly higher than male students in science achievement ($p < .001$).

Table 7 Results of ANOVA for Science Achievement by Schools

Variable		Sum of squares	df	Mean Square	F	p
Science Achievement	Between Group	21377.285	9	2375.254	8.578***	0.000
	Within Group	147588.354	533	276.901		
	Total	168965.639	542			

Note: ***The mean difference is significant at .001 levels

The result from ANOVA showed that there were significant differences by their schools concerning science achievement ($p < .001$).

Table 8 Correlation Matrix between Attitude towards Science and Science Achievement

Variables	Attitude towards Science	Science Achievement
Attitude towards Science	1	.406**

Note **Correlation is significant at .01 level (2-tailed).

According to Table 8, the correlation between attitude towards science and science achievement was moderate and significant correlation ($r=.406$, $p<.01$). So, it could be interpreted that attitude towards science was positively correlated with science achievement of Grade 8 students.

4. Conclusions

According to result, female students had higher in science attitude and achievement than male students. In order to develop attitude of male students towards natural science education and to minimize the gender gap, teachers should give special attention for male students starting from secondary school level up to higher education. The teacher should try to help male students to set academic goal and to plan effectively for academic work.

And, there was significant difference in students' attitude towards science and achievement by school. It may also be differed by the location and environment of the schools, favourable classroom atmosphere, supporting materials and motivation strategies on their learning. Moreover, teachers should apply various interesting teaching methods and many kinds of teaching aids to become alive the teaching-learning situation.

The present study indicated that science attitude and science achievement had the positive relationship. Therefore, significant positive correlation was established between students' science attitude and their achievement. It meant that students who have high science attitude scores tend to receive higher scores in science achievement.

For the better achievement in natural science, willingness and positive reaction are important. Lack of interest can negatively influence the achievement of students. So changing the attitude of the students is vital. Thus teachers should try:

- To change the attitude of the students towards sciences.
- Motivate students to participate in the science education.
- Create conditions in which students learn to participate in science education.

As a result, student can develop confidence in sciences. Once they acquire the interest to participate in different science education activities, they can easily involve in different science related fields.

Acknowledgements

First of all, I am indebted to Dr. Saw Pyone Naing (Rector, Sagaing University of Education) and Dr. Myat Myat Thaw (Pro- Rector, Sagaing University of Education) for their administrative supports. Secondly, I would like to express our heartfelt respect and gratitude to Associate Professor Dr. Khin Hnin Nwe (Head of Department, Department of Educational Psychology, Sagaing University of Education).

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Measurement of the Neutron Fluxes in Two Irradiation Channels of Isotopic Neutron Source Facility using Neutron Activation Analysis (NAA) Method

Khin Ye Lwin¹, Khin Cho Cho², and Moe Phyu Hlaing³

Abstract

The neutron flux is very important factor in data analysis. The accuracy of the measurement is partly depends on the accuracy of neutron flux measurement. The thermal and epithermal neutron fluxes in two irradiation channels in the ²⁴¹Am-Be isotopic neutron source irradiation facility were measured by using neutron activation analysis (NAA) method. The activity of ²⁴¹Am-Be neutron source was 0.27 Ci. Gold and indium foils were used as the activation foils and the reactions are ¹⁹⁷Au (n,γ) ¹⁹⁸Au and ¹¹⁵In (n,γ) ^{116m}In. The respective emitted gamma ray spectrums from activated foils were measured by using Falcon 5000 HPGe detector system. The measured data were compared with the MCNP simulation. The measured neutron fluxes are agreed with the MCNP results. The results of the neutron fluxes were low but stable and sufficient to use for research and education on elemental analysis and reaction cross section measurement by using neutron activation analysis method.

Keywords: ²⁴¹Am-Be isotopic neutron source, neutron flux, neutron activation analysis(NAA), HPGe detector

1. Introduction

Neutron Irradiation facility is one of the important educational tools for the research centers and university laboratories. In many developing countries, one of the major drawbacks is the lack of appropriate neutron sources, either a nuclear research reactor or a neutron generator. With the purpose to assess the feasibility of using other alternative neutron sources, isotopic neutron sources of an appropriate design and characteristics in terms of neutron flux and spectra could be used to carry out interesting and meaningful training and research oriented projects based on neutron activation and radiochemistry. Although neutron flux is not high, isotopic neutron sources are effective for many research institutions without nuclear research reactors or neutron generators. The advantages of isotopic neutron sources are extremely small size, relatively low purchase and maintenance costs, long and short term stability of the neutron output, possibility to use thermal and fast neutron fluxes, ease and low cost of shielding with a negligible health hazard [1].

Therefore the small-sized neutron irradiation facility using ²⁴¹Am-Be isotopic neutron source has been assembled to perform the several measurements such as neutron flux measurement, reaction cross-section measurement, qualitative and quantitative multi-elemental analysis by neutron activation analysis (NAA) technique. The accuracy of the measurements partly depends on the accuracy of neutron flux [2]. The objective of the research is to measure thermal and epithermal neutron fluxes in two irradiation channels of isotopic neutron source facility by neutron activation method and compare with the MCNP simulation.

¹ Dr. Division of Atomic Energy, Ministry of Education, [123, Natmauk Road, Bahan, Yangon](mailto:123.Natmauk.Road.Bahan.Yangon), Ph: 09448023448, Fax: 01 545065 ms.khinyelwin@gmail.com.

² Division of Atomic Energy, Ministry of Education, cho.khincho@gmail.com

³ Material Science and Research Division, Ministry of Education, 19moephyu@gmail.com

system is to protect operation personnel from possible injury by escaping radiation. The water is the most effective neutron shielding materials which has a plenty of light atoms (e.g. hydrogen atoms). In the irradiation facility, water was used for the dual purpose; moderating the fast neutrons and reducing the radiations to acceptable levels.

2.4 Gamma Ray Spectrometry

In the experiment, Falcon 5000 gamma ray spectrometer was used to measure the gamma radiation emitted from the induced materials. It is the portable electrically-cooled HPGe Spectrometer which provides radiation monitoring and nuclide identification and quantification. There are four modes of operation providing dose and count rate measurements, locating radioactive material or a radiation hotspot, nuclide identification (NID) with activity measurements. For the spectrum acquisition and analysis, Genie 2000 basic spectroscopy and gamma analysis packages included. The Falcon 5000 components are housed in a single unit and consist of HPGe detector, GM tube detector, cryostat cooler and controller, InSpector 2000 MCA, WLAN/LAN module, internal battery charger, and Global Positioning System. The 5 cm thick lead bricks were used as detector shield to reduce the effect of background.



Figure 2. The experimental setup for the measurement of the gamma ray

2.5 Measurements Neutron Flux by Neutron Activation Method

In this study, a foil activation method was applied for neutron flux measurement. Two types of foils were used; ^{115}In and ^{197}Au [4, 6, 7], and the physical characteristics of each are summarized in Table 1.

Table 1. Physical parameters of activation foils

Foils	Size	Purity (%)	Thickness (mm)	Weight (g)
¹¹⁵ In	[1 x 1] cm ²	99.99	0.5	0.68
¹⁹⁷ Au	[1 x 1] cm ²	99.47	0.5	0.30

For thermal neutron flux measurement, each of bare ¹¹⁵In activation foils were irradiated in two irradiation channels which were far 4 cm and 8 cm from the source respectively. After the foils were irradiated, gamma rays from the induced activities were measured with the HPGe detector, whose detection efficiency had been calibrated with standard gamma sources and the obtained data were used to calculate the neutron flux. Experimental arrangement for ¹⁹⁷Au was similar also. For the measurement of epithermal neutron flux, each of ¹¹⁵In and ¹⁹⁷Au activation foils were sandwiched between two cadmium sheets of 1 mm thick and were also irradiated in two channels. Experimental procedure was also similar to bare foils.

2.6 Neutron Flux Calculation

The neutron fluxes can be deduced by the following equations. The detailed theoretical expression for specific activity and neutron flux of bare foil and foil with cadmium cover was presented in the works which referred to as [6,7].

Specific counting rate (or specific activity) of A_{sp} is defined as

$$A_{sp} = \frac{N_p \lambda}{w(1-e^{-\lambda t_c})e^{-\lambda t_t}(1-e^{-\lambda t_d})} \dots\dots\dots (1)$$

Where N_p is gamma peak area (count) of interest; λ is decay constant; t_c is irradiation time; t_t is cooling time; t_d is counting time; and w is irradiated sample mass. Therefore, the epithermal neutron flux is

$$\Phi_{epi} = \frac{A_{sp}(cd)}{G_{epi} I_0(\alpha) \cdot N_A \cdot \theta \cdot y_{\gamma} / M} \dots\dots\dots (2)$$

And for thermal neutron flux is

$$\Phi_{th} = \frac{G_{epi}}{G_{th}} (R_{cd} - 1) Q_0 \Phi_{epi} \dots\dots\dots (3)$$

Where ϕ_{th} and ϕ_{epi} (n.cm⁻²s⁻¹) are thermal and epi-thermal neutron fluxes, respectively; G_{th} and G_{epi} are self-shielding coefficients for thermal and epi-thermal neutrons, respectively (for thin foils, $G_{th} \approx G_{epi} = 1$); $I_0(\alpha) = \int_0^\infty \frac{\sigma(E)dE}{E^{1+\alpha}} (1eV)^\alpha$ is resonant integral for distribution of epi-thermal neutron fluxes without obeying the rule of 1/E; α is spectrum coefficient expressing spectrum deviation from the rule of 1/E; $\sigma(E)$ is neutron capture cross-section for reaction (n, γ) at energy E ; N_A is Avogadro number; θ is isotope abundance; y_{γ} is gamma-emitting probability of

interest; ε_p is counting efficiency at energy peak of interest; M is atomic mass of element: $Q_0 = \frac{I_0(\alpha)}{\sigma_0}$; σ_0 is capture cross-section for thermal neutron of interest; and $R_{cd} = \frac{A_{sp(bare)}}{A_{sp(cd)}}$ is cadmium ratio.

Thermal and epithermal neutron fluxes were deduce from measured gamma activities of irradiated indium and gold foils. The nuclear characteristics of the foils are listed in Table 2.

Table 2. The nuclear characteristics of the activation foils [4, 7, 8, 9, 10]

Reaction	t_c	t_r	t_d	$T_{1/2}$	θ (%)	γ -ray nergy (keV)	γ (%)	σ_0 (b)	I_0 (b)
$^{115}\text{In}(n,\gamma)^{116m}\text{In}$	3 h	2 min	1800 s	54.13 min	95.71	1293.5	84.4	201.2	3209
$^{197}\text{Au}(n,\gamma)^{198}\text{Au}$	72 h	15 min	3600 s	2.697 d	100	411.8	96	98.65	1571

2.7 Monte Carlo Simulation

The MCNP code developed in Los Alamos carries out the radiation transport, relating to neutrons, photons and electrons with energetic and temporal dependence in a three-dimensional geometry by using the Monte Carlo method [3, 11]. In this work, the MCNP4C code was used to estimate thermal and epithermal neutron fluxes in two irradiation channels of ^{241}Am -Be isotopic neutron source facility. Total energy range considered was from 10^{-5} MeV to 1.1×10^1 MeV. For the neutron flux calculations, the F4:N tally card was used. This tally allows the calculation of the average neutron flux in the volume (particles/cm²). In this Monte Carlo simulation, 10^7 particles were stimulated for each cycle.

3. Results and Discussion

The measured thermal and epithermal neutron fluxes in two irradiation channels of isotopic neutron source facility by neutron activation analysis method and the simulated results by MCNP code were shown in Table 3.

Table 3. Neutron flux values in two irradiation channels of isotopic neutron source facility

Channel	$\phi_{th} (^{115}\text{In})$ (n.cm ⁻² .s ⁻¹)	$\phi_{th} (^{197}\text{Au})$ (n.cm ⁻² .s ⁻¹)	$\phi_{th}(\text{MCNP})$ (n.cm ⁻² .s ⁻¹)	$\phi_{epi} (^{115}\text{In})$ (n.cm ⁻² .s ⁻¹)	$\phi_{epi} (^{197}\text{Au})$ (n.cm ⁻² .s ⁻¹)	$\phi_{epi}(\text{MCNP})$ (n.cm ⁻² .s ⁻¹)
Channel 1 (4 cm)	6.45×10^3	8.59×10^3	6.32×10^3	3.30×10^1	6.56×10^1	1.74×10^3
Channel 2 (8 cm)	1.84×10^3	2.74×10^3	2.10×10^3	2.79×10^0	1.54×10^1	4.55×10^2

The results are shown that the measured thermal neutron flux by ^{115}In foil is agreed with the MCNP calculation and that of ^{197}Au foil is a bit higher than calculation result. It can be proved that the neutron fluxes measured by ^{197}Au foil are higher than those measured by ^{115}In

foil in other research papers [4]. For epithermal neutron fluxes, the measured results by activation foils are lower than that of MCNP calculation. It is observed that values of thermal neutron flux in both channels are moderately high but the values of epithermal neutron flux are very small at channel 2. As the neutron flux are many order of magnitude lower than that of a nuclear reactor or of a particle accelerator, large samples must be irradiated in order to achieve good sensitivity.

4. Conclusion

The thermal and epithermal neutron flux in the two irradiation channels have been determined by using NAA method and MCNP simulation. The measured neutron fluxes are agreed with the MCNP simulation for thermal neutron fluxes. The neutron flux is higher in the closer channel than in the further channel. The facility is low cost but very useful. Water as moderator is also easily available and cheap. This neutron irradiation facility has very stable neutron flux that can be used to measure the induced activity in the specified material and sufficient to use for several measurements such as elemental analysis, reaction cross-section measurement, etc. As the neutron flux in an isotopic neutron source is usually quite modest, large samples are often required to obtain a reasonably high induced activity [1]. This irradiation facility is suitable to use as research and educational tool.

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A Morphophonemic Analysis of Myanmar Language

Tun Aung Kyaw¹

Abstract

The purpose this paper is to analyze the morphophonemic system of Myanmar language. The procedure for morphophonemic analysis is (a) to examine the data, consulting the glosses, and make a provisional division of the forms into morphemes, (b) to find each morpheme that alternates, and locate all of its allomorphs, (c) within each allomorph, to locate the particular segment or segments that alternate, (d) to consider the logical possibilities, setting up the underlying representations so that all the allomorphs of each morpheme can be derived from a single underlying representation by general phonological rules. The results of this analysis are that we can establish a morphophonemic system of Myanmar language and this result will be very useful for Myanmar language learners around the world. The key findings are aspiration rules, voicing rules and grammatical tone rules in Myanmar phonology.

Keywords: morphophonemic system, allomorph, segment, underlying representation, phonological rules.

1. Introduction

Morphophonemics is a branch of linguistics referring to the analysis and classification of the phonological factors which affect the appearance of morphemes, or, correspondingly, the grammatical factors which affect the appearance of phonemes.

In the European tradition, morphophonology (or morphonology) is the preferred term; in the American tradition, it is morphophonemics. In some theories, morphophonemics is seen as a separate level of linguistic structure intermediate between grammar and phonology. In early versions of generative grammar, morphophonemic rules were distinguished as a separate component in the derivation of sentences, whereby a terminal string of morphemes would be converted into their correct phonological form. In later generative theory, the term systematic phonemics became standard.

In morphophonemic analysis, there are two levels which are segmental level and suprasegmental level. I would like to present segmental level analysis only in this paper.

2. Methods

2.1 Morphophonology (segmental)

In this section, I want to indicate the conditioning factors for the morphophonology. There are three assimilatory processes in the phonology (morphophonology) of the Myanmar language. I want to present details of such processes that involve alternations between different phonemes (indicating whether or not productive), and any others involving significant phonetic changes.

¹ Dr. Professor, Department of Myanmar, Yangon University of Distance Education

2.2. Non-causative Verb versus Causative Verb

Causative is a term used in grammatical description to refer to the causal relationship between alternative versions of a sentence. For example, the pair of sentences *The cat killed the mouse* and *The mouse died* are related, in that the transitive *kill* can be seen as a ‘causative’ version of the intransitive *die*, viz. ‘cause to die’ (*The cat caused the mouse to die*); similarly, some affixes have a causative role, e.g. *-ize*, as in *domesticize* (= ‘cause to become domestic’). This is a relationship which is clearly established in the morphological structure of some languages (e.g. Japanese, Turkish), where an affix can systematically distinguish between **non-causative** and **causative** uses of a verb (‘causative verbs’ or ‘causatives’), e.g. ‘she eats’, ‘she causes (someone) to eat’, which is similar to English *she makes him eat*. Some linguists have also tried to apply the notion of causative systematically to English, seeing it as an abstract underlying category from which sets of ‘surface’ verbs (such as *kill* and *die*) can be derived.

In Myanmar verb construction, there are many pairs of verb; one version is non-causative version and another is causative version. Some causative version of each verb is composed by aspiration and some causative version of other verbs is composed by devoicing. Examples are as follows:

Non-causative Verb

/kwe` / ‘break’

/tea’ / ‘fall’

sou? ‘be torn’

pau? ‘be a hole’

ti? ‘be block’

Non-causative Verb

/lu?/ ‘be free’

/ne` / ‘bend’

/mwa’/ ‘be crispy’

/ŋa’/ ‘enough’

/pu?/ ‘bend’

Causative Verb (aspiration)

/khwe` / ‘cause to break’

/teha’/ ‘cause to fall’

/shou?/ ‘tear’

/phau? / ‘make a hole’

/thi?/ ‘block’

Causative Verb (devoicing)

/ hlu?/ ‘cause to be free’

/hne` / be bent’

/hmwa’/ ‘make crispy’

/hŋa’/ ‘share’

/hpu?/ ‘make bent’

According to above examples, plosive consonants in non-causative verbs become aspirated plosive consonants in respective counterparts of causative verbs. Moreover, liquid consonants in non-causative verb become devoiced liquid consonants in counterparts of causative verbs.

However all the pairs of this type do not follow this morphophonemic rule. Examples are as follows:

/teo` / ‘welcome’

/jo’/ ‘be reduced’

/wĩ ‘enter’

/?ei?/ ‘sleep’

/teho` / ‘be sweet’

/eɔ’/ ‘reduce’

/Θwĩ’/ ‘cause to enter’

/Θei?/ ‘cause to sleep’

/maũ maũ' khwè 'the dog of Maung Maung

4. Conclusion

The results of this analysis are that we can establish a morphophonemic system of Myanmar language and this result will be very useful for Myanmar language learners around the world. The key findings are aspiration rules, voicing rules and grammatical tone rules in Myanmar phonology.

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Economic Development and SME Policy in Lao PDR

Souksavanh Vixathep¹, Nobuaki Matsunaga²

Abstract

Following their economic reforms in the late 1980s, the Lao economy has developed as favourably as Vietnamese. Yet, despite the similarities in political regime, economic performance, and economic and legal reforms, Laos has not been as highly recognized as Vietnam. Applying qualitative and quantitative approaches on a comparative analysis, the paper aims to shed more light on the challenges of Laos in economic development and poverty eradication. To our knowledge this study is among the pioneer works for these two economies.

The study focuses on economic growth, legal reform, and small and medium enterprise (SME) policy. It reveals that SMEs in Laos and Vietnam are very small in employment size. However, the number of enterprises, particularly in the larger category, is much smaller in Laos than in Vietnam even after taking into consideration the difference in population size. Moreover, the business environment for 'starting a business' and 'getting credit supply' is more restrictive in Laos than in Vietnam. Since 2004 the government of Laos has implemented SME promotion policies and most entrepreneurs evaluate them helpful. However, the policies are found ineffective in this analysis. The findings imply that effective implementation of SME policies is a pressing issue for Laos.

Keywords: Laos, Vietnam, economic development, SME policy, economic reform

1. Introduction

In the last three decades, upon the introduction of the *Doi Moi* reform in 1986, the economic development in Vietnam has achieved noticeable success. Real gross domestic product (GDP) per capita (at 2010 prices) increased from \$382 in 1985 to \$1,835 in 2017 (8-fold increase), while real GDP grew by 7.5 times at an annual growth rate of 6.5%. The proportion of the extreme poor, who live with \$1.9 or less per person a day (2011 international dollar), decreased dramatically from 52.9% in 1992 to 2.8% in 2012. There is sufficient evidence for the Vietnamese economy to be evaluated as highly successful. At the same time, the Lao economy has not been evaluated as successful as Vietnamese, although Laos' economic performance is deemed comparable to that of her neighbor. Specifically, from 1985 to 2017, GDP per capita (at 2010 prices) increased from \$432 to \$1,730 (4-fold increase), and real GDP grew by 7.4 times at an annual growth rate of 6.5%*. [1].

From 1985 to 2005 the annual growth rate in Laos was somewhat lower than Vietnam. However, it surpassed Vietnam in 2005 and has since been somewhat higher. Their GDP per capita in terms of international dollar (PPP) is practically equal, although that of Laos was slightly higher than that of Vietnam up until 1993 (Figure 1). Laos and Vietnam (LV) achieved around 6% of real annual economic growth after 1960 with some fluctuations caused by Asian Financial Crisis in 1997 and the World Financial Crisis in 2008, as well as the post-reform turmoil and University of Hyogo, svixathep@em.u-hyogo.ac.jp natural disasters.

¹ University of Hyogo, svixathep@em.u-hyogo.ac.jp

² Kobe University, matsu@kobe-u.ac.jp

* Unless otherwise noted, all statistics applied for this study are taken from World Development Indicators (various issues), World Bank.

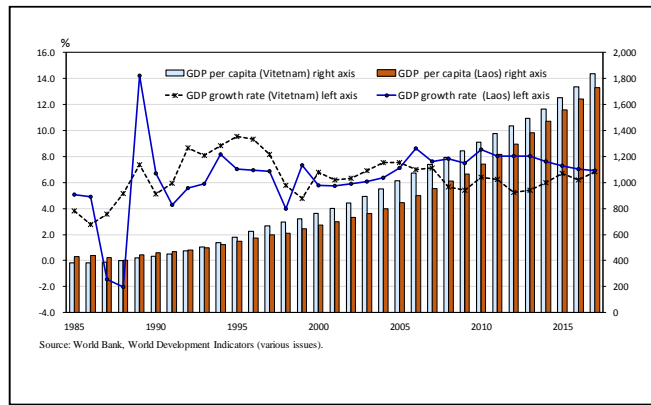


Figure 1. GDP per capita and GDP growth rate of Laos and Vietnam (\$2010 prices)

Why Laos is not as highly evaluated as Vietnam with her comparable economic performance? One of the reasons might be her smaller size in population (6.86 million compared to Vietnam's 95.54 million in 2017) and GDP (\$16.85 billion compared to Vietnam's \$223.78 billion in 2017), which has a much smaller impact on the world economy. However, these two countries have many things in common. Hence, the study will analyze the Lao economy by comparing it to the Vietnamese, in order to shed more light on the challenges facing Laos. The main objective is to find a way for Laos to relieve from the present situation with many people suffering from extreme poverty. The study focuses on the status quo and policies on small and medium enterprise (SME) development, which directly influence the lives of the majority.

2. Comparative Analysis of Lao and Vietnamese Economy

2.1 Economic and agricultural reform

There are many similarities between the two countries: they were colonized by France in the late 19th century until the declaration of independence in 1945; they endured another 30 years of civil war. Finally, in 1975 Laos established the Lao People's Democratic Republic (Lao PDR) and Vietnam the Socialist Republic of Vietnam.

Following independence and unification, LV adopted the Soviet-style economic model (collectivization of agriculture, nationalization of private enterprises, price control and rationing system of most goods, state monopolization of external trade, etc.) aimed at rebuilding the war-depleted economies. However, under the centrally planned economic system, their economies faced the declining, impoverishment, famine problem, and social disorder. Thus, in the late 1980s both governments embarked on a drastic economic reform to resolve the deadlock, namely the *Doi Moi* in Vietnam and *Chintanakan Mai* (New Economic Mechanism) in Laos. LV aimed to transform the centrally planned economy to a market-oriented one. [2].

Major elements of *Doi Moi* are a full-fledged introduction of market economy, including the recognition of multi-ownership of productive means, price liberalization, and emphasis on international division of labor. More specifically, the program includes contract farming, reform of state-owned enterprises (SOEs), recognition of private and foreign enterprises, respect for market prices including interest rates and foreign exchange rates, liberalization of foreign trade and investment, etc. The main elements of the reforms in Laos are similar to those of *Doi Moi*.

Both countries have adopted a gradual approach for reforms. [3] [4].

The food production indexes were very much comparable for both countries at the start of reforms in 1986, followed by a smooth increase the agricultural production. During 1985–2005 agricultural production increased by 2.5 times in LV, and the production grew more rapidly in Laos after 2010. Food supply per capita increased by 53.9% in Laos and 78.1% in Vietnam, since population grew by 56.0% and 38.1%, respectively. The upward trend in cereal production (metric tons per hectare) implies an enhancement in land productivity upon the start of the reforms, although land productivity is higher in Vietnam than Laos. Therefore, it can be concluded that reforms in agriculture were successful in LV.

2.2 Legal Reform

Due to space limitation, this section discusses only legal reforms related private enterprise and excludes the SOEs. Under the socialist regime, only household enterprises were allowed to coexist with SOEs until the end of 1970s. In 1979 the Government of Laos (GOL) came out with a new direction to utilize private and individual economies to expand the production and improve people's lives. This was followed by a further diversification of ownership forms of productive means and the abolition of collectivization in agriculture.

The Constitution promulgated in 1991 formally allowed the ownership of state, groups and individuals, and stipulated the protection of the ownership. The Constitution revised in 2003 clearly states that “All types of enterprises are equal before the laws (Article 13); The State protects and promotes all forms of property rights: State, collective, private domestic and foreign investment (Article 16).” These points are maintained in the 2015-revised Constitution. [5].

In Laos, the Business Law was promulgated in 1994, which states that “The right and interest of local and foreign businesspeople investing in business ... are protected” (Article 2) and that “All types of operations conducted by enterprises in all economic sectors are inter-related and competing on an equal footing before the law” (Article 5). In 2005 the Enterprise Law was enacted to replace the Business Law. However, the contents are almost the same except for one point: The Enterprise Law “applies to private enterprises, both domestic and foreign, state enterprises and joint enterprises established and operating in the Lao PDR” (Article 8), while the “Business law is applicable in the context of business with a registered capital from 1,000,000 kip and over” (Article 8; 1,000,000 kip was equivalent to \$94.00 in 2005). [5].

In Vietnam, private enterprises were formally allowed to exist by the Government Decree No.27 and No.28 regarding the ownership, and Government Decision No.19 in 1988. In 1990, private enterprises were formally approved by the Law on Enterprises. The existence of private enterprises and private ownership of productive means were formally guaranteed by the Constitution in 1992. The new Law on Enterprises became effective in 2000, which covered all types of domestic private enterprises (limited liability companies, shareholding companies, partnerships and private enterprises). This law was epoch-making in that it recognized the lawful profit-making nature of business activities, except for those clearly banned by the law, and that the enterprise registration was drastically changed from the approval to autonomous basis. The procedure was so simplified that the number days required for registration dropped from 20 days to 7 days and that the necessary cost decreased to one-twentieth. The new Constitution in 2002 stipulated that the equal conditions were guaranteed to private enterprises to compete with SOEs.

[5].

With respect to investment promotion, in the late 1980s the laws on promoting foreign direct investment (FDI) in LV initially aimed to control and manage FDI, which did not promote investment as expected. However, since the mid-2000s these laws have been revised to unify domestic and foreign investment and promote FDI, and these have a positive impact on investment in both countries. It is worth noting that the percentage share of FDI in Vietnam has consistently been higher than that of Laos and that Laos started the legal reforms a few years later than Vietnam. [6].

3. SME Policy in Laos

This section starts with understanding the status quo of SMEs in Laos. Table 1 represents the number of firms and their composition by sector and by number of employees in Laos (data from the Economic Census conducted in 2006 and 2013). There is no other comprehensive data which can better illustrate the status quo of SMEs in Laos.¹

Table 1. Number of firms and their composition by sector and number of employees in Laos

	Year of census	2006						2013						
	Sector	1-4	5-9	10-99	100+	Total	by industry		1-4	5-9	10-99	100+	Total	by industry
A	Agriculture, forestry and fishing	81.3%	12.5%	6.0%	0.2%	4,318	3.4%	A	63.3%	25.1%	10.4%	1.1%	2,188	1.8%
B	Mining and quarrying	55.6%	17.8%	23.9%	2.7%	297	0.2%	B	22.6%	29.6%	43.2%	4.7%	257	0.2%
C	Manufacturing	90.1%	5.6%	3.8%	0.5%	24,331	19.2%	C	70.8%	18.0%	10.4%	0.7%	15,573	12.5%
D	Electricity, gas, steam and air conditioning supply	29.8%	28.1%	33.3%	8.8%	114	0.1%	D	23.5%	18.5%	47.1%	10.9%	119	0.1%
E	Water supply, sewerage, waste management	70.1%	12.9%	16.7%	0.4%	264	0.2%	E	38.8%	33.5%	24.1%	3.5%	170	0.1%
F	Construction	45.5%	20.2%	32.0%	2.1%	628	0.5%	F	23.1%	24.1%	48.6%	4.2%	642	0.5%
G	Wholesale and retail trade	97.5%	2.0%	0.5%	0.0%	81,780	64.4%	G	89.5%	8.6%	1.8%	0.0%	78,407	62.8%
H	Transportation and storage	92.4%	4.5%	2.9%	0.1%	3,799	3.0%	H	85.9%	9.1%	4.6%	0.4%	3,509	2.8%
I	Accommodation and food service activities	68.1%	22.4%	9.3%	0.2%	3,439	2.7%	I	75.9%	17.7%	6.3%	0.1%	14,549	11.7%
J	Information and communication	91.6%	2.4%	5.4%	0.6%	872	0.7%	J	64.3%	12.8%	21.3%	1.6%	375	0.3%
K	Financial, banking and insurance activities	47.8%	29.1%	21.4%	1.7%	299	0.2%	K	30.1%	36.3%	30.5%	3.0%	531	0.4%
L	Real estate activities	91.3%	4.9%	3.4%	0.0%	618	0.5%	L	84.8%	8.0%	6.9%	0.3%	712	0.6%
M	Professional, scientific and technical activities	82.7%	8.9%	8.4%	0.0%	359	0.3%	M	64.3%	22.5%	12.7%	0.5%	409	0.3%
N	Administrative and support service activities	74.8%	13.9%	10.5%	0.8%	755	0.6%	N	59.8%	27.4%	12.2%	0.6%	854	0.7%
O	Education and training	29.9%	28.2%	41.9%	0.0%	298	0.2%	O	14.6%	24.7%	59.2%	1.4%	417	0.3%
P	Human health and social work activities	87.2%	9.1%	3.7%	0.0%	375	0.3%	P	76.2%	17.8%	5.9%	0.0%	421	0.3%
Q	Arts, entertainment and recreation	85.3%	9.7%	4.9%	0.1%	1,013	0.8%	Q	65.7%	21.7%	12.2%	0.3%	866	0.7%
R	Other service activities	97.2%	2.1%	0.7%	0.0%	3,353	2.6%	R	90.2%	7.7%	2.0%	0.1%	4,809	3.9%
	Total by number of workers	93.4%	4.2%	2.2%	0.2%	126,913	100.0%		83.4%	11.8%	4.6%	0.2%	124,808	100.0%

Source: National Statistics Center (2007) *Report of Economic Census 2006, Volume I* : Lao Statistics Bureau (2015) *Report of Economic Census II, 2013* .

Source: National Statistics Center (2007) Report of Economic Census 2006, Volume 1: Lao Statistics Bureau (2015) Report of Economic Census II, 2013.

It is revealed that in 2013, micro enterprises with 1-4 workers occupy 83.4%, small with 5-9 workers 11.8%, medium with 10-99 workers 4.6%, and large with more than 100 workers only 0.2% of all enterprises. Thus, the *striking small size* is a characteristic of Lao enterprises.

¹ For the Economic Census 2013 the total number of primary economic units were 178,557, of which 134,577 units were surveyed by personal interview. The following economic units are excluded from survey: villages with fewer than 10 economic units, economic units without a permanent address (mobile shops, street vendors, lottery sellers, Tuk-Tuk or taxi driver, mobile fruit carts and other temporary retail shops), other production units with only one labor such as handicraft, weaving, agriculture, forestry and animal breeding. Some 9,704 NPOs and 15 economic units of 'public administration and defence' were excluded. For the Economic Census 2006, out of 209,484 primary economic units, 126,913 units located in the villages with road access were surveyed. Therefore, both censuses are not "census" with 100% samples in the country.

This characteristic, however, was more salient in 2006: micro enterprises with 1-4 workers occupy 93.4%. Reviewing the changes in the composition reveals that all sectors but 'Accommodation and food service activities' have decreased the percentage share of the micro enterprises and increased the share of the larger-sized firms between 2006 and 2013. Large sectors, such as 'Wholesale and retail trade' and 'Manufacturing', occupy 62.8% and 12.5%, respectively, while the share of micro enterprises from 97.5% to 89.5%, and from 90.1% to 70.8%, respectively. However, with 95.1% share in 2013, micro or small enterprises with fewer than 10 workers are still the dominant size in Laos. [7].

Derived from the data of 2013 Economic Census in Laos (Table 1) and 2012 Establishment Census in Vietnam², the sectoral classification in LV is practically the same, while the classification of size (number of workers) and the number of firms are different. It is revealed that regardless of the larger population size (*13.9 times*), Vietnam has disproportionately more enterprises than Laos (4,537 thousand enterprises in Vietnam vs. 125 thousand enterprises in Laos; *36.4 times*): for large enterprise 26.1 times in all 18 categories under study and 251.4 times in manufacturing; for medium enterprises 67.4 times in commerce/services sectors and 21.0 times in manufacturing. [8], [9].

In summary, Laos and Vietnam share a common characteristic (striking small size of enterprises), while the number of large or medium firms are very much different. Hence, there is a need for Laos to have more enterprises, especially large or medium ones, for economic development. Here it is apparent that the challenges for SME policy in Laos are to increase the number of enterprises and to help micro and small firms grow to larger ones by providing better business environment.

The GOL has formulated and implemented SME policy since 1996. The recent SME Development Plan (2011-2015) identifies 7 priority areas to be implemented³. In this section, the SME policy of GOL is evaluated and discussed in two aspects: first, by the objective indicator of doing business; and second, by the subjective evaluation of government services provided by entrepreneurs.

3.1 Ease of doing business

The World Bank has published *Doing Business* every year from 2004, which is the annual report measuring the regulations that enhance business activity and those that hamper it. *Doing Business* measures regulations in each country affecting the ease of doing business. A virtual domestic SME with 10-50 employees located in the largest business city is assumed to make a comparison of the ease of doing business across countries⁴. [10].

The two most important indicators for SME development in the report are 'starting a

² Due to space limitation data from 2012 Establishment Census cannot be presented in this paper. However, they are available upon request. The discussion in this section largely refers to this data set.

³ Department of SME Promotion, Ministry of Industry and Commerce (2017, p7)

⁴ To ensure comparability of the data across countries, the following standardized case scenarios and assumptions are applied. It is a limited liability company or its legal equivalent; operates in the economy's largest business city; is 100% domestically owned and has five owners, none of whom is a legal entity; has start-up capital of 10 times income per capita; performs general industrial or commercial activities, and does not perform foreign trade activities; leases the commercial plant or offices and is not a proprietor of real estate; has a turnover of at least 100 times income per capita; does not qualify for investment incentives or any special benefits; has 10-50 employees, all of them domestic nationals; has a turnover of at least 100 times income per capita, etc. <https://www.doingbusiness.org/en/methodology/starting-a-business>

business' and 'getting credit'. With respect to 'starting a business', it is apparent that the situation in Laos improved slightly in 2007 and became substantially better in 2012, before deteriorating in 2015. In Vietnam, the ease of getting credit has improved substantially in 2007-2008 and maintained the level through 2014, and then enhanced slightly in 2015. In sum, the business environment for SMEs regarding 'starting a business' and 'getting credit' was more restrictive in Laos than Vietnam, and the ease of getting credit improved substantially in Laos only as recently as 2015. [10].

3.2 Evaluation of government assistance by entrepreneurs in Laos

This analysis relies on the survey data of the GIZ⁵. The GIZ has conducted the large-scale enterprise survey in every two years from 2005 to 2013 for the major regions in Laos (Vientiane Capital, Luang Prabang Province, Champasack Province, Luang Namtha Province, and Savannakhet Province). This survey series provides the subjective assessment of the central and local government services as well as other information of firms based on questionnaires for entrepreneurs. [11].

The GIZ's *Enterprise Survey* asked entrepreneurs about the helpfulness of government services with five scales: very helpful; helpful; neutral; unhelpful; and very unhelpful. The survey results⁶ reveal that government services are rated as being 'helpful' or 'very helpful' by 61-75% (central government assistance) and 64-80% (local government assistance) by entrepreneurs. It has also been revealed that the perception of entrepreneur has improved from 2005 to 2013. It is worth noting that larger firms tend to rate government services as 'helpful' or 'very helpful', while micro and small firms with less than 20 workers tend to evaluate government services as 'unhelpful' or 'very unhelpful'. In sum, government services have generally been *highly* rated and the positive rating has risen except for micro firms. However, SMEs tend to rate government services *lower* than larger firms, and a number of micro firms rate government services as 'unhelpful' or 'very unhelpful'. [11].

4. Concluding Remarks

Laos and Vietnam are neighboring countries with a long borderline and several similarities in political regime, economic performance, economic and legal policies and reforms. Following the reforms started in the late 1980s, Laos has achieved comparable economic performance to Vietnam. However, there is still a big difference between these two countries, for example in life expectancy, poverty incidence, and human development. The gap between economic performance and social indexes arouses suspicions that a remarkable economic performance of Laos may be a "goldbrick," that the fruit of economic development may concentrate in a small number of people, and that economic development is not sufficiently inclusive.

Recent development in Laos appears to concentrate on big projects, such as special economic zones, buildings, hydro-power dams, roads, railways, etc., which could lead to high external debt stocks. It is undeniable that infrastructure is very important for economic

⁵ GIZ is the German abbreviation for the Gesellschaft für International Zusammenarbeit.

⁶ Due to space limitation, the summary table of the survey results cannot be presented in this paper. However, it is available upon request.

development. However, if the infrastructure does not generate sufficient income and employment for Lao people, economic development is deemed not inclusive.

For inclusive economic development and/or more equal distribution of income and employment, SME promotion is one of the most effective measures. In spite of the great efforts of GOL in SME development, business environment in Laos, in terms of ‘starting a business’ and ‘getting credit’, is still more restrictive than Vietnam, and indeed conditions for ‘starting a business’ deteriorated in 2015.

Notwithstanding the limitation of the analysis, the paper tries to examine the challenges facing Laos by comparing them with those of Vietnam. It can be concluded that Laos is still behind her neighbor in many aspects of development. Since 2004 the government of Laos has implemented SME promotion policies and most entrepreneurs evaluate them helpful. However, the policies are deemed ineffective in this analysis. The findings imply that effective implementation of SME policies is a pressing issue for Laos. [12]. In reality, however, Vietnam also has many problems and challenges to overcome so that there are issues that cannot be shown by comparing the two countries.

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Bioaccumulation of Metals in Gill and Liver of Some Fishes of Different Feeding Habits from Water and Sediment of Ayeyarwady River Segment, Salay Environs

Cho Cho Thin¹, et al

Abstract

The present study aimed to evaluate the relationship of metals in water and sediment on important organs (gills and livers) of nine commercial fish species. In this study, bioaccumulation of six metals (Ca, Mg, Na, Cd, Pb, As) in gills and livers of nine fish species and metal concentrations in water and sediments of Ayeyarwady River segment, Salay environs were analyzed by Flame Atomic Absorption Spectrometer at Universities' Research Centre of University of Yangon. The study period lasted from January to December, 2016. Cd and Pb concentrations in all studied fishes of different feeding habits and their environs were lower than the maximum permissible limit while those of As were over the limit. Those of essential metals (Ca, Mg, Na) were within the FAO standard ranges. The maximum concentration of arsenic (2.79mg/L) was recorded in the gills of herbivorous fishes. According to the results of Transfer Factors, Cd and As accumulated in gill and liver tissues of most of studied fishes came from water and sediment. Arsenic levels in the gill and liver tissue samples taken from studied species except *N. notopterus* were over the dangerous limits designated by WHO/FAO and there is health hazard risk to the local consumers.

Keywords: fish gill, liver, sediment, metal concentration

1. Introduction

Nowadays, the pollution of the aquatic environment due to heavy metals has become a worldwide problem, because they are indestructible and most of them have toxic effects on aquatic organisms [1]. Even though some metals are essential for living organisms, they can also be toxic over the limits (e.g. Ca, Mg, and Na) [2]. If their concentration is too high, they may equal the toxicity of nonessential metals (e.g. Cd, Pb, As) [2].

Among environmental pollutants, metals are of particular concern, due to their potential toxic effect and ability to bio accumulate in aquatic ecosystems [3]. According to the literature, metal bioaccumulation in fish and subsequent distribution in their organs is greatly interspecific. In addition, many factors can influence metal uptake like sex, age, size, reproductive cycle, swimming pattern, feeding behavior, and geographical location [4].

However, fish normally accumulate heavy metals from food, water and sediments [5] and this is a good indicator of heavy metals pollution in water [6]. Impact of contaminants on aquatic ecosystems can be evaluated by measuring biochemical parameters in the liver of fish that respond specifically to the degree and type of contamination [7]. Gills serve as a good indicator of water quality. They are sensitive to any change of water components since gill filaments and lamellae provide a very large surface area for direct and continuous contact with contaminants in water [8].

In this study, concentrations of six metals (calcium, magnesium, sodium, cadmium, lead and arsenic) in the gill and liver of nine fish species were assessed because these fish species

¹ Dr. Lecturer, Department of Zoology, University of Yangon, Myanmar. chochothin.uy2016@gmail.com,
2. Dr Myin Zu Min, 3. Dr Min Thaung, 4. Dr. Yee Yee Win

were consumed as food by local people. Metal levels of water and sediments from the Ayeyarwady River segment of Salay environs, which the fishes inhabited, were also detected. The Transfer Factor (accumulation factor) is the ratio between the accumulated concentration of a given pollutant in any organ and its dissolved concentration in water. It gives an indication of the accumulation efficiency for any particular pollutant in any fish organ [9]. Thus, Transfer Factor (TF) of heavy metals in soft tissue (liver) of the studied fish species was also determined.

2. Materials and Methods

Study Area

Ayeyarwady River segment of Salay Township, Magway Region situated at 20° 42' N to 20° 51.30' N and 94° 14' E to 97° 47.51' E was chosen as the study area to analyze metal concentrations in some fish species and their environs (Fig. 1).

Study Period

Study period lasted from January, 2016 to December, 2016.

Collection and preparation of Samples

From the study site, 68 specimens of 9 study fish species were collected from local fishermen. Feeding habits of recorded fish species were designated in accordance with Talwar and Jhingran [10]. From among the collected species, three species each of herbivores, carnivores, and omnivores were selected for determination of selected metals. The liver and gill were carefully excised, rinsed in double distilled water and oven dried at 1100°C. The heavy metal concentrations in the dried samples were estimated after acid digestion, following the standard method [11], using Atomic Absorption Spectrophotometer. Each water sample was filtered through a 0.45 micron Whatman filter paper. The water samples were analyzed directly. The sediment sample was sun dried, grounded and sieved with a 200 mm sieve to obtain a fine powder, of which 1.0 g was used. Then sediment analysis was carried out according to the procedure described earlier [12].

Data Analysis

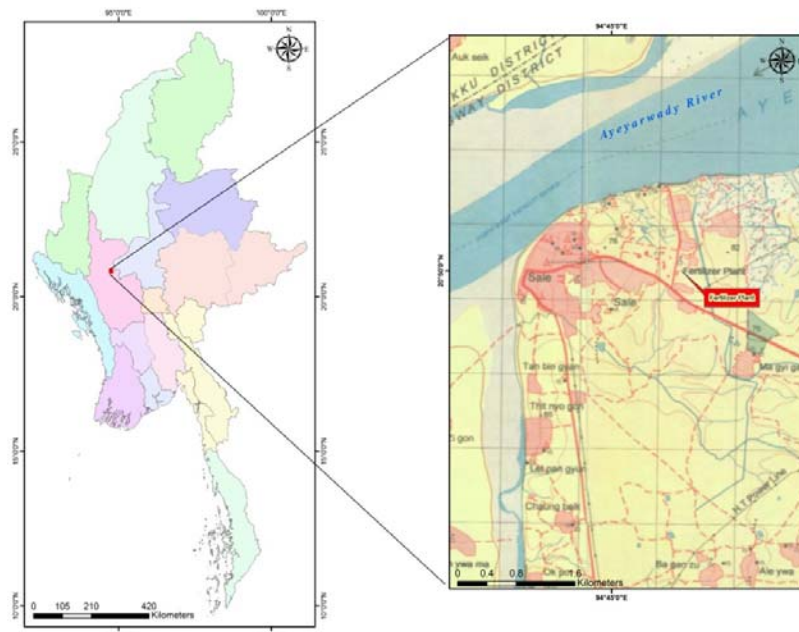
The concentration of metals (calcium, magnesium, sodium, cadmium, lead and arsenic) in gill and liver of fish specimens and aquatic environs of study area were analyzed in triplicates by Flame Atomic Absorption Spectrometer in Universities' Research Centre (URC) at University of Yangon. The results were compared with WHO/FAO maximum permissible limits (MPL) [13, 14].

Transfer Factor (TF) calculation

The TF was given as

$$TF = \frac{\text{concentration of metal in fish soft tissue}}{\text{concentration of metal in environ (water or sediment)}}$$

TF greater than 1 indicates bioaccumulation of metals in fish soft tissue [15].



Source: Universal Transverse Mercator (UTM) Map Sheets, 2004

Figure 1. Map of the study area and study site

3. Results and Discussion

A total of 9 fish species which included three each of herbivores (*Cirrhinus mrigala*, *Labeo calbasu*, *Oreochromis mossambicus*), carnivores (*Notopterus notopterus*, *Separata aor*, *Channa punctatus*), and omnivores (*Tenualosa ilisha*, *Rhinomugil corsula*, *Mastacembelus dayi*) were collected from the Ayeyarwady River segment of Salay Township.

Calcium, magnesium and sodium (essential metals) concentrations of gill and liver of all studied fish species of different feeding habits were found within the FAO standard ranges (Table 1). Mean concentrations of essential metal in gills and livers of fishes of different feeding habits were presented in Fig. 2. A large number of studies have shown that the level of bioaccumulation of heavy metal in fish muscle is significantly correlated with fish species [16]. The results observed in this study were in good agreement with the above consensus.

Cadmium and lead concentrations of gill and liver of all studied fish species of different feeding habits were found to be lower than those of maximum permissible limits recognized by WHO/ FAO (Table 2). Arsenic concentrations in gills and livers of all studied fish species of different feeding habits were found to be higher than those of maximum permissible limits except in *Notopterus notopterus* (-0.37 mg/L), a carnivorous fish. Especially, the mean concentrations of toxic metals for all studied fishes were presented in Fig. 3.

Calcium, magnesium and sodium concentrations in water and sediment for all seasons were found to be lower than those of maximum permissible limits recognized by WHO/ FAO. Cadmium (0.03 mg/L), lead (0.51 mg/L), and arsenic (1.39 mg/L) concentrations of water were higher than the MPL. Cadmium, lead, and arsenic concentrations of sediment in all seasons were observed to be lower than the "threshold effect concentration"(TEC)," midpoint effect concentration"(MEC), and "probable effect concentration" (PEC) [17] (Fig. 4). Maximum permissible limit of metal concentration designated by WHO and FAO guidelines were shown in Table 3.

In addition, transfer factor of heavy metals in liver of studied fish species was also determined. (Table.4). It is found that Cd are hazardous for the aquatic ecosystems especially for the *C. mrigala*, *L. calbasu*, *O. mossambicus*, *S.aor*, *C. punctatus*, *R. corsula* and *M. dayi*. Transfer factors from water for cadmium were greater than 1, which indicated that the above mentioned fish species accumulated metal from water. Similarly, Transfer Factors from water and sediment for arsenic in *T. ilisha* and *M. dayi* were greater than 1. Thus, level of arsenic in the area is hazardous for these fish species. Heavy metals pollution affects not only aquatic organisms, but also public health as a result of bioaccumulation through their food chains.

Transfer Factors of Cd and As in gill from water and sediment for most of the studied fish species were greater than 1 (Table.5). Thus, levels of Cd and As were hazardous to the studied fish species. Similar results were found for Pb in *L. rohita*, *R.corsula* and *M.dayi*. The results show that As levels in the soft tissue samples taken from studied fish species except *N. notopterus* were over the dangerous limits given by WHO/FAO and there is high risk for local public who consume eating these species.

Table 1. Essential metal concentration (mg/L) in gill and liver of studied fish species

Feeding Habits	Species	Ca		Mg		Na	
		Gill	Liver	Gill	Liver	Gill	Liver
Herbivore	<i>Cirrhinus mrigala</i>	84.44	18.56	8.09	8.09	51.21	52.59
	<i>Labeo calbasu</i>	86.97	35.80	8.84	6.14	36.54	3.60
	<i>Oreochromis mossambicus</i>	86.19	21.94	8.56	7.91	57.73	11.75
	<i>Notopterus notopterus</i>	78.24	13.61	8.66	8.02	54.13	12.95
Carnivore	<i>Separata aor</i>	87.36	19.25	8.51	4.29	68.05	4.87
	<i>Channa punctatus</i>	83.94	72.41	8.33	7.07	20.60	1.18
	<i>Tenualosa ilisha</i>	80.45	22.48	8.53	2.30	25.93	1.13
Omnivore	<i>Rhinomugil corsula</i>	86.69	38.60	8.58	6.97	51.24	4.07
	<i>Mastacembelus dayi</i>	82.99	21.73	8.35	6.45	17.49	6.59

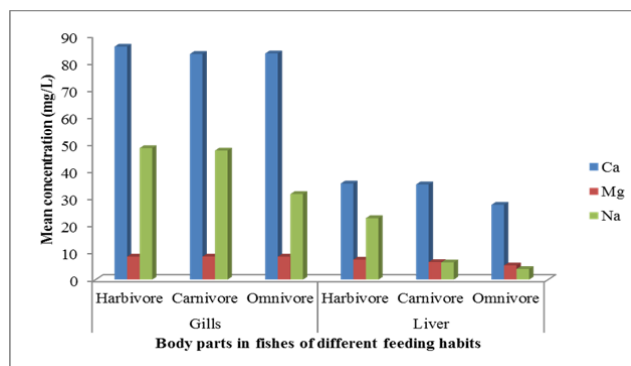


Figure 2. Mean concentration of essential metal in gills and liver of fishes of different feeding habits

Table 2. Toxic metal concentrations (mg/L) in gill and liver of studied fish species

Feeding Habits	Species	Cd		Pb		As	
		Gill	Liver	Gill	Liver	Gill	Liver
Herbivore	<i>Cirrhinus mrigala</i>	0.06	0.07	0.49	0.08	3.08	0.25
	<i>Labeo calbasu</i>	0.05	0.04	0.77	0.36	2.89	1.37
	<i>Oreochromis mosseimbicus</i>	0.05	0.03	0.47	0.18	2.39	0.62
Carnivore	<i>Notopterus notopterus</i>	0.05	0.03	0.31	-0.03	2.85	-0.37
	<i>Separata aor</i>	0.04	0.03	0.40	0.11	2.45	0.49
	<i>Channa punctatus</i>	0.04	0.04	0.40	0.29	2.28	1.14
Omnivore	<i>Tenualosa ilisha</i>	0.04	0.02	0.25	0.02	2.40	1.79
	<i>Rhinomugil corsula</i>	0.05	0.03	0.52	0.22	2.54	0.48
	<i>Mastacembelus dayi</i>	0.04	0.04	0.58	0.42	1.92	1.43

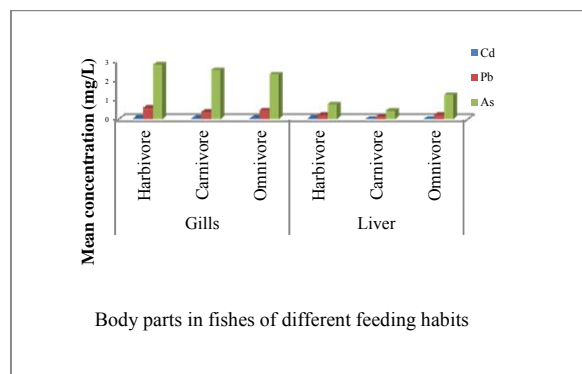


Figure3. Mean concentration of toxic metal in gills and livers of fishes of different feeding habits

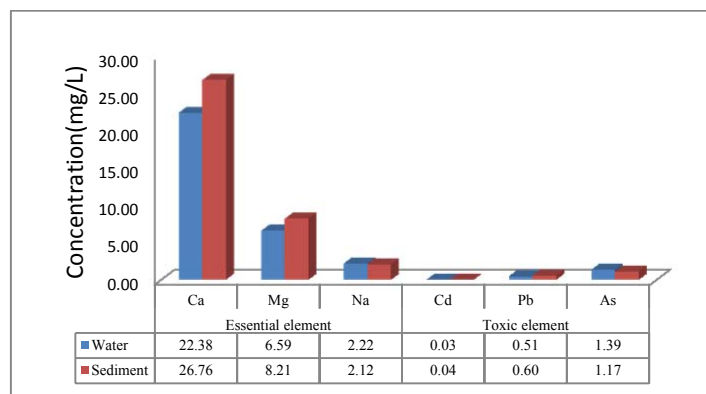


Figure4. Essential and toxic metals concentrations (mg/L) of water and sediment in study area

Table 3. Maximum permissible limit of metal concentrations (mg/L) stated in WHO and FAO guidelines

Metal	WHO/FAO limit	WHO guideline limit	Sediment		
	(Muscle)	(Water)	TEC	MEC	PEC
Ca	19-881	100			
Mg	4.5-452	150	Not stated		
Na	30-134	200			
Cd	0.2		0.99	3	5
Pb	1		36	83	130
As	0.01		9.8	21.4	33

Table 4. The Transfer factor (TF) of heavy metals from water and sediment to liver of studied fish species

Feeding Habits	Species	Cd		Pb		As	
		TF from	TF from	TF from	TF from	TF from	TF from
		water	sediment	water	sediment	water	sediment
Herbivore	<i>Cirrhinus mrigala</i>	2.44	1.65	0.16	0.13	0.18	0.22
	<i>Labeo calbasu</i>	1.48	1.00	0.70	0.60	0.99	1.17
	<i>Oreochromis mossambicus</i>	1.26	0.85	0.36	0.31	0.45	0.53
Carnivore	<i>Notopterus notopterus</i>	0.96	0.65	-0.07	-0.06	-0.27	-0.32
	<i>Separata aor</i>	1.19	0.80	0.22	0.19	0.35	0.42
	<i>Channa punctatus</i>	1.30	0.88	0.56	0.48	0.82	0.98
Omnivore	<i>Tenualosa ilisha</i>	0.78	0.53	0.04	0.03	1.29	1.53
	<i>Rhinomugil corsula</i>	1.11	0.75	0.44	0.37	0.34	0.41
	<i>Mastacembelus dayi</i>	1.37	0.93	0.82	0.70	1.03	1.23

Table 5. The Transfer factor (TF) of heavy metals from water and sediment in gills of studied fish species

Feeding Habits	Species	Cd		Pb		As	
		TF from	TF from	TF from	TF from	TF from	TF from
		water	sediment	water	sediment	water	sediment
Herbivore	<i>Cirrhinus mrigala</i>	2.07	1.40	0.96	0.82	2.22	2.63
	<i>Labeo calbasu</i>	1.93	1.30	1.51	1.28	2.10	2.47
	<i>Oreochromis mossambicus</i>	1.67	1.13	0.92	0.78	1.72	2.04
Carnivore	<i>Notopterus notopterus</i>	1.78	1.20	0.61	0.52	2.10	2.44
	<i>Separata aor</i>	1.59	0.08	0.78	0.67	1.76	2.10
	<i>Channa punctatus</i>	1.41	0.95	0.78	0.67	1.64	1.95
Omnivore	<i>Tenualosa ilisha</i>	1.37	0.93	0.50	0.42	1.73	2.10
	<i>Rhinomugil corsula</i>	1.81	1.23	1.20	0.87	1.83	2.17
	<i>Mastacembelus dayi</i>	1.48	1.00	1.14	0.97	1.38	1.64

In this study, the effects of metal accumulation in gills and livers of fishes and their environs (water and sediments) were determined. The values observed for toxic metals concentrations of all studied fish species of different feeding habits and their environs were lower than the maximum permissible limit in all seasons except for the arsenic in cold season. That of essential metals were within WHO and FAO concentrations ranges.

The observed variability of heavy metal levels in different species depends on feeding habits, ecological needs, metabolic rate, physiological condition of fish, age, size and length of the fish and their habitats [18]. It is found that Cd levels are hazardous for the aquatic ecosystems especially for the *C. mrigala*, *L. calbasu*, *O. mossambicus*, *S.aor*, *C. punctatus*, *R. corsula* and *M. dayi*. Transfer factors for Cd in liver from water were greater than 1, which indicated that the above mentioned fish species accumulated metal from water. Similarly, Transfer Factors for As from water and sediment in *T. ilisha* and *M. dayi* were greater than 1. Thus, As are hazardous for these fish species in the area. Transfer Factors of Cd and As in gill from water and sediment for most of the studied fish species were also greater than 1. Thus, Cd and As are hazardous for the present studied fish species. The accumulation of metals in the liver is likely linked to its metabolism. Gills are the main route of metal exchange from water as they have very large surface areas that facilitate rapid diffusion of toxic metals. Similar results were found for Pb in *L. rohita*, *R.corsula* and *M.dayi*. Heavy metal pollution affects not only aquatic organisms but also public health as a result of bioaccumulation through food chains. The results show that As levels in the soft tissue samples taken from the studied fish species except from *N. notopterus* were over the dangerous limits given by WHO/FAO and there is a health risk for the local public who consume these fish species.

4. Conclusion

In the present study, essential and toxic metal concentrations in gill and liver of all studied fish species were found to be lower than the maximum permissible limit except for the arsenic. Based on the results, it was concluded that it seems to be not appropriate for eating studied fish species except for *N. notopterus*. According to the results of Transfer Factors, Cd and As which accumulated in gill and liver of most of the studied fish species came from water and sediment of the river segment.

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Aquaculture Development in Myanmar: Evolving Policies and Implications

Thida Kyu¹, Thapye Nyo²

Abstract

Aquaculture is the main animal protein source at an affordable price for rural people and an important provider of employment opportunities in Myanmar. Small-scale fisheries play not only a source of livelihood, income for millions of people but also the fifth-largest earner of foreign currency for the country during the period from 2009/10 to 2017/18. This study focused on fish farming, which contribute to 95% of Myanmar aquaculture. The purposes are to identify the issues and barriers of aquaculture value chain, to set out possible policy options to stimulate aquaculture growth. This study mapped the value-chain (business start point to final markets) uses exploratory research method using field interviews, key informant interviews, and stakeholder focus group discussion. Before interviews, literature reviews of Fishery sectors and concerned law and regulation from various sources were conducted. Then, Government officers from related ministries, Myanmar Fishery Federation (MFF), RUMFCCI, exporters, lawyers and business actors are interviewed as key informants in value chain segments. This study finds out issues and barriers on fish farming value chains and the key barriers are land acquisition, financing, and cost of fish feeds. Then, from this finding, relevant policy recommendations are formulated for aquaculture sector development and fishery export.

Keywords: Value-chain analysis, aquaculture, fishery export, food security

1. Introduction

Most of the protein in the diet of the population of 53 million comes from fish. Apart from its original role in fish food supply, fisheries are one of the main contributors to the development of Myanmar economy. Small-scale fisheries play a crucial role as source of livelihood and income for millions of people in Myanmar. It is also the fifth or sixth-largest earner of foreign currency for the country during the period from 2009/10 to 2014/15. The Livestock and Fishery sector contributed round about 8% of Gross Domestic Product (GDP). Fisheries product accounts for about 14% of monthly food expenditure of average household. According to previous studies, the annual Maximum Sustainable Yield (MSY) of the marine fisheries is estimated at about 1.05 million metric tons. This study focused on inland water fish farming, which contribute to 95% of Myanmar aquaculture. Fish farming accounts for nearly 20% of domestic consumption in Myanmar. Fish farming also generates a lot of rural nonfarm employment. In Myanmar, of all the various food producing systems, aquaculture is considered to be the main animal protein source at an affordable price for rural people and is an important provider of employment opportunities.

2. Purpose of Study and methodology

The purposes of the study are to identify the issues and barriers of aquaculture value chain, and to set out possible policy options to stimulate aquaculture growth.

This study uses value chain approach to explore laws and regulations into various stages of fishery value chains. The fishery value chains are divided into three segments: upstream,

¹ Dr. Pro-Rector, Meiktila University of Economics, Myanmar, thidakyu@gmail.com. CBI (2012). *Myanmar Seafood Exports: Quick Scan of the EU Market Potential*, p. 9

² Srivinas, S. and Hlaing, U.S. 2015. *Myanmar: Land Tenure Issues and the Impact on Rural Development*. Report prepared for Food and Agriculture Organization of the United Nation

midstream, downstream. Before interviews, literature reviews of Fishery sectors and concerned law and regulation from various sources were conducted. Then, field surveys were conducted in Fish firm in Ayeyarwady Region and Yangon Region. After that government officers from Ministry of Livestock, Fishery and Rural Development, Ministry of National Planning and Economic Development and Ministry of Commerce, Chairman of the Myanmar Fishery Federation (MFF) and its members, Members of RUMFCCI, Exporters, Researchers, Lawyers, and Business actors as key informants interviewed in up-, mid- and downstream of value chain segments.

3. Results and Discussion

3.1 Aquaculture Production in Myanmar

Main fishery resource in Myanmar is fresh water through: fish culture, leasable resource and open fisheries and marine fishery through: coastal or In-shore fisheries and off-shore fisheries or deep-sea fisheries. Inland water system is comprised of the Ayeyarwady, Sittaung, and Thanlwin rivers, which run for roughly 2,000 km, as well as 2600 km of tributaries and minor water system. Marine resources include both vast coastal waters and large areas of coastal mangrove swamps. Myanmar people normally prefer freshwater fish to marine fish and freshwater fisheries were aimed mainly at domestic food whereas marine and aquaculture were intended for both domestic consumption and exports. Farmed fish is exported as well as sold on the local market although the domestic fish price is lower than that for export. Table 3 presents the area of aquaculture ponds and its total production from 2005/06 to 2014/15. Not only total area and total production steadily increased but also average yields per acre increase by 62.4% from 2005/06 to 2017/18. In 2017/18, aquaculture fishery production is only 19% of total production but 6% from leasable fisheries, 21% from Open fisheries and 54% from marine fisheries respectively.

. Table 3. Total Aquaculture Ponds and Production

Year	Area of Aquaculture Ponds (Acre)	Production of Aquaculture Ponds (Thousand Metric Ton)	Average Yield per Acre (Tons)
2005/06	405855	574.99	1.42
2006/07	436825	616.35	1.41
2007/08	441098	687.67	1.56
2008/09	440585	775.25	1.76
2009/10	442702	858.76	1.94
2010/11	443695	830.48	1.87
2011/12	448469	899.05	2.00
2012/13	449692	929.38	2.07
2013/14	450323	964.12	2.14
2014/15	469153	999.63	2.13
2015/16	478002	1014.42	2.12
2016/17	487525	1048.69	2.15
2017/18	491345	1130.35	2.30

Source: DoF, Fishery Statistics, (2018)

Myanmar export about 30% of the rohu produced and about 10% of striped catfish with a small amount of tilapia annually. The main markets are the Middle East (Kuwait, Iraq, Saudi Arabia and United Arab Emirates) for gutted and chopped fish, mainly for Asian guest workers, and Bangladesh for frozen whole fish. The domestic market demands smaller sized fish, 0.25-0.50 kg, compared to 0.9-1.0 kg for the export market. Myanmar could export considerably more freshwater fish if the main constraint of market glut or shortage is overcome to provide a regular supply of fish for export.

The domestic consumption and exports of Myanmar Fishery products is mentioned in Table -4. The total volume of fishery exports was apparently decreasing after 2008/2009 due to Nagis cyclone (May 2008) and increase of domestic consumption. In 2009/10, the domestic consumption stood at 3,546,277.6 metric tons (90.44% of the total production) and the share of the exports was 9.56. The total volume of fishery exports was apparently increasing, however the proportion ranged from 10 % to 14 % of total production. In 2014/15, the domestic consumption stood at 4978659 metric tons (93.64% of the total production) and the share of the exports was 6.36. In recent year, the percentage of domestic consumption is slightly decline because of increase in export.

Major importing countries of Myanmar fish and fisheries products were Singapore, Thailand, Hong Kong, China, Japan, Malaysia, Austria, Britain, U.S.A, Bangladesh and Indonesia. Since 2002/03, China has been the major importer of Myanmar fish and fisheries. However, in 2017/18, Thailand imported the largest amount (US\$ 258.808 million). Most of the products were sold out to China, Thailand and Bangladesh through border trade. China especially bought Myanmar product to sell out to the northern parts of its country. Bangladesh also bought not only iced and chilled fish but also dried fish.

Table 4. Domestic Consumption and Export of Fishery Products (Metric Ton)

Sr. No	Year	Production	Domestic Consumption		Exports	
			Quantity	%	Quantity	%
1	2005/06	2581780	2310710	89.50	271070	10.50
2	2006/07	2861710	2518283	87.99	343427	12.01
3	2007/08	3180920	2829268	88.90	351652	11.10
4	2008/09	3542190	3217480	90.83	324711	9.17
5	2009/10	3921970	3546278	90.44	375092	9.56
6	2010/11	4163460	3789567	91.02	373893	8.98
7	2011/12	4478210	4091229	91.36	386981	8.64
8	2012/13	4716220	4339374	92.01	376846	7.99
9	2013/14	5047530	4702263	93.16	345267	6.84
10	2014/15	5316950	4978659	93.64	338291	6.36
11	2015/16	5591830	5222859	93.40	368971	6.60
12	2016/17	5675470	5236764	92.27	438706	7.73
13	2017/18	5587460	5019233	89.83	568227	10.17

Source: Department of Fishery, Fishery Statistics, (2018)

3.2 Value Chain in Aquaculture Sector

A total of 491345 Acres are used for breeding, rearing and harvesting fish and crustaceans in Myanmar. Of total aquaculture ponds, 51% are used for shrimp culture and 41% for fish culture. The culture of freshwater fish is concentrated in the Ayeyarwady (50%), Yangon (28%) and Bago (11%) regions of Myanmar. Producers are comprised of small scale farmers who supply the local market and larger, vertically-integrated farmers who cater to the export market. A variety of species are cultured, including rohu, catla, common carp, grass carp, mrigal carp, silver carp, tilapia, striped catfish, and Philippine catfish. The value chain in fishery sector is divided into three segments; upstream, midstream and downstream. Upstream is defined as comprising all enterprises involved in the production and distribution of inputs. The midstream segment is comprised of farms, where these inputs are combined using labor to produce fish of marketable size. The downstream segment involves all activities relating to the marketing, processing and distribution of fish produced.

3.3 Regulatory and Institution

Every fishing activity in Myanmar's fishery industry is controlled by the licensing and registration system to manage both the fishing vessels and their gear, under the current Fisheries Law and Union of Myanmar Investment Law 2016. "The Fisheries Law" 1905 was the only legislation regulating fishery management and the fishing industry of Myanmar until amended in 1954, and was finally repealed by "Law relating to the fishing rights of foreign fishing vessels" in 1989. After that, the government publicized three other fisheries laws, namely "Aquaculture fisheries law" in 1989, "Myanmar marine fisheries law" in 1990, and "Freshwater fisheries law" in 1991. The law relating to the fishing rights of foreign fishing vessels is amended in 1993. Most prospective fish farmers and prospective small-scale fish farmers have to convert agricultural land to aquaculture ponds, previously. The Farmland Law (2012) formalized transferrable private land use rights (Oberndorf, 2012), in effect regularizing the existing informal market in agricultural land. In order to convert agricultural land to aquaculture in a legally compliant manner, it is necessary to apply to the State/Regional Administrative Authority for permission to change the title of the land. A successful application to change land titling will result in the issue of an official document 'La Na 39' or form 7 (UN-Habitat/UNHRC, 2010). The process of applying for La Na 39 is complex. Thus, land rights transfer or land-use change is a lengthy process, requiring considerable time and frequent visits to various government offices located in entirely different line ministries (Srivinas and Hlaing, 2015, p8).

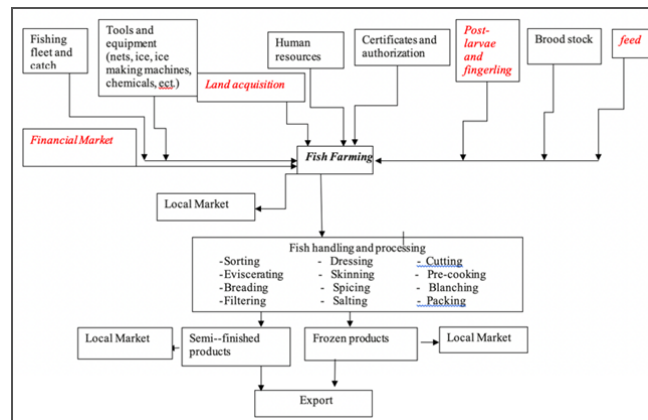


Figure 1. Aquaculture (fish firm) value chain in Myanmar

Department of Fisheries (DoF) is the major government institution which is accountable for the management of fishery sector development. DoF's responsibilities involve, among others, facilitating the technical needs and equipment of the marine sector; distributing freshwater and deep-sea prawns to private breeders and assisting them with breeding techniques; undertaking research and development activities; collecting taxes; issuing fishing licenses; and establishing model breeding centers. Myanmar Fisheries Federation (MFF) was reformed in 1998 as a replacement of Myanmar Fishery Association which was established in 1989. Myanmar Fisheries Federation is one of the highest NGOs commercial organizations to encourage and promote fishery industries of Myanmar. Ministry of Commerce (MoC) undertakes market information for fishery export, business to business meeting and trade fairs under department of trade promotion (DoTP).

3.4 Issues in Myanmar Fishery Sector Value Chain

Actually, the legislative framework relies on outdated laws that must be enhanced in order to account for modern aquaculture and fishery management practices and policy. Current laws refrain from addressing a number of issues including fish disease control, environmental impact assessments, and aquaculture guidelines and codes of conduct. All the fishery laws and regulations are not complied with current technology, materials using in fishery sector and environmental situation, new fishery law are needed for sustainable development of fishery sector. Thus, Myanmar government submitted draft of Aquaculture law and Myanmar marine fishery law" to parliament recently to enact. The following section will present important issues and regulatory burdens in fish farming (aquaculture).

Land acquisition and business start: Land categorization and ownership is a major problem in starting an aquaculture farm. According to The Farmland Law (2012) and The Vacant, Fallow and Virgin Lands Management Law (2012), a formal application is required and to get a permit from the relevant state and regional governments. There is no consistency in approving this permit and different governments assessing differently and the level of restrictions depend on the region. This difficulties and complex procedures (cost, time, inconvenience and need for connections with officials in the state bureaucracy) might undermine capacity of many smaller prospective fish farmers to obtain permission to take up aquaculture. As a result, the official

permission, La Na 39 or Form 7 had been issued for around only half of total pond acreage, with some putting the figure as low as 10%. Time taken for the assessment is too long and causing financial and opportunity losses and to the new investors. The investment gap between purchasing a farm with permit and starting a new farm is too wide and discouraging for new investments creating major bottleneck in the sector. To avoid this situation, some investors considered purchasing approved farms separately. This also creates another major problem for new investors to get the farm in one connecting establishment and lead to added overheads and increased operating costs. If the pond was constructed without a permit, the owner has to fill it back to the original stage in addition to the fine (10lks until 2018 and 30000 kyats currently) and up to 2 years in jail (2018 amendment). To purchase an established pond, the cost is between 5lks to 100lks. To construct a pond the cost starts from 15lks. There are still many issues and disputes surrounding land ownership and types of land. Farmlands intended for rice are not allowed to have fish pond and this creates integrated farming impossible and subsequently leaving farmers with no option to diversify and rely on one particular type of crop. Moreover, According to Farmland Law (2012) and The Vacant, Fallow and Virgin Lands Management Law (2012), Land rights for agriculture and aquaculture land are different such as agriculture land can be mortgaged, giving, sold, leasing or otherwise transferred or divided but aquaculture land cannot be without the permission of the Cabinet of the Union Government.

Hatchery: Technology is lacking in this area and it is still difficult to get good and healthy hatchlings at reasonable price. The hatchery production lasts approximately four months from May to August. There are two main hatchery technologies used in Myanmar and the traditional method is called ‘hapa-based’ and it is land and labor intensive. The more advanced method widely used across Asia which involved stripping of eggs and removing brood fish is less common in Myanmar due to higher cost. The traditional method produces lesser number of hatchlings. Department of Fishery (DoF) provides hatchlings (over 789 million fingerlings in 2012/13 but only 631 million in 2017/18) to the farmers but the allocation is not sufficient. Most species become hybrid and degenerated. Import from neighboring countries may be an option but it is not sustainable long term solution and technology transfer, resource allocation and investment is much needed in this area. The number of private hatcheries has grown steadily in recent years but still not enough for the whole sector. Some larger farms also operate as hatcheries and sold its excess hatchlings to smaller farms. In general, the supply is not sufficient for all of fourteen different species and the hatchlings are not good quality.

Feeding: More than 80% of total aquaculture production in Myanmar comes from agricultural byproducts and wastes as feed with only around 20% of reliant on commercially manufactured palette feeds. The supply and distribution of commercial palette feeds are dominated by single company in the market with relatively low competition with no more than five companies in the entire country. Due to lack of enough feed mills and the local companies and high price of feed, in many situations, the small holders have to sell their fishes to the feed mills companies in advance. The law enforcement is weak and the terms and conditions are not favorable to the small holders and often have to pay very high interest rates. Some feeding mills in the country are facing difficulties sourcing raw materials and unable to run regularly. A key informant reported that foreign fish feed companies were wary of investing in Myanmar due to fears over their ability to recover credit extended to farmers. This may suggest that development of a more competitive feed sector is constrained by foreign investors’ access to capital and concerns over the strength of the legal frameworks in place. The private sector, and in particular the MFF, has

not effectively communicated the sector's needs to Customs authorities. Importation limits on enriched flours and other key inputs compels hatcheries to use oilseed cakes as an alternative. However, there is also a short supply of cake for the fisheries sector since a large majority of the cake is absorbed by the livestock sector. Also, it has only been possible to import oilseed cake since 2012 and current volumes remain insufficient to satisfy a growth in hatcheries production. Another issue is the uncertain quality of the cake that is imported, as border controls of oilseed cake imports remain inadequate due to limited testing facilities and the absence of standards against which to evaluate the product.

Finance: The costs of investing in aquaculture can be substantial. Fixed or quasi-fixed inputs may include land purchase or rental, pond construction, housing for workers, poultry sheds, boats, trucks or other means of transport, water pumps, generators and transformers. Variable inputs comprise labor, feed, seed, chemicals, fuel, and ice. Expenditure on feed alone (which accounts for an estimated 75-80% of operating costs), may run to \$2000-2500 per acre/year, with labor and seed accounting for the bulk of the remainder. The ease and terms with which startup and operating capital for aquaculture can be accessed thus have important implications for the sector's inclusiveness. The vast majority of investment and operating capital for aquaculture is raised from informal sources. Although Myanmar Livestock and Fishery Development Bank (MLFDB) provides credit at low rates of interest (13% per annum), it was said by informants only to issue loans to farmers with more than 50 acres of ponds. Although loans from fish traders are often secured with land use certificates (e.g., La Na 39/Form 7 or Form 105), meaning that land can be foreclosed in the face of a serious default, the conditions are flexible (allowing for regular borrowing to cover monthly feed costs, repayment upon harvest, and rescheduling of payments in case. Small farms and nurseries are usually financed from a combination of own savings, informal loans from relatives (both with and without interest) and informal moneylenders (at between 3-6% per month, depending on terms), and (once running), reinvestment of profits. A key constraint for enterprises seeking bank financing is stringent collateral requirements. Moreover, leasehold title, which can be used as collateral for access to credit, is rarely accepted because of complicated procedures and a complex legal system to recognize leasehold titles. High collateral requirements are further stimulated by difficult banking regulations and the absence of loan guarantee mechanisms. Additionally, the absence of an implemented moveable asset law that ensures movables such as cultured fish/shrimp in the ponds, machinery, fishing boats and gear can be used as collateral makes it even more difficult for the fisheries sector to access credit. Deficiencies in the banking sector are complicated by an absence of alternative funding sources such as specialized finance lines, leasing microcredit or sector development funds. There is also limited availability of microfinance services. Furthermore, Myanmar SMEs Development Law (2015) exclude the fish farm or aquaculture farm to be SMEs under definition of SMEs. So fish farm cannot access SME development loan at low interest rate and tax exemption for SMEs. With depriving enterprises of funding that is needed to invest in upgraded capacities, limited financial instruments increase the risk of doing business. In particular, there is a low level of insurance use due to the previously government managed insurance system.

Processing Plant: Processing plants are only able to focus on the processing alone and unable to participate as an operator in the entire fishery farming process. There are only 23 plants that meets EU standard in 2019. DoF also has its own processing standards and criteria for the processing plants.

3.5 Market access and Investment

Companies are not willing to invest in marketing which is much needed especially for export and Myanmar fishery products are relatively unknown. Most Myanmar companies are willing to operate jointly with foreign companies, but the current rules and regulations are still inflexible with many requirements. The massive growth in trade of fish in Myanmar is a clear example of the type of positive transformational change that can occur when regulations that distort the functioning of the market are removed. In Market access, the export tax on fishery products and import tax on inputs for fishery are exempt since 2013 allowing the industry to grow faster. However, because of growing domestic demand and low growth rate of fishery production, export cannot be promoted much. There are many good social and economic benefits come from fishery with no evidence of any major environment impacts.

4. Conclusions and Recommendations

Fishery production from aquaculture will be a major source of increased fish production, following expansion of aquaculture industries, increased average production and modern technology. For promotion of fish exports, the fishery sector should develop and apply fish quality and safety management systems that support the current competitive position of Myanmar fishery products in the regional and world markets through the implementation, validation and promotion of HACCP, GAP, and GHP and improved laboratory practices, the promotion and conduct of training programs to upgrade the technical skills and competencies of personnel in the private sector and the strengthening the compliance of fisheries industry to regional and international requirements. There is an important need to upgrade the fish product to be semi-processed or value-added in order to increase its value. The approaches to upgrade traditional fishery processing and preservation methods as well as market promotion are also crucial for the effective utilization of fisheries resources.

4.1 Policy Option for Legal frameworks governing land use

Restrictions on land use represent the single largest constraint to development of the farm segment of the inland aquaculture value chain, particularly in areas outside of existing pond clusters. The prohibition on conversion of paddy land to other uses is misplaced given that rice now represents a minor cost component in food budgets, even among the poorest, and aquaculture occupies a tiny fraction of cultivable land nationally. The need to apply for land use titling change of in order to convert agricultural land to ponds in a legally compliant manner is similarly restrictive. Accordingly, the removal of these controls is a priority. Holders of use rights to agricultural land should be allowed complete freedom of choice in crop cultivation. Redesigning aquaculture as a form of agriculture (in relation to land management issues only), might offer one means of overcoming land use titling restrictions. Insecure tenure and legal ambiguities have inhibited the development of private land rental markets that could support smallholder access to land for aquaculture, and place those who have constructed ponds without following due process at risk from a more interventionist future role for the state in land management. Retroactively regularizing the status of ponds already constructed would remove this source of uncertainty. An interim measure would be to waive the requirement for farms sized 10 acres or less to obtain apply for La Na 39, formalizing what is already a de facto norm in

some locations and guaranteeing future security of tenure in a pro-smallholder manner. A stepped system of land taxation and pond licensing fees represents an additional option for rebalancing the sector in favor of smallholders, by minimizing charges levied on smaller pond farms and taxing larger operations at higher rates, proportional to farm area.

The following options should be considered as short-term and long-term policy recommendations for land acquisition for fish-farming business start.

1. Streamline procedures and transparent decision making process with appropriate time frame for application of non-agricultural land use permit should be established by collaboration among department of fishery and other concerned organization. (It is the most cost-effective and easiest way to reduce regulatory burden for land acquisition for fish farm.)
2. Amend The Vacant, Fallow and Virgin Lands Management Law (2012) through parliament. (This option also will be possible but it will take a certain to pass the law)
3. Waive the requirement for farms sized 10 acres or less to obtain apply for La Na 39, and rearrange appropriate penalty fee

Policy Option for Finance and enabling environment

Limited access to finance is the greatest constraint to aquaculture development after land use restrictions. Large farms are not generally severely credit constrained, but smaller commercial producers must borrow from informal lenders at high rates of interest, and are sometimes unable to access credit from any source. This results in underinvestment, suboptimal use of inputs, and diminished capacity to seize new opportunities. These observations indicate that there is the need to continue and accelerate ongoing macro- scale reforms to finance and banking.

With respect to sector specific finance mechanisms, the capacity of MLFDB to provide larger volumes of credit to a wider customer base should be expanded, and its approach to loan dispersal should be reformed to make it more responsive to the practical needs of aquaculture producers. This should include an explicit remit to serve the needs of commercial small and medium scale producers. Measures to achieve this goal could include: removing restrictions on the size of farms to which loans can be extended; allowing for multiple loan withdrawals over the course of a production cycle; scheduling repayments in line with the duration of the production cycle; reducing the degree of collateralization required; providing loan facilities with a window of more than one year; supplying credit to non-farm SMEs in aquaculture value chains, and; training bank staff on aquaculture to support more effective decision making.

The following options should be considered as short-term and long-term policy recommendations for reducing regulatory burden for financing of fish farming.

1. Establish a credit guarantee scheme with adequate resources, to be implemented in commercial or trade banks with the objective of reducing the collateral requirements needed to access loans for the fisheries sector
2. Elaborate and endorse a movable assets law that ensures movables such as cultured fish / shrimp in ponds, machinery, fishing boats and gear can be used as collateral in requesting credit
3. Amend SMEs Development Law(2015) through parliamentary process

4. Establish specialized insurance for the fisheries sector in collaboration with emerging new private insurance companies.

Policy Option for Feeding

The feed manufacturing sector is currently uncompetitive. Foreign and domestic investment in aqua-feed production should be encouraged to improve the sector's performance, leading to lower prices, higher product quality, and more widespread adoption of formulated feeds with resultant productivity gains. For instance, very large farms (sized more than 100 acres, and operated primarily by absentee owners or companies) account for 60% of total pond area, and a single company retains a virtual monopoly on fish feed production. Realizing the full potential of aquaculture will be an important piece of the puzzle if Myanmar's agriculture is to transition toward the production of more diverse, higher value agricultural produce. To do so will require fostering and facilitating more inclusive and more evenly distributed patterns of aquaculture development and growth than exist at present. Moreover, collaboration between the Myanmar Aqua-Feed Association (under MFF) and the Myanmar Pulses, Beans & Sesame Seeds Merchants Association should increase to ensure that feeds, ingredients and inputs respect the quality requirements for fish feed production.

The following options should be considered as short-term and long-term policy recommendations for reducing regulatory burden for feed supply of fish farming.

1. As a part of the fisheries policy and legislative framework, implement a delegation of power to competent authorities, (including Regional and State governments), for effective implementation and enforcement of fisheries laws
2. Strengthen law enforcement mechanisms such as inspection, execution and suing within administrative and jurisdiction power, to reduce the occurrence of 'informal arrangements' between parties being used to circumvent laws through delegating some law enforcement power to appropriate government organizations (e.g. armed forces, coast guards, the police force, etc.) by administrative mechanisms
3. Enforcement of competition law and creating competitive business environment for fish feed firms
4. Eliminate import taxes on inputs to produce fish and shrimp feed (wheat flour, soya cake, fish meal, feed additives, etc.) as a means to facilitate the production of higher quality feed in quantity

For fishery export sector to strengthen, there is a need for the private sector to contribute capacity building and technical know-how for manufacturing high-value products, stronger access to financial support, more paying taxes and better access to data. Similarly, the government needs to provide more port facilities, upgrade roads for better transportation and also relieve trade barriers. Since 2018, the export of fish and fishery products is sharply increase, and to sustain this trend, in keeping that of fine operational cold storages; that of the better packaging; and that of fine quality fish.

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Impacts of Infrastructures on River

Kyi Kyi Lwin¹

Abstract

Nowadays the sedimentation caused by gold mining, deforestation, climate change and some infrastructure structures is the vital problem in Ayeyarwady River. The high sediment load and resulting River bed raises compromise navigation on the River. The location of the study area is - Innwa waterway at Mandalay in middle of Ayeyarwady River. Bank erosion occurs at the downstream and upstream of mouth of MyitNge River. Mainstream barriers and dams, construction of bridges, River training structure around the navigation channel may result shoaling problem at the Innwa waterway and it can affect not only human and River system. Field survey and data collection was carried out and GIS software is used to know the changes of morphology of River. The interview program was achieved by asking the questions to related departments and local people who lived near study area. Some local people houses were moved to new places and also they cannot work by cargo carrying since vessel could not pass to the River. They also cannot get the good quality of water. Therefore, it is necessary to protect the human life and River for sustainable use as well as human dignity.

Keywords: sediment transport, environmental and social impact, infrastructure

1. Introduction

The Ayeyarwady is Myanmar's largest river basin and has been described as the heart of the nation. River transport system save cost and energy has little environmental impact compared to other modes of transport. Navigation enhancement is crucial for the development of national economic. Nowadays the sedimentation caused by gold mining, deforestation, climate change and some infrastructure structures such as hydropower station, bridge is the vital problem in Ayeyarwady River. The high sediment load and resulting river bed raises compromise navigation on the river. The objective of the research is to know the impacts of infrastructures along the river and to get a better understanding and investigate the activities of the water on the sedimentation and its impact on navigation.

2. Methods

The location of the study area is Innwa waterway which length is 8.536 km (5.3 miles) at Mandalay in middle of Ayeyarwady River. Innwa waterway is one of the 14 constraints in Mandalay, and is one of the most important inland waterways for the transportation. The location of the study area is shown in figure 1.

¹ Department of River and Coastal Engineering, Myanmar Maritime University Myanmar, jiwenwen@gmail.com



Figure 1. Location of study area (Source; Google)

To get a better understanding the activities in rivers and their surrounding catchments that affect sedimentation and to investigate the impacts of infrastructures on public and navigation, field surveys were carried out and interview program was achieved by asking the questions to Directorate of Water Resources and Improvement of River Systems (DWIR) and local people lived near study area. The morphological changes of river can be provided by ArcGIS software. The causes and effects of problem source at study area are shown in figure 2.

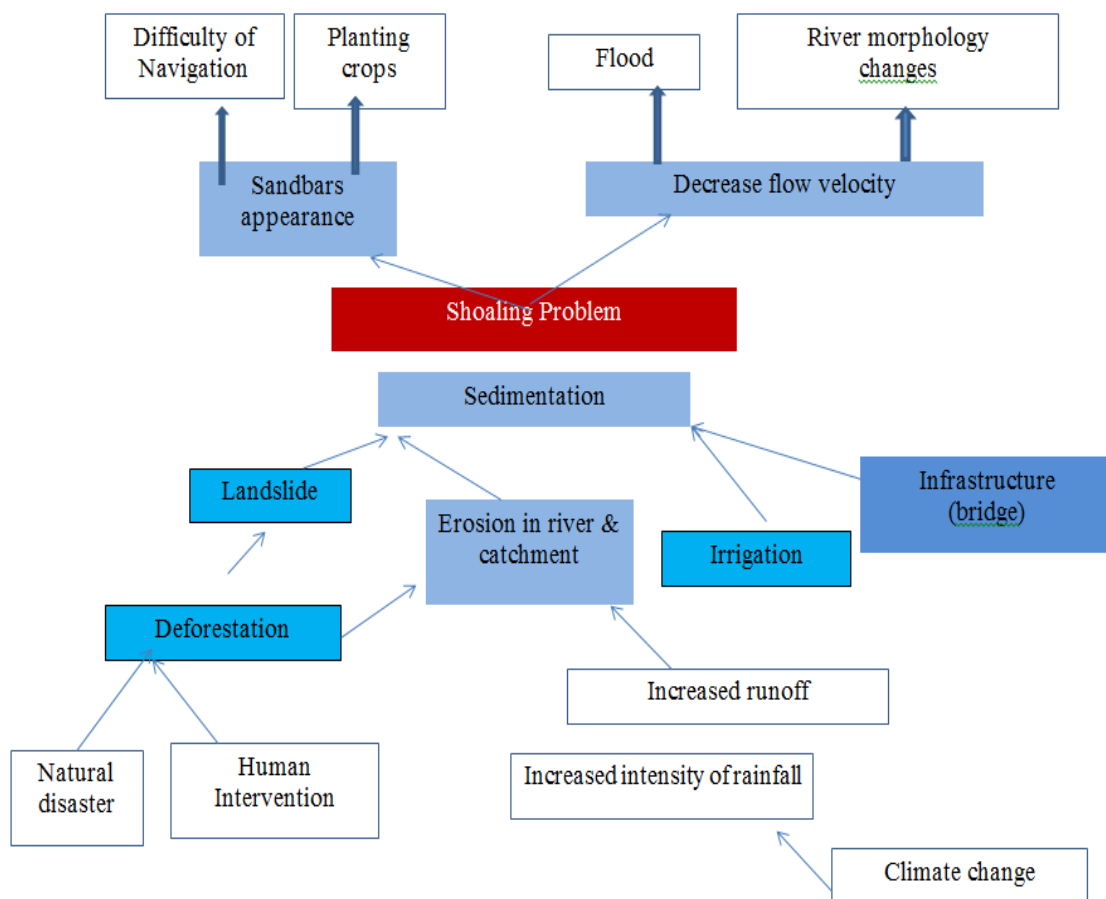


Figure 2. Causes and effects of problem source

3. Results and Discussion

In 2008, the new bridge (Yadanabon Bridge) was constructed across Ayeyarwady River. Due to the new bridge construction the amount of sedimentation is rapidly increasing. As a result the vessels that are passing along river have faced the shoaling problem, a series of sand bars appeared in river. Moreover there are social impacts due to construction of bridge. For example the people who stayed near river had to move other places.

After 1983, the sand bars appeared in front of the Sagaing port every year. At the upstream of Yadanarbon Bridge, the main current flows along the Sagging bank and towards Amarapura between two bridges (old & new). At downstream, it flows along Tada Oo. Bank erosion occurs at the downstream and upstream of mouth of MyitNge River. Sand bar near pagoda will move toward the new bridge yearly. Upstream of Taung Taw, the erosion problem occurs because the water is flowing along bank.

DWIR operated the dredging work and removed snag rocks to improve the waterway during dry season of 2013-2014. However, excavated sand bars reappear again and lead the shoaling problems. The construction of new bridge (Yadanabon Bridge) is also a threat to the flow regime of the river. Along Innwa waterway, five places are needed to improve navigational channel. The pictures indicate dredging of sand deposits by backhoe dredger near the bridge and removing snag rock at MeThway Tite waterway.[1]



Figure 3. Operations of dredging work and removing snag rock [1]

From interviewing, the local people told that the sandbars are appeared due to the construction of bridge and the difficulty of navigation can be occurred especially for vessels. Also their houses were moved to new places and also they cannot work by cargo carrying because any vessel could not pass to the river for not enough water depth. They cannot get the good quality of water. Although it can be negative impact to some people, some people can get more income by selling food and other things at that place because new workers and investors came to that place to get and buy dredged sand for construction work. The figures are with the local people who lived near study area.



Figure 3. Interview with local people

From the Landsat image of river it can be seen the sand bar appeared at the junction of Ayeyarwady River and MyitNge River by comparing between the year of 2000 and 2016. It is one of the reasons for the effect of construction of bridge and also the reduction of flow velocity can occur at the mouth of MyitNge River.

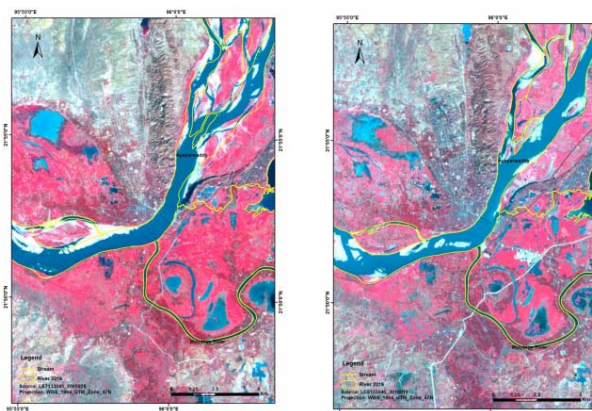


Figure 4. Morphological changes between 2005 and 2016

To get better transport along waterway, it is necessary to improve the navigational channel. It can provide river training works to counter the migrating sand bar which are an integrated part of the improvement of navigation on the Ayeyarwady River alongside dredging maintenance.

4. Conclusion

The morphology changes of Ayeyarwady River can be seen from change detection methods and navigation problems are the main issues for the improvement of river system. From the interviewing of local people, we can know that the construction of infrastructures may affect both the positive and negative impact on human beings and environment of river system. Dredging is the temporary solution and it is costly for yearly. To overcome the costly conventional maintenance techniques innovated modern methods should be introduced. Also financial support is also needed. More researches for improvement for good navigation should be studied to get better coordination and better understood about the process of system. In addition, it should be aware of impact of socio-economic system. Monitoring must be made for sustainable flow of the river according to criterion.

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The Implication of Project Based Learning to Enhance Attitude Toward Biology Learning

Nu Nu Nyunt¹, Eaint Thandar Khine²

Abstract

The purpose of this research is to study the impact of project based learning to enhance attitude toward Biology learning. Attitude is also considered to be an important product for upper secondary school students' in Myanmar. The total of 124 Grade 9 students who enrolled in combination seven were selected from No.4, Basic Education High School, South Dagon Township, Yangon Division. The design of this study is experimental in nature which is also a classroom based on action research. In order to uplift the attitude toward Biology of experimental group, classroom based action research was carried out. During intervention, project based learning is applied. Collected data were analyzed before and after intervention. The results showed that students from experimental group had more positive attitude toward Biology than controlled group. According to the pre-test and post-test results, post-test result is significantly higher than that of pre-test. It can reasonably be said that project based learning could enhance students' attitude towards Biology as well as Biology achievement.

Keywords: project based learning, biology chievement, action research,

1. Introduction

In Project based learning method, students gain knowledge and skills by working a considerable amount of time to explore and respond to an authentic, engaging and complex question, problem, or challenge. Students bring diverse backgrounds and experiences to the classroom. Students' ability, prior learning, rate of learning, social and cultural background, native language, maturity and individual's interest are factors in the learning process. Project based learning provides students different options for taking in information. Horpyniuk,(2015) stated that project based learning is a strategy in which student led education that can enhance engagement and educational motivation. Project based learning may lead to improve academic grades and promotes better school behavior. Effective teaching strategies can create positive attitude on the students toward school subjects (cited in Jebson 1998). Biology teachers should apply teaching methodologies that will promote positive attitude towards Biology among students. The present study intended to study the implication of project based learning to enhance attitude toward Biology learning. Implementing Project-based Instruction in the Classroom

Project-based learning is complex, from both a teacher's and student's perspectives. For teachers, it requires a number of different roles, starting with planning and ending with assessment. It also requires students to assume different roles, and teachers need to assist students as they learn how to perform these new roles. In this section we describe how teachers can make project-based instruction work in their classroom, starting with the process of planning.

A second planning task is to identify a topic for study and then frame the topic in

¹ Lecturer, Yangon University of Education, nyuntnn@gmail.com 317, Pyay Rd, Kamaryut Township, Yangon University of Education, 09421057970, Fax 01504773

² No.4, Basic Education High School, South Dagon, deainthandarkhine@gmail.com

terms of a problem for students to investigate. Topics for project-based learning can come from several sources. The most obvious is the assigned curriculum. Although teachers are expected to teach a number of “assigned” topics driven by standards, all it takes is a little creativity to transform these into the focal point of project. Another teacher planning task during project based learning is to organize resources, both in print and media formats. This task has been made much simpler with the advent of the Internet, but teachers still need to plan for access to computers, the availability of relevant websites, as well as more mundane things such as printing. The first step in implementing project based learning in the classroom is to orient students to the problem. An effective problem has several essential characteristics. First, it must be real or meaningful to students. In addition, it must be understandable and afford a starting point for students’ investigative efforts. Finally, it must be complex and open ended to provide students with multiple options for their investigations. After orienting students to the problem, teachers need to organize students into study teams. One of the easiest, but not necessarily the best, way to do this is by student choice. Group may not be balanced in terms of ability, ethnicity, or gender. Working with friends or in homogeneous groups often prevents students from learning about others and how to work with students who are different from them (Eggen & Kauchak, 2012). After students are organized into study teams, teachers need to structure the teams’ efforts by establishing timelines, both for intermediate goals and final projects. Time lines provide concrete due dates for different groups to meet and help with student accountability. Major tasks each group will need to struggle with are data collection and analysis. The final products that result from project based learning can and should take multiple forms. Students should take the audience into consideration when planning their reports and should be encouraged to employ a variety of media formats.

For the aim of capturing the uniqueness of project based learning, Thomas (2000) offers five criteria to answer this question: centrality, driving question, constructive investigation, autonomy and realism.

Centrality: Project based learning is central, not peripheral to the curriculum. According to this feature, the project is the central teaching strategy; learners encounter and learn the main concept of a discipline through the project.

Driving Question: Project based learning focuses on questions or problems centered on a theme. That drives learners to learn the central concepts and principles of a discipline. When attempting to pursue the questions, activities, products and performances occupy learners’ time.

Constructive Investigations: projects involve learners in a constructive investigation: an investigation is “a goal directed process that involves inquiry, knowledge building and resolution.” The central activities of the project should involve the transformation and construction of knowledge by students.

Autonomy: Projects are student driven to a significant degree. Project based learning includes more learners’ autonomy, choice and responsibility than traditional instruction.

Realism: Projects are authentic, not school-like. Projects embody some characteristics that give the feature of authenticity to the learners. These characteristics may include the topic, the task, the roles played by the learners, or the final product (Thomas, 2000).

2. Methods

2.1 Research Design

This study is mainly aimed to investigate the effect of project based learning to enhance attitude towards Biology of Grade 9 students. It is the true experimental design which can compare the pre-test and post-test score. This is a classroom-based action research. Design of this study is pre-test, post- test, controlled group design. Attitude towards Biology Questionnaire was used to measure students' attitudes towards Biology between the two groups: experimental group and control group. The experimental group was given the treatment by using project based learning and the control group was taught by using formal instruction.

2.2 Sample of the Study

The total of 124 Grade 9 students (males and females) were randomly selected from No.4 Basic Education High School, South Dagon Township, Yangon Region during 2017-2018 Academic Year as participants of this study. Participants ranged in age between 14 to 16 years.

2.3 Instrumentation

Attitude towards Biology questionnaire was used in this study. The questionnaire was developed by Dr. Pavol Prokop (2007). It includes three subscales such as interest, difficult and importance. Expert review was conducted for face validity and content validity by 10 experts who have special knowledge and close relationships with the subject. There are 17 items in this questionnaire. Each item had a five-point Likert scale, 1= Strongly disagree, 2= Disagree, 3= Undecided, 4= Agree, 5=Strongly agree. This inventory contained positive items to check whether students' responses were confirmed or not. Negative items are scored in a reverse order.

2.4 Research Procedure

Pre-attitude test and post-attitude test question papers will be used. In this study, pre-attitude test will be administered to test whether there will be a significance difference between experimental group who will be taught with project based learning and control group who will be taught with traditional instruction.

Pre-attitude test was administered to the students in December 2nd week before intervention. After administering the pre- attitude test, the objectives of the lessons were identified and prepared the lesson plans. The intervention period was conducted within 4 weeks. After intervention, post-attitude test was administered to experimental group and controlled group to compare the post attitude differences between these two groups on February, 2018. Data were analyzed by using Statistical Package for the Social Science (SPSS) to generate descriptive statistics such as mean, standard deviation, mean difference and independent samples t- test.

3. Results and Discussion

Table 1. Independent sample t-test result of Biology Achievement between Experimental group and controlled group (Pre-test)

Group	N	Mean	S.D	<i>t</i>	<i>p</i>
Experimental Group	58	34.91	9.55	1.51	0.13
Controlled Group	66	32.22	10.25		

According to Table 1, there was no significant difference between experimental group and control group. It can reasonably be said that two groups of students have the same ability on biology achievement pre-test.

Table2. Independent sample t-test result of Attitude towards Biology between Experimental group and controlled group (Pre-Test)

	Group	N	Mean	S.D	t	p
Attitude Towards Biology (post-test)	Experimental Group	57	67.4386	6.07	1.816	0.072
	Controlled Group	69	65.1884	7.56		

Based on the result, the mean score of the pre attitude test for experimental group was 67.43 and that of controlled group was 65.18. Table 2 Indicates that there is no statistically significant difference between experimental group and controlled group in the pre-test score of attitude towards Biology.

Table 3.The Comparison of Students' Attitude towards Biology (post-test) Between Experimental Group and Controlled Group

	Group	N	Mean	S.D	t	p
Attitude Towards Biology (post-test)	Experimental Group	58	78.16	5.41	19.934	0.000
	Controlled Group	66	44.17	12.59		

The data obtained from the post-test scores were recorded and analyzed by using independent sample t-test to compare the difference between experimental group and controlled group as shown in table 3. According to post-test results, students' attitude towards Biology from experimental group and controlled group were 78.16 and 44.17 respectively. Result evidently shows that students' attitude towards Biology can be increased after intervention with project based learning. Students' attitude towards Biology from experimental group performed better on that from controlled group.

Table 4. Independent sample t-test result of Biology Achievement between Experimental group and controlled group (Post-Test)

Group	N	Mean	S.D	t	p
Experimental Group	58	43.81	6.86	7.15	0.000
Controlled Group	66	32.36	10.73		

Table 4 shows that there was significant difference between experimental group and control group. It can reasonably be said that students from experimental group performed better on biology achievement post-test. The result evidently show that project based learning can enhance students' learning biology.

Table 5. Paired Samples Statistics of Biology Achievement of Grade 9 Students

Group		Mean	N	S.D	t	p
Experimental Group	Biology Achievement (Pre)	34.91	58	9.55	-5.582	0.000
	Biology Achievement (Post)	43.81	58	6.86		
Controlled Group	Biology Achievement (Pre)	32.22	66	10.25	-.084	0.933
	Biology Achievement (Post)	32.36	66	10.73		

The mean scores of students' biology achievement from controlled group on pre-test and post-test result were 32.22 and 32.36, respectively. The mean score of students' Biology achievement from controlled group between pre-test and post-test were slightly differed but no significant different was not found. Concerning the experimental group, the mean scores of pre-test and post-test result were 34.91 and 43.81, respectively. The mean score of students' Biology post-test achievement from experimental group was significantly higher than that of pre-test result. It may be concluded that application of project based learning can enhance students' biology learning.

Table 6. Comparison of Means and Standard Deviations of Controlled Group between Pre-attitude test and Post-attitude test

Group		N	Mea	SD	t	p
Controlled Group	Attitude Towards Biology	66	65.7	7.273	12.028	0.000
	Attitude Towards Biology	66	44.1	12.59		

The mean score of students' attitude towards biology from controlled group on pre-test and post-test result were 65.70 and 44.17 respectively. The mean score of the students' attitude towards biology from controlled group between pre-test and post-test were slightly differed. The mean score of the students' attitude towards biology post-test from controlled group was significantly lower than that of pre-test result. It may be concluded that the application of project based learning is necessary to enhance attitude towards biology.

Table 7. Mean Comparison of Students' Attitude towards Biology of Experimental Group

Group		N	Mea	SD	t	p
Experimental Group	Attitude Towards Biology	58	68.9	5.27	-10.016	0.000
	Attitude Towards Biology	58	78.1	5.41		

According to table 7, the pre-test mean score and the post-test mean score of experimental group were 68.97 and 78.16 respectively. Accordingly to t-test result, the mean score of post-test was significantly higher than that of pre-test. The students' attitude towards Biology on post-test was greater than that of pre-test. It can be concluded that students from experimental group show higher attitude towards Biology than the students from controlled group. Therefore, results can be interpreted that project based learning is effective in order to improve students' academic achievement and attitudes towards Biology. Biology teachers should teach biology subject by using project based learning. It can confidently said that students' attitude towards Biology could be enhanced by using project based learning.

4. Conclusions

In order to enhance the attitude towards Biology of experimental group, classroom-based action research was carried out. During intervention, project based learning was carried out. Collected data were analyzed before and after intervention. The results revealed that students from experimental group had more positive attitude towards Biology than controlled group. According to the biology achievement score, posttest results are significantly higher than that of pretest. Teachers should use project based learning in all subject area for all grade level.

Project based learning was found to be effective on students' attitudes towards Biology. After the implementing of project based learning, students' biology academic achievement and attitudes were improved. In addition to the academic achievements, experimental group expressed positive attitudes towards learning Biology, the students seemed rather happy to learn Biology through project based learning because they were able to progress at their own pace and, at the same time, contribute to others' learning in such a supportive and encouraging learning context.

The findings of post-test at the end of the four-week implementation indicate that the experimental group performed better than the control group. By project-based learning, students have a chance to practice their understanding on the learning material by interacting and communicating with their peers in the groups. Students do not memorize the concepts and other things; they do study the learning materials and learn deeply. So, the learning environment should be organized so that students interact face to face with each other and share the responsibility of the learning process. All the teachers from primary level to high school level might use project based learning in order to enhance students' attitudes towards respective subject areas.

Based on the findings of the study and conclusion reached, the following recommendations were made:

1. Biology teachers should adopt project based learning as an effective teaching learning strategy in order to enhance students' attitude towards Biology.
2. Seminars, workshops and conferences should be organized in order to apply project based learning in classroom.

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Why Popular Factors for Success Do Not Lead Success?

The Three Types of Omissions That Exclude Useful Information Out of Successful Cases

Shin Ichiro IRIE¹

Abstract

To learn from successful cases of innovation, we should understand what is omitted from the description of success stories and factor analysis. Policies are made based on plausible factors for success, but actually, not only there is little useful information in workplace, but also it misleads the policy that does not lead success. In this presentation, based on the Actor Network Theory in anthropology of science, taking historical research of Edison light bulb as data, I clarify three types of omissions: (1) Few data due to less legitimacy of tricks. (2) Reification by language conventions. (3) Ignorance by Scientism. After explained these three omissions, I examine that the Western dualism make the three omissions, and that objectivity in dualism is impossible in social science because of excessive abstraction and recursiveness. This presentation is not just point out the limit of traditional social science, I explore the further potential. In order for that, I examine experience of Japan as the clue evading dualism, propose another possibility of Case Study that may be ensured legitimacy by local-generality. This presentation is a systematic summary of what has been said individually in; phenomenology, Bourdieu, situated approach in cognitive science, anthropology of science, and social constructionism, it is easier to use as a clue for practitioners to learn from successful cases.

Keywords: innovation, success, Actor Network Theory, reduction, factor, scientism

1. Introduction

The original meaning of innovation is the introduction of novelties to social. When capitalism grew, the introduction of newness to the economy was called innovation [1], and when social change due to diffusion of new technology became conspicuous, new technology was called innovation [2].

In this article, so called technological innovation is discussed, mainly focused on the reason why innovation is difficult although full of success stories on mass media and factor analysis on academic papers. On this issue, author consider that knowledge that is useful for success in innovation is not top secret, although many peoples know, because of less legitimacy of the knowledge of trick, the useful knowledge do not discuss in social science.

2. Method and Data

The method is qualitative analysis based on the logic of the Actor Network Theory [3], as one of Social Constructionism [4] [5]. The data is historical description of Edison Bulb [6] and examples of 'translation' of tricks in negotiation [7] [8], as follows.

¹ Assistant Professor. Kyoto Institute of Technology, iriesin@gmail.com, Shin Ichiro IRIE, 1 Hashigamicho, Mtsugasaki, Sakyo-ku, Kyoto-shi, 606-8585, Japan. +81-(0)90-7570-4235

3. Edison's electric light business

When Thomas A. Edison began developing light bulbs in the United States, 20 types of light bulb patents were already registered. In the UK, light bulbs were produced in factories. What Edison did was an improvement. Edison bulbs were 'invented' with filaments made by carbonizing bamboo thin stick from Kyoto. Edison struggled with the development of the light bulb because he intended to make the filament made of carbonized material with a resistance unusually high. Why was it had to so high resistance? It was to make the filament glow with only small current. If the resistance is large, the electrons will collide and heat up and emit light. However, the filament is easily cut at a high temperature. So, the previous filament was made of metal. Then why did Edison stick to making it glow with a small current? It was because the current that flows is small, less copper (more expensive than iron) was necessary for the long electrical wires, and the cost of coal for power generation was also cheaper. The reason Edison wanted to make it cheaper was to provide light service at a lower price than the gas lights that were widely used as existing room lighting.

The degree of resistance was calculated using Ohm's law, which was the most advanced scientific theory at the time. It seems that Edison, a graduate of elementary school, did not understand Ohm's Law well, but he hired a university graduate engineer as a research assistant at the Edison's R & D facility called Menlo Park, and understood that the resistance of carbonized filaments satisfied the condition. Edison wrote a memo that estimate the costs and profits. If successful, enormous profits were expected.

Edison's electric lamps that are less expensive than gas lamps have become very popular because they had a very low risk of house fire and did not pollute indoor air. The gas lamp industry had taken action. Because there was no utility pole, the electrical wires had to be buried, the legal legislation that limits the construction period to a few month was made, as the effort of lobbying of the gas lamp industry.

During the burial work, Edison himself performed the insulation work. He entered the dug trench and connected the wires. If there was insufficient insulation even at one location, electricity would be leak and all the bulbs would not light. Edison took a nap for about three hours a day on a bundle of wires. It is said that Edison have slept for three hours while working, but he seems to taken a nap frequently with a bed in the corner of the lab. However, it seems that the sleep was fairly three hours a day during the wire burial work. He is described as respectable hard worker. But, if the insulation failed and the lamps did not glow, not only the sales was lost, huge development costs would not be got and Edison may had gone bankrupt. However, if it was successful, huge profits were expected with concrete numbers on the memo. Even if we are not Edison, there may be not a few people who can do their best by sleeping for three hours a day.

Edison improved more than just the light bulb filament. He had developed all sorts of related technologies, including generators that efficiently generate small currents, parallel distribution systems, and methods for efficiently removing coal ash generated by power generation, and so on.

Edison also frequented the Patent Office. The lawsuits were filed for patents that might compete not only with light bulbs but also with related technologies. He established EEIC, a company specializing in patent management. Edison took all measure against the competitors. In

order to compete with laws and regulations that the gas lamp industry had made, Edison performed clever entertainment for lobbying. He pulled out expert glass craftsmen from competing light bulb companies and made it impossible to produce. When an alternating current (AC) that threatened Edison's direct-current (DC) electric light business appeared, Edison made the newspaper reporter to post an illustration of dogs and cats that was dead by AC electric shock on the electric fence in the ranch. He also worked on the New York State Parliament to change from a hanging to an execution by AC electric chair.

To develop new technology, Edison established Menlo Park, an organization dedicated to research and development that was not seen at that time. Menlo Park's public relations magazine was sent to investors to raise funds, and articles on 'innovative development' often referred to as hype were posted.

Edison is not the inventor of the light bulb. Edison invented the electric power business. Connect to the electric wire network which laid by the electric light business, any electric machine will work. The company's name founded by Edison is General Electric.

3.1 Examples of 'translation'

The actor which want to develop and to diffuse new technology have to be connected with; human actors such as competent research assistant, physical actors such as elemental technologies, and 'social' actors such as funds and patents. Natural scientists tend to neglect 'social' actors, and social scientists tend to neglect physical actors. On the other hand, Edison performed the connection without distinguishing whether the actor is human, physical or 'social'. Edison's view of the world is not that of natural scientist nor social scientist. For Edison, these three types of actors are equally important. This kind of view of world is called 'hybrid' where human actors, material actors, and 'social' actors are mixed without being distinguished [3][7].

In order to achieve our goal based on the hybrid view of the world, to connect with a strong actor with limited resources, we have to work against the actors that are usually stronger than us. The work is called "translation" [7]. In ordinary terms, the work against human actor is called 'persuasion', 'install' physical actor, and 'get' social actor, for example. In the Actor Network Theory, human actor, physical actor and 'social' actor are regarded as equivalent and are not distinguished, so the same terminology 'translation' is used. The 'translation' is the work against the actor (usually stronger than translating actor) to be connected. Here are some examples as below.

When the actor in charge of traffic safety install traffic sign that say at 20 km/h in order to make the car drive slowly but in vain, hump on the road is made. The drivers see the small protrusion on the road, the driver brakes for selfish reasons that the driver does not want to hurt car with an impact. As a result, the slow driving desired by the road safety officer is realized. The hump is called a 'sleeping policeman'.

The hotel front manager at the resort wanted to prevent guests from losing their keys when they went out. However, even if front manager put a plate with the message "Please leave the key at the front desk when you go out" on the desk or tell it verbally, the effect was small. It was the same when the manager wrote a message on the key holder. But, when a weight was tied to the key holder, the customer willing to leave the key at the front desk, because the weight is

disturber in the pocket of customer.

In these two cases, the translator's purpose, such as slowing down for traffic safety and preventing key loss, are 'translated' into the selfish motives of drivers and guests. In these two cases, 'translation' created physical negatives for actors that want to be connected. There is another example of 'translation' that produce the desired result just by creating possibilities with words.

During World War II, the physicist proposed developing nuclear weapons to Pentagon general. The general rejected saying because new weapons take decades to operate well, physicists should refine existing weapons. So, the physicist said. "What if Nazi Germany got the nuclear bomb first?" At this moment, the general's purpose (war victory) was transformed from a victory with existing weapons to a victory in nuclear warfare. The physicist did 'translate' the purpose of the general.

Translation is different from persuasion. Persuasion controls the opponent until the end. In the 'translation', the translator actor only prepares halfway. After the preparation, the opponent actor will voluntary be connected. This is the strategy of 'the Sun' in the fable of "The North Wind and the Sun". This is the strategy not grabbing the fruit with hand, but waits for the fruit to ripen and fall into the translator's palm.

3.2 Three reductions that omit useful knowledge

For entrepreneurs who want to start new businesses and engineers who want to develop new technologies, Edison's practice and the cases of 'translation' are useful. However, it is impossible to learn from Edison's biography more than the importance of inspiration and effort. Many success stories of new technologies are on the newspapers and the magazines, but there is little description that make you confirm that you can do it. In addition to biography and mass media, academic papers in social sciences such as economics and management have elucidated factors for success, it avoids 'translation'.

The aspects of the useful knowledge at workplace in innovation could be summarized as MELD; Mobilizable, Ex ante, Local, generate desirable Dynamics. Why do articles that are not useful in the workplace have been accumulated as success stories of mass media and factors of social science? This is because useful knowledge is omitted by three reductions as below.

Reduction 1: Few Data due to Less Legitimacy

Because 'translation' is a kind of trick, it is regarded as less orthodox as a scientific knowledge. The reasons are as below.

- 1) **No merit to talk for successful person:** The successful person do not talk 'translation' because not only it makes a bad impression, but also it announces competitive secret.
- 2) **Mass media censorship:** Publishers of biographies and business articles must balance the demands of both; readers who want to read easy-to-understand success stories and successful person who want to improve their impressions.
- 3) **Silence on the academic stage:** Because it is difficult to handle by a natural science method,

scholars do not consider that it is not matter of science and talk 'translation' as anecdote at a drinking party.

4) Less orthodoxy of Humanities: Humanities have been written 'translation' as; proverbs, art of war in history, and strategy of negotiation in novels, etc. However, it is considered unscientific, the knowledge of humanities is underestimated in legitimacy.

Reduction 2: Reification by Language Conventions

1) Disassemble and conceptualize: In order to talk about Edison Bulb easier, we extract partial actor network and put the abstract word (concept) as a label, making the distinction between human, things and 'social'. For example, the abstract words 'entrepreneurship' (human), 'core technology' (material) and 'potential demand' (social) are made. For example, in order to explain why the Edison's light business were welcomed, we extract the partial actor network contains actors such as city residents, gas lights, house fires, room air pollution, bills more expensive than electric lights. Then we label abstract word 'potential demand' on the small actor network as a concept. So do we 'core technology' and 'entrepreneurship'.

2) Substantiate (reify): While abstract concepts such as 'potential demand' are frequently used in conversations and sentence, concept can be understood even if the specific partial actor network that the concept means is not recalled. At this time, the abstract concept exists in the same way for everyone like a substance (entity). Thus, the abstract word is no longer a label of the partial actor network, but an entity that exists like material. A success story is made by make these substantialized words arranged and filled with sentences.

3) Retrospect and paraphrase: Paraphrasing the aspects of successful state as key factors for success by transporting aspects from the present to the past. For example, we can recognize 'potential demand' only when interpret the big sales amount of the new product. Most of new product would not sell, and until new products had released and sold, there was no demand. What exists was only a vague desire and it is not demand. We can't recognize 'potential demand' ex ante. So can't 'entrepreneurship' and 'core technology'. We are allowed to explain the success of new product saying "Because the potential demand was discovered.", "Because the engineer have entrepreneurship such as strong spirit and rich imagination." or "Because the core technology was developed." This explanation is not wrong in casual conversation, but in case persons in the manager give instructions based on this understanding, their subordinates get lost.

Consequence of reduction 2; is director boss syndrome. They direct to subordinates; "Find out potential demand!", "Work hard and never give up!" and "Develop core technology!" Director boss requires results without showing means. In this sense, director boss is obscene and incompetent, but they have power. And one source of their power is 'scientific' factors for success on business magazines.

Reduction 3: Ignorance by Scientism

1) Numerical scientism: It is difficult to explain phenomena with subjective intentions and social relationships such as 'translation' by the method of natural science, because natural science require to measure numerically. However, some social scientists believe that natural science methods are the best way to elucidate the human world [9]. Natural scientific methods require

strict conditions such as objectivity, universality, reproducibility, using numerical data. Because phenomena that do not fit the natural science method are difficult to study, if social scientists know ‘translations’ through daily experience, they do not treat ‘translation’ as scientific issue. As a result, only the phenomena that natural science method is easy to implement is studied as a topic of social science.

2) Procedure scientism for achievements: Even when there is no meaningful implication for theory nor workplace at the end of academic paper, social scientists must publish academic papers in order to obtain better jobs. When they were a graduate student, they think this kind of research practice do not fulfill their social responsibilities, but when students got a job, they are busy with miscellaneous work, they can’t get enough time for research, and give up make research both scientific and practical. Then, they tell themselves that “I wrote papers based on the scientific procedure, I fulfilled my social responsibilities as a scientist.”

Consequence of reduction 3; is Relevance Lost between scientific knowledge and workplace practice. In spite of the accumulation of scientifically ‘correct’ knowledge about the human world, it is difficult for social science cause changes as scientists intended like natural science can do. Even if many of director boss exist in business, social science has weak power to improve.

3.3 Western dualism derives three reductions

The three reductions can be derived from Western European dualism. The background of Western European language conventions is the Christian worldview. It is assumed that the omnipotent god is placed at the top of the hierarchical world, and that man is entrusted to rule the world. Therefore, humans are located at the center of the world, and they are called subjects. Anything other than subject are positioned as environment around subject are called object. Object to be observed consists of; human being other than the observer, material, and residual neither human nor material called social (Figure 1).

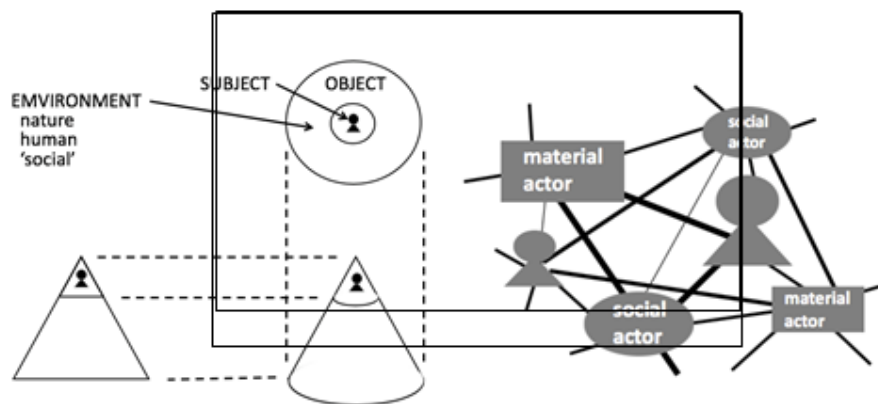


Figure 1. Position of scientist is top/center of the world in the dualistic view.

Figure 2. Human, material and 'social' are equal actor in the hybrid network view.

As the industrial revolution began and capitalists increased, the following were constructed to counter the churches and kingships that would take profits. The rational individual

who has God-given freedom against the church and kingship, the nature around subject given to rational subject (citizen, individual) by the God, science as a means to make effective use of nature that is the second Bible written by the God. As a result, the position of priests, who were agents of the God in the Middle Ages, was replaced by scientists in modern ages. Scientists are orthodox and have the legitimacy of being able to control nature under the commission of the God implicitly. Therefore, the biography of an innocent scientist do not describe political bargaining.

Even it is pseudo-correlation, desirable results can be easily reproduced in the world of things. This made natural science and factory production successful and it fostered capitalism. When natural science got success in the world of things, it was applied to the human world, because there were much social problems caused by industrialization. Scientists applied natural science to the human world, assigned macro to sociology and micro to psychology. What traditional sociology and psychology can do were limited to the phenomena that natural science methods can be applied, produced a lot of useful knowledge, the success of sociology and psychology has raised the status of social science. As a result, the status of 'non-scientific' humanities has been lowered.

3.4 Objectivity in dualism is impossible in social science

Scientists try to explain the world around them objectively and universally. In order to explain objectively, the object and scientist must exist independently. As a result, the environment around the scientist is positioned as object to be observed. In order to observe object objectively and comprehensively, it is necessary to look at object from the viewpoint of a bird, the viewpoint of scientists exists at the apex of a conical world. This bird's view derives excessive abstraction that make scientists ignore actual knowledge that relate to MELD: Mobilizable, Ex ante, Local and generate desirable Dynamics, at first. For second, the bird's view also ignores recursiveness as below.

If the object is material, a lot of useful knowledge can be produced even from a bird's eye view. However, in the social sciences, scientists who are observers are part of the society that should be observed. There is kind of difficulty to observe my eyes with my own eyes. If scientists elucidate the laws of chemical reaction and astronomical motion, the chemical reaction and astronomical motion would not change. So, objective research is possible. However, when social scientists produce knowledge about the human world, the knowledge is used to intervene in humans and society, and the human world will be changed from its previous state. In some cases, the observation itself change what scientists observe. In other word, social (object) was changed by social (scientist's practice) itself. It is called recursiveness.

In order to try to avoid this problem of recursiveness, if scientists try to study the human world so that it never affect the human activities and social phenomena at all, i.e. objectively, elucidate MELD knowledge is difficult. It is because scientists can get knowledge about specific actors and relations which is related to MELD by the result of intervening object like an experiment. In order to describe MELD knowledge legitimately, social science have to construct the social science method that ensure the scientific correctness.

3.5 Experience of Japan as the clue to evade dualism

The necessary aspects of practical knowledge to realize innovation are MELD: Mobilizable, Ex ante, Local, generate desirable Dynamics. It contains both time (ex ante) and space (local). But it is simple. Ex ante is matter of local, because when it is mobilizable ex ante, it is always local. (Of course, all local is not necessary mobilizable.)

MELD is possible by evading dualism. By evading dualism, no distinction between the center and the periphery, the world became kind of hybrid network that do not distinguish human/material/social (Figure 2). This world is pluralistic, local actor that can mobilize and that generate desirable dynamics could be found, because if the social is monolith, it is impossible for the actor embedded in the social to intervene by utilizing differences in different positions. On that occasion, the concepts we design is relational that not substantialized factors. In the non-dualism world, human is not the God's surrogate, human is equal at most to nature and this understanding of world may lead environmental sustainability.

This hybrid world view is not uncommon in Asia, such as Lao-tse in 3rd century B.C. China, Buddhist Nāgārjuna in century India, for example. Martin Heidegger and Albert Einstein suggested that Buddhism might be compatible with science and technology, and it is not a metaphysical imagination, but has been realized in economics to a certain extent already in 20th century Japan.

Japan has an experience at the end of the 19th century, with the national policy of 'Japanese spirits and Western technology'; Japan was industrialized by avoiding colonization. In some successful Japanese management, the world view seems non-dualism.

In production improvement, although improvement plan is usually made by elite engineer in private room in the West, but in Toyota's Kaizen, blue workers on the production line discuss together and improve the process of production. This Kaizen is considered as most important factor for success of Toyota.

In develop new product, although it is usually designed by elite engineer in the West, 1980s Japanese facsimile maker that defeated Western manufacturers, the new product design was drawn at production factory. The low-level engineers drew blueprint, in order to manufacture easier, they combine multiple parts into one part and simplified the lines. As a result, the facsimile is cheap but high speed and hard to break.

Salespersons in the West only sell products developed by the elite, while Japanese sales department called Eigyo propose new products, coordinate with factory production plan and negotiate budget at the top management committee. Persons of Eigyo are as powerful as engineers in the company, and it is often the case top managements came from Eigyo.

In engineer education, after the industrial revolution, since engineering is not a matter of scholar in traditional universities in the West, department of engineering was not made in the traditional universities at first, and was set up in a poly-tech or institute outside of the university, when Japan made department of engineering in first national university.

In management research, this kind of fact have been described as Case Study especially by Peter Drucker and some Japanese qualitative researchers, for example. These qualitative studies have room to further development in methodologies for ensure the scientific legitimacy.

It is difficult to ensure the scientific legitimacy on knowledge that derived from a small

number of cases usually one case however rich the case is. It is because induction from a small number of facts does not provide grounds for correctness as knowledge. However, there is the legitimacy of knowledge in the historical facts that are not reproducible. The fictional anecdotes in novels are often change reader's life. What bring this in humanities? There is a rhetoric: By examine the fact which author surprised, visualizes existing common sense which makes the author surprise at the fact, then, make alternative understanding reversing common sense.

Here, the amazing fact is against the existing common sense and is example of alternative understanding that includes the amazing fact. The alternative understanding made by logic based on the existing common sense. In this sense, alternative understanding shares a space of existing common sense. Because it is impossible to do induction from one fact, we can't make another understanding directly from the fact, by reflect against common sense, there is a possibility that local-generalality within the range where common sense exists can be given to alternative understanding.

4. Conclusion

To learn from successful cases of innovation, we should understand that MELD information may be omitted by three reductions. The three reductions omit useful knowledge in workplace. The Western dualism derives these three reductions, and objectivity in dualism is impossible in social science, because of excessive abstraction and recursiveness, when experience of Japan is the clue to evade dualism. The Case Study of non-dualism cases may be ensured legitimacy by local-generalality of alternative understanding by reflecting amazing fact against existing common sense.

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Educational Service Quality of Meiktila University of Economics in Myanmar

(Case Study: Master of Public Administration Programme – Mandalay University Campus)

Thida Htoo¹

Abstract

The better the educational service, the greater the opportunities to the students who generate lifelong learning for their career development. People are asking that whether the quality of educational services provided by higher education institutions is good or not. This study intends to examine the quality of educational services in MPA Programme (Mandalay Campus) provided by Meiktila University of Economics. Parasuraman's SERVQUAL dimensions is used to find out the factors that contribute to quality of educational services and learning outcomes of the students. The study found that according to the five dimensions, all dimensions are negative mean gap value. However, reliability dimension, assurance dimension and empathy dimension, and responsiveness dimension are low negative mean gap value. This means that students' expectation and their perception are very close in these dimension. However, tangible dimension are shown high negative mean gap value. This means that students have less satisfaction on tangible dimension especially hygienic canteen, sport and health facilities. Regarding with the expected learning outcomes, students have strongly recommended on their acquiring knowledge gained from the MPA programme. They have highest mean value on ability to apply knowledge gained from learning courses in their working environment, and their community, ability to have critical thinking, improvement in social network, good professional ethic and attitudes, and ability to do with team work. The students have strongly recommend good image of teaching and learning strategy of MPA programme, and they want further study in advanced level courses especially PhD in MPA programme.

Keywords: Quality, Educational service, Learning outcomes

1. Introduction

Education plays a vital role for assessing the human personality and promoting social, economic and cultural as well as the development of the country. The more the person has life long learning, the higher the rate of return for their career and thereby contributing to faster the national development. The investment in higher education can provide the appropriate and useful skilled human power for industry, for science and technology, for creation of basic social (education, food, shelter, health, and nutrition) and economic (agriculture, energy, water, transport and communication) infrastructure and for better social and administrative governance. Therefore, higher education presents a critical factor in innovation and human resource development (HRD) and plays a vital role in the success and sustainability of the knowledge economy.

The more the students gain in advanced degrees, the greater the probability of earning more income and improving their career and their social status are. According to the United States Census Bureau Report (2007b), adults with advanced degrees earn four times more than those with less than a high school diploma. Therefore higher education become effective tools for

¹ Dr. Professor & Head, Department of Economics, Meiktila University of Economics. thidahtoo4@gmail.com

human resource development. For human resource development, university plays a vital role for providing educational services. The more the quality of educational services in higher education, the greater the well qualified –educated human resources can produce in the university. To obtain quality in higher education, “To create an education system that can generate a learning society capable of facing the challenges of the Knowledge Age” become more obvious. Therefore this study intends to examine the whether the students satisfied the educational services provided by MPA programme (Mandalay Campus) or not, and to find out the factors that contribute to learning outcome and future intentions of post-graduated students who are attending MPA programme (Mandalay University Campus).

Problem statement

Although Myanmar’s Universities produce a large number of graduates, there are many complaint on quality of education and educational services provided by higher institutions. This is why university need to evaluate the progrmmes provided to their students and thereby leading to better educational services that will provide for the students for future. The study intends to examine the gaps between post-graduated students’ perceptions on service quality and their expectations on service quality.

2. Research Methodology

In order to achieve study objectives, service gap analysis was used. The questionnaire is based especially on AUN-QA programme level criteria by using Parasuraman SERVQUAL dimensions. In assessing the gaps between post-graduated students’ expectation and their perception, Likert Scale are mainly used with structured questions.

Profile of Meiktila University of Economics (MEUE)

MEUE offered five Bachelor Degree Programmes: Bachelor of Business Administration, Bachelor of Commerce, Bachelor of Economics, Bachelor of Public Administration and Bachelor of Statistics; five Master Degree Programmes: Master of Business Administration, Master of Commerce, Master of Economics, Master of Public Administration, and Master of Statistics; three Ph.D. Programmes: Ph.D. Commerce, Ph.D. Economics, Ph.D. Statistics; but Executive Master has not been offered yet. Master of Business Administration and Master of Public Administration programmes are expanded at Mandalay University and Nay Pyi Taw as well as MDevS Programme in Nay Pyi Taw. Defense Services Administration School is an affiliated institution of MEUE and it offers Master of Public Administration.

3. Result and Discussion

3.1 Tangibility

According to the tangibility, there is a gap between students’ expectation and their perception. The service quality gap arise the difference between students’ expectation and their perception in terms of tangibles dimension. According to the mean gap score, among the items

for tangible dimension, good feature of university, adequate parking area, providing teaching aid materials in classrooms, safety classroom, having good personality of academic and support staffs shows lowest negative gap. Nonetheless, the statement of overall cleanliness within the University Campus, University Provides Up-to-date library with adequate up-to-date text books, up-to-date research paper, providing sufficient internet, hygienic canteens, providing adequate sport and health facilities have largest negative gap. The study found that University need to provide up-to-date text books, research paper, sufficient internet and wifi, hygienic canteens and sport and health facilities. Students' expectation are very close to their perception, means that students have satisfaction on most of the items of tangibility dimension. It can be reflected that overall mean score value is (-0.68) (See Appendix Table-1)

3.2 Reliability

According to the reliability dimension, taking class right time by the academic staffs (-0.21), providing up-to-date courses that align with the needs of the region/labor market, teaching and learning strategy with freely and actively collaborate in discussions, error free records of students' result, alignment with the subjects that academic staffs deliver due to specializations shows lowest negative gap. This means that students' perception are closely with their expectation. Overall mean value for reliability is (-0.17), this means that the more the students have their expectation from the programme, the greater the satisfaction on the programme. If the programme provides more seminar related with courses/ research /thesis, students have more knowledge and idea that can apply in their working environment (See AppendixTable-2).

3.3 Responsiveness

According to the responsiveness, students' expectation are close with their perception thereby leading to lower negative gap. Because the overall mean value is (-0.391). The study found that students have satisfaction on academic staffs' willingness to give directions and suggestions on their query, prompt services with full knowledge and understanding of the subject, ability to supervise the students' thesis, prompt services of programme director with the notion of flexibility and ability to adapt the needs of the students, and prompt services of rector with a notion of flexibility and ability to adapt the needs of the students. The students have however less satisfaction on supporting staffs from student affair department, admin and finance department, and engineer department to adapt to the needs of the students (See Appendix Table -3).

3.4 Assurance

According to the assurance, students have satisfaction on well-manner of academic staffs, and supporting staffs, having adequate competency to share the students' query, adequate experience in helping /suggesting the student's research work effectively, student-centered approach, active learning, presentation with empirical work, logically sequenced, integrated and up-to-date courses, providing courses with full knowledge and understanding, providing courses with critical thinking and apply in working environment. This is due to lower negative mean value gap. This means that students' expectation are close with their perception on assurance

dimension. Thus overall mean value is (-0.22). University need to provide safe environment for the students within the campus due to negative mean value of 0.44 (See Appendix Table-4).

3.5 Empathy

Regarding with empathy dimension, student satisfaction on academic staffs' attention to the students' needs concerning with lecturing, supporting staffs' attention to the students concerning with exam and students' affairs, academic staffs' sincerely responses for students' difficulties, sincere interest of rector on solving other social problems, convenient working hour of student affair department. This statements show lowest negative mean value for empathy dimension. Student have more satisfaction on programme director's sincere interest in solving problem and difficulties. In sum, the students have satisfaction on items of empathy dimension because the overall mean value has only (-0.18) (See AppendixTable-5).

3.6 Means Gap Score by Five Dimensions

According to means of SERVQUAL scores in terms of all dimensions, the overall level of perception mean score of each dimension is higher than the overall level of expectation mean score

Mean Gap Scores by Five Dimensions

No.	Dimension	Expectation	Perception	GAP
1.	Tangible dimension	3.88	3.2	-0.68
2.	Reliability dimension	4.14	3.97	-0.17
3.	Responsiveness dimension	4.02	3.63	-0.39
4.	Assurance dimension	4.01	3.79	-0.22
5.	Empathy dimension	3.93	3.75	-0.18
	Overall Mean Gap Score	3.99	3.67	-0.32

Source: Survey Data, August, 2017

According to the five dimension, all dimensions are negative mean gap value. However, reliability dimension, assurance dimension and empathy dimension, and responsiveness dimension are low negative mean gap value. This means that students' expectation and their perception are very close in these dimension. However, tangible dimension are shown high negative mean gap value. This means that students have less satisfaction on tangible dimension especially hygienic canteen, sport and health facilities.

3.7 Expected Learning Outcomes

Regarding with the expected learning outcomes, students have strongly recommended on their acquiring knowledge gained from the MPA programme. They have highest mean value on ability to apply knowledge gained from learning courses in their working environment, and their community, ability to have critical thinking, improvement in social network, good professional

ethic and attitudes, ability to do with team work. Moreover, they have ability to manage their time and people in their working environment, ability to solve problems with confidence, ability to be thoughtful in everything, ability to work with right decision in their career, ability to gain high position in their work due to the MPA programme.

Expected Learning Outcomes

		Mean Value
1	I have ability to be thoughtful in everything	3.96
2	I have acquired knowledge gained from the MPA programme	4.16
3	I can apply knowledge gained from learning courses in my work	4.19
4	I can apply knowledge gained from learning courses in the community	4.61
5	I have critical thinking and explore the good result.	4.20
6	I have ability to lead and manage people and time.	4.15
7	I have ability to report writing technically	3.97
8	I have good communication skills	4.15
9	I have good professional ethic and attitudes	4.25
10	I have ability to do team working	4.21
11	I have ability to solve problems with confidence	4.13
12	I have ability to work right decisions in my career	4.13
13	I have ability to gain high position in my work	4.12
14	Improvement in social network	4.28
Overall mean value		4.18

Source: Survey Data, 2019

Future Intention

According to the future intention, students have strongly recommend good image of teaching and learning strategy of MPA programme, and they want further study in advanced level courses especially PhD in MPA programme.

Table (8) Future Intention

		Mean value
1	I want further study in advanced level courses (PhD) from this programme	3.83
2	I will recommend good image of teaching and learning strategy of this programme	4.26
Overall mean value		4.18

Source: Survey Data, 2019

4. Conclusion

In sum, students have satisfaction on MPA programme due to their expectation and perception which are very close. University need to provide more internet and wifi, up-to-date library, hygienic canteens, sports and health facilities as infrastructure. Regarding with responsiveness dimension, supporting staffs from student affair department, admin and finance department, and engineer department need to take care of students on their needs. As assurance dimension, University need to provide safe environment for the students within the campus. University need to provide more infrastructure like hygiene canteen, Sports field and health facilities.

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The Traditional Monk's Bowl as Sustainable Development in Myanmar

Lei Shwe Sin Myint¹, Thet Mar Aye², Thandar Aye³

Abstract

A bowl is one of the eight necessary requisites of a monk. Before the Buddha laid down the rule on the kind of bowl a monk should use, monks used bowls made of various materials. The bowls made of earth and iron is allowed. Innwa village when Myanmar people mostly live is well-known as the center of domestic business of traditional handicrafts. It mainly focuses on to a greater understanding of what makes to collect and review existing research on the economic and social impact of valuable as the unique handicraft. Field researches will carry out in order to get necessary information. Field researches include non-participant observations, key-informant interviews, and in-depth interviews. The results on the monk's bowl casting show that the art was made without the help any machine, the tools used in the work are hand-made, and man power alone. A monk's bowls is not only essential material object for Buddhist monks but also an important cultural symbol for Myanmar people, especially for Buddhists. It is assumed that another form of style replaced as traditional cultural handicraft in Innwa especially for producing monk's bowls sacred for Buddhist monks.

Keywords: monk' bowl, material, handicrafts, culture, economic

1. Introduction

Innwa village is one of the villages in Ta-Da-Oo village group, Hanthawady District, Mandalay Region. Most inhabitants are Myanmar and it is well known as a place for various traditional handicrafts. One of the handicrafts is bowl-production. This art has long been existed in Innwa for about a hundred years. A bowl is one of the four necessary requisites for Buddhist monks, and for this reason, it is one of the religious objects in Myanmar. Innwa used to produces two kinds of bowls – iron and earthen, but earthen bowls are not produced any more in Innwa. Earthen bowls have been used at the time of the Buddha (see figure-1). Iron-bowls have taken the place of earthen bowls. It is appropriate for monks to use iron bowls. Although the tradition of earthen bowls has disappeared, the craftsmen continue to produce iron bowls in Innwa. There are about seven families that make iron bowls. A bowl is one of the eight necessary requisites of a monk. Before the Buddha laid down the rule on the kind of bowl a monk should used, monks used bowls made of various materials. The Buddha later laid down the rule that monks should not use bowls made of wood, gold, silver, ruby, stone, beryl, glass, white copper, glaze, white lead, black lead, and copper. The bowls made of earth and iron is allowed. (Myanmar Encyclopedia, Vol. X) Bowls, earth or iron, are used for monks to go alms-round and eat meals. A bowl suitable for monks to use needs a specific color. Then only monks can mark it as the bowl. As bowls are necessary requisites for Myanmar Buddhist monks, it becomes a religious symbol for Myanmar people. There used to be many bowl productions in Mandalay, but at present the business has moved to Innwa. The kinds of bowls made in Innwa are earthen or iron (white bowl and black bowl). However Innwa only has a few earthen bowl productions. Monks used to use earthen bowls that are permitted by Vinaya rules, but now this tradition is already extinct. Earthen bowls are good for health and allowed by the Buddha. However, it is so fragile

¹ Associate Professor, Department of Anthropology, University of Mandalay. kalyah007@gmail.com

² Associate Professor, Department of Anthropology, University of Yangon

³ Lecturer, Department of Anthropology, University of Mandalay

that people do not really like them. For this reason, no-one uses earthen bowls nowadays. Consequently, there are only few people who know the art of making earthen bowls. Monks use iron or lacquer bowls, instead. Therefore, this traditional art started at the time of Myanmar monarchical period is soon to be extinct, and this paper aims at leaving a record on it so that later generations will have some information about the tradition.



Figure 1. Earthen Bowls

(Source from the Mirror Newspaper, 8.10.2016)

2. Methods

The main purpose of this research is to come to a greater understanding of what makes to collect and review existing research on the economic and social impact of valuable as the unique handicraft and also as a learning form. The specific objectives are to examine environmental awareness, conservation and sustainable use of natural resources, to analyze on the realistic functions of the learning form of handicraft, to study the current problems and development practice for monk's bowl products for a creative economy. In this research, the data were collected by using available information, library research and field research. Qualitative method was used to get data. Therefore non-participant observation (NPO), key informant interview (KII), in-depth interview (IDI) were applied to collect data. Non-participant observation method was done in work place of alms bowls making in Innwa Village. To carry out key-informant interviews 7 home industries of alms bowls making were collected.

3. Results and Discussion

3.1 Historical Background of Research Area and Earthen Bowls

The history of bowls goes back to the time of the Buddha. *Tha-bake-tan* Village in *let-thit* quarter in Mandalay used to be the only place where earthen bowls were made. There was a local demand for bowls in Mandalay since it was the place where there were many monks dwelling and learning Pariyatti. Besides, the weather in this dry area was also supportive for making *thayoe* (mixture of wood-oil, sawdust, and powdered charcoal and fine ash used in the making of lacquer-ware and gilded glass mosaic). *Let-thit-yat* village used to be included in Amarapura Township in Mandalay Region. There used to be royal bowl productions in those areas. Amarapura Royal City was established in 1144, and *tha-bake-tan* village was included in this area. The bowls made there were carried by bullock-carts or cars, and sold in Eindawya. *Let-thit-yat* village was the only place famous for bowl productions. *Let-thit-yat tha-bake-tan* is located in the east of Innwa, and in the north-east of Pinya. Innwa and Pinya are the cities on the west and south-west bank of Dutthawady River and *let-thit-yat tha-bake-tan* is on the east bank. The

tradition of earthen bowls in *let-thit-yat* came down from Bagan Period through Konbaung Period. There is no written record on the history of bowls in *let-thit-yat tha-bake-tan*, but the local people believe that they had this tradition long and they are proud of it. Earthen and iron bowls are allowed for monks. Studies show that earthen bowls are more used at the time of the Buddha. Pitaka literature provides the rules for earthen bowls. Monks are supposed to use the bowls until it is broken. If there is a crack on a bowl, monks should mend it. They should mend it until the crack is so long that it needs five knots on it. After that the bowl is not usable and monks can find a new one. Monks should not keep their bowls at open spaces for that can damage the bowls. Besides monks should not ask for many bowls more than they really need even if a bowl-maker has made an offer to donate. This rule meant to protect the bowl-makers' business and to teach monks to lead a life of contentment. (Aunt Nyein Chan, 1997) These records prove that monks, during the time of the Buddha, used earthen bowls.

It proves that the people of that time value it a lot. During the time of the Buddha, earthen bowls were widely used, and became a religious symbol for Buddhists. Monks in Myanmar use iron bowls for going alms-round. The donors also use the bowls made of aluminum vessels or steel pots. Earthen bowls are rarely used nowadays. People use iron bowls, instead. It is assumed that for the people of Myanmar although there is a material cultural change, the use and value on earthen bowls remain the same. Therefore, Myanmar is a place unique for making earthen bowls for monks, and it is necessary to preserve this culture.

3.2 Learning system of Earthen Bowl Productions

The necessary tools and materials used to make earthen bowls include earth (*in Myanmar language called Kabar-mya*), pet-kyin, set-pyin, ta-mhaw-lone, oak-htoe, let-khat, chit or khwe, kyauk, si, htin, phoe, thit-say, and tha-bake-tike. The earth suitable for making bowls is available at a place near Let-ywe Village, a mile away from Let-thit-yat tha-bake-tan. There used to be a lake at that place. The owners of earthen bowl foundries also own pieces of land in that area. In March and April, they carry the earth from their land and keep it at home. It is the most suitable time to bring the soil from that place since the area is dry and the transportation is good enough. Besides, farmers are free from their farm-works and their bulls and bullock-carts are available to rent. This is good for both bowl-makers and farmers. It is important for bowl-makers use particular type of earth. They cannot make bowls using wrong types of earth. It is difficult for them to mould bowls and also these bowls can be broken when they bake them. If they use wrong types of soil and were lucky to have some bowls baked, the bowls are so fragile, and do not last long. Wet food cannot be kept in those bowls. The soil must be clean. Sandy soil and newly settled silt are also not usable to make earthen bowls. The best type of soil is yellow thick silt settled a long time ago. The bowl-makers called this kind of earth (soil) as *kabar-mye-say* or *tha-bake-mye*. *Pet-kyin* or a hole dug on the ground is dug up by bowl-makers. The soil that is chosen to make bowls is mixed with water in this *pet-kyin*. *Set-pyin* is a circular wooden plate which is used to shape bowls. *Ta-mhaw-lone* is a tool shaped like a stick. It is used to hit the mud (the soil already mixed with water) until the mud gets sticky and shaped like a mortar. The shape is similar to a stick that people in Myanmar use to wash clothes.

Oak-htoe is a tool used when bowl-makers mould the mud into a bowl. They use it while they are hitting the mud to shape a bowl. They place it inside the bowl-shaped mud and hit the mud with a *ta-mhaw-lone* outside. It is also called *let-khu-tone*. *Let-khat* is a flat stick used with

hands. The shape is similar to a table tennis bat. It is usually made of teak-wood or gum-kino wood. This tool has two parts, the flat area (*let-khat-pya*) and the handle (*let-khat-yoe*). *Chit* or *khwe* is a flat iron ring used to scrape the inside part of bowls. *Kyauk* is a tool used to make earthen bowls. It is a hard and smooth rock that can be found in streams or rivers. It is about one inch and a half big. *Si* is some oil such as ground-nut oil, sesame oil, kerosene, or oil dregs that are applied on the bowls before baking them. With the oil on the bowls, when they are baked, the bowls became black and shiny. *Htin* is the wood used to bake bowls. Usually they are about six feet long. Most bowl-makers like the wood from *Than* tree (*Terminalia oliveri*) or *Dahat* tree (*Tectona hamiltoniana*) since they produce high temperature flame. Teak wood and oil are used at the end of baking process to get the required color. However, teak wood is expensive, and they only use pieces of wood. *Phoe* is a place where the bowls are baked. First the bowls already mould are dried under the sun. When they get dry enough, they are baked in a *phoe*. The shape of *phoe* used throughout the year in *let-thit-yat* is unique. Some people build their *phoe* on the flat ground, but some prefer a high ground. However, the structure is the same. A high ground is actually man-made. They add the soil on the flat ground until they get a 9 feet high pile of soil, 25 feet in diameter at the bottom and 15 feet in diameter at the top. They make high ground *phoe* so that they can use it in rainy seasons when the river floods the area. Oleo-resin obtained from the tree is called *thit-say*. It is used to color the bowls black and it helps the bowls last long. *Thit-say* is also pronounced as *thit-see*, or *Sit-see*. The black oleo-resin liquid among all other kinds is the best for making bowls.

Tha-bake-tike is a room in the ground. The bowls that are already baked and colored with *thit-say* are kept safely and dried in the *tha-bake-tike*. The bowl foundries at *Let-thit-yat tha-bake-tan* do not usually use brick walls or concrete roofs. They put the wooden sticks on the hole on the ground and covered with soil. Earthen bowls without painting with *thit-say* have more demand in the market than those painted with *thit-say*. The observation found that there are eight *maye-tikes*, but only two are in use.

3.3 Learning system of Iron Bowls Production

An iron plate is hammered until it is shaped into a bowl. There are two distinct steps in the process. First, the bowl makers hammer an iron plate to shape it into a bowl, and it is called a plain bowl or a white bowl. Secondly, they apply *tha-yoe* (mixture of wood-oil, sawdust, powdered charcoal and fine ash used in the making of lacquer-ware and gilded glass mosaic) on it. This step is called making a black bowl. Iron bowls last longer and also are lighter to carry around; they are preferred by monks than earthen bowls (see figure-2).

The size of iron bowls vary. However, there are four usual sizes: *Shin* (the size suitable for young novices), *Inn-khan* (the size suitable for monks, but a little small), *A-kyi* (the size suitable for monks, and bigger than *Inn-khan*), *Shan* (the size used in Shan State).

Shin size is the smallest one. People usually donate eight requisites at the novice-initiation ceremonies. The bowls usually donated in such ceremonies must be allowed by the Vinaya rules and also big enough to use for the novices to eat the meals from the bowls. The iron plate needs to be ten inches in diameter, and when it is finished hammering, the mouth is seven inches in diameter and the bowl is about four inches deep. The widest part which is in the middle part of

the bowl is 26 inches in circumference. 32 bowls can be made out of a standard barrel used as the containers for cooking oil.

The second smallest size bowl is called Inn-khan. The sizes between an Inn-khan and an *A-kyi* do not have much difference, but an Inn-khan is much bigger than a Shin. An iron plate with 11 inches in diameter is used to make an Inn-khan bowl. The mouth is eight inches in diameter and the bowl is about four inch and a half deep. The widest part of the bowl is 28 inches in circumference. 23 bowls can be made out of a standard barrel mentioned above.

A-kyi is the second biggest bowl made for monks. An iron plate with 11 inches and a half in diameter is used to make an *A-kyi* bowl. The mouth is eight inches in diameter and the bowl is about four inch and a half deep. The widest part of the bowl is over 30 inches in circumference. 23 bowls can be made out of a standard barrel mentioned above. Previously, Shan bowls are as twice bigger as *a-kyi* bowls. It is the biggest size of the bowls usually made. This kind of bowl is used in Shan State and for this reason it is called Shan bowls. However, the size is too big according to Vinaya rules, and monks do not use them when they go alms-round or eat meals. It is used when the monastery boys go alms-round for monks. In some Shan villages, the bowl is placed at the village centre where people come to put their offerings in it. When the bowl is filled with food, it is taken to the monastery. Nowadays, not many Shan bowls are sold out and therefore bowl makers make them when they receive special orders. Usual Shan bowls need an iron plate with 14 inches and a half in diameter. The mouth is over eleven inches in diameter and the bowl is about seven inches deep. The widest part of the bowl is over 42 inches in circumference.

During the time of the Buddha, earthen bowls were mainly used by monks. However, there are some records of iron bowls at that time. Later, as the development in iron-smith business, iron bowls are more used. In early Mandalay Period, according to some senior monks, almost all monks used iron bowls. There used to be many monks who went alms-round with earthen bowls before independence. But nowadays, iron bowls are preferred. In some regions, at food offering ceremonies and novice-initiation ceremonies, earthen bowls are used since they are allowed by Vinaya rules and cheaper. Therefore, the value of earthen bowls is still high among Buddhists. Besides, earthen bowls are more suitable for monks since they are good for health and allowed by the Vinaya rules. It seems therefore that people prefer to donate earthen bowls. As a bowl is one of the eight requisites of monks, Buddhists consider that bowl-donation is a noble act. Therefore it can be noted here that bowls represent as a symbol of Buddhism for both monks and laypeople. Studies show that there are two stages in the process of making an iron bowl: the stage of white bowl and that of black bowl.

3.4 Learning Step of White Bowls

A circular iron plate is placed on an anvil and hammered until it shapes into a bowl. It is the stage of a bowl before the bowl is painted with *tha-yoe* (see figure-3), and become a black bowl. This stage is called *aphyu-hte* (plain), *ayaing-hte* (natural), or *kongyan-hte* (raw). Studies show that the bowl business was very good about 50 years ago. An area called Oh-bow in North-Mandalay was famous for white bowls. The area was reportedly filled with the sound of hammering. Later, the bowl foundries are replaced with car-body foundries which become a better business with more money. The bowl foundries moved to nearby villages where they can

get cheaper labors. Ye-won Village and the area around this village becomes a centre for white bowl foundries. The raw material required for white bowls is iron plates. Previously, bowl makers made iron plates out of iron, but they started using brown iron plates and thick barrels 50 years ago. But nowadays, they use thinner barrels that are used as the cooking-oil containers. The tools used include chisels, hammers, anvils, scrapers, and bellows. Bowl makers usually use the chisels that are sharp enough to cut iron plates. It is usually harder than the iron plates. The flat edge at the end is about half of an inch or an inch, and the body is about one inch in diameter and six inches in length.

A hammer (*Tu*) is a tool consisting of a piece of metal with a flat end which is fixed onto the end of a long thin usually wooden handle, used for hitting things. It is used to smoothen or cut iron plates, or making a mould. There are various kinds of hammers used to make bowls: *khwet-tu*, *tu-shae*, *tu-lat*, *kauk-tu*, *pu-tu*, etc. *Tu-shae*, *tu-lat*, and *tu-pu* are also called *yike-tu*. Depending on the area, the location of the foundry and the preference of bowl makers, the size of hammers vary, but the shapes are the same.

An anvil (*Pay*), which is used by blacksmiths and goldsmiths, is a heavy block of iron on which heated pieces of metal are shaped by hammering. An iron plate is placed on an anvil and hammered until it shapes into a bowl. There are various kinds of anvils: *khwet-pay*, *rite-pay*, *kauk-pay*, and *sint-pay*. A scraper (*kyauk*) is used to brush the iron. The type of scraper used is usually made of natural stones or iron scrapers especially designed for the purpose. The scraper is used on a motor or with hands when the edge of the bowl-mouth is smoothened. A bellow (*phoe*) is a stove in which iron plates are heated. It is a tool used to blow air, especially into a fire to make it burn better. In this bellow, iron plates are heated. The material cultures are used in making white or plane bowls, and they are made by the bowl makers themselves.

3.5 Learning Step of Black bowls

In this stage, the white bowl is coated with *thit-say* (lacquer) (see figure-4). The bowl makers coat the white bowls with *thit-say* and put them in the *tha-bake-tike*, and repeat this process again and again until the bowls are strong enough to use. This stage is called *thit-say-tha-yoe-kain-loke-ngan*. This stage includes various steps: *thit-say-thoat* (coating with lacquer), *pya-pet* (spraying with ash), *tha-yoe-chaw*, *khae-tike*, *a-young-khan-thoat*, *shwe-khan-thoat*, *khae-tike*, *a-young-tin*, and *a-hte-si*, etc. Required materials and tools include *tha-bake-tike*, *thit-say*, *put-khon*, *phwe-kyan*, and *kyauk*, etc. One of the peculiar features of iron bowl making is that a bowl must be coated with *thit-say* and put it in the *tha-bake-tike*, and this should be done again and again. This is necessary because then only *thit-say* gets dry easily and will not become dusty. Therefore, every foundry has *tha-bake-tike*. The walls of *tha-bake-tikes* need to be brick-walls and the roof must be concrete. Then only, the work will be done safely and quickly. A *tha-bake-tike* is an under-ground room; it has only one hole with a door that can be tightly closed. Inside the *tha-bake-tike*, on the walls, there are shelves, eight to nine inches distance from one another. The bowls are kept on those shelves. The construction is almost the same for all *tha-bake-tikes*. The bowls, after being coated with *thit-say*, are dried in *tha-bake-tikes* in a room temperature. This is a necessary step in making bowls, but it might cost money and time for the bowl foundry owners.

An iron bowl with an inscription, "U Paw Kywe's donation, 1300 Sakkaraj", on it is found in a bowl shop at Eindawya in Mandalay. That bowl has the mouth which is 3.8 inches in diameter. This bowl is called food offering bowl (Swan-taw-tin Tha-bake). It was made over 50 years ago, but it is still in its original condition. It used a thick iron plate. This bowl stands as a prove that Myanmar Buddhists place great value on monk-bowls which are the symbol of Buddhism in Myanmar.



Figure 2. Iron Bowl



Figure 3. White Bowl



Figure 4. Black Bowl

3.6 Responsibilities and Skills of Bowl Makers

The bowl makers in Innwa value their job. They are proud of their job believing it is something religious and wholesome since they make iron bowls and earthen bowls that are necessary for Buddhist monks. They also believe that they have wholesome livelihood. They believe, "Good mind produces good bowls", and that their success depends on the attitude they have. Besides, this is a kind of art that needs skills, and therefore the workers value their art. One needs to learn this art from basic. This art is handed down through family tradition. The only change in the tradition is that they used to make earthen bowls, but now they make iron bowls. School education is not a necessity to become a bowl maker, but there are specific skills they need to learn, and most importantly they need to have the right attitude. Innwa is now a centre for monk-bowls. Each foundry has at least ten workers. They work every day, but they do not seem tired of their job for this is where their interest is. They get the daily wage of round about 3500 kyats. The workers consider that their job produce things that are supportive for the attainment of Nibbana. This is one of their motivations to continue this tradition. A skilled in the past worker need at least three year experience at work. They need to learn from skilled workers (see figure-5). At first, a worker who newly joins the team is not paid, for he is at the learning stage. When he has learnt some skills, he starts getting some money which is a pocket money. The money they get depends on the skill they have, and how helpful they are at work. They need to learn *thit-say* coating, and other details. When their work shows neat and satisfactory, the teacher asks them to make a bowl without getting any help from others. This is a kind of test and with the teacher's approval; they are allowed to work on their own.

There is a story that the workers tell. One day, a young boy from Ye-won Village who used to be a novice came to learn how to make bowls. He had a monk-bowl-full of tamarind seeds that he used to count how many times he needed to hammer the iron plate to make a bowl. For each strike of hammer, he took one tamarind seed out of the bowl. When all the seeds were taken out, he found that he had not yet finished even a white bowl. He thought the life as a layman was too tiring, and he joined the order of monks again. This story seems to highlight the fact that a bowl-maker must have perseverance, love the job, and have some skills. Nowadays, the workers get their wages as soon as they join the team. However the money depends on how

they are helpful at work and on the skills they have. Sometimes, the money depends on the part of work they do. A new worker gets 3000 kyats every day. There are some people who wanted to become bowl-makers, but they are not successful. People whose hands are always wet with body-oil cannot get the job. And there are people who are allergic to *thit-say*. Oily hands cause delay in the time require for *thit-say* to get dry. Besides, *thit-say* color becomes dull and consequently there is a delay at work. Those who are allergic to *thit-say* cannot make monk-bowls. Even those who do not have such problems may get some skin diseases. Their skin gets dull or they get ringworms on their body, or the skin gets dry. Therefore, this is not a kind of work for everyone. It needs handcraftsmanship, and there is a problem of getting new workers. There is a danger that this art might extinct. Besides, there are other jobs available in Innwa and this also causes the problem. Therefore, one need to be interested in this art and also must have health condition suitable for this work.



Figure 5. Skilled workers

4. Conclusion

Monk-bowl foundries have existed in Innwa for many years. The art of making earthen bowls that used to be the requisite of monks and laypeople devotionally donated is now almost disappeared. Monks use iron bowls and lacquer bowls nowadays, and they do not use earthen bowls anymore. Bowl foundries in Innwa are owned by families. This is a kind of family business which everyone in the family needs to give their hand. Bowl workers value their job for they consider that they are making religious items and therefore they need to keep their mind wholesome. It is difficult to make an earthen bowl and also an earthen bowl is fragile. There is also a shortage of raw materials and this is not environmentally friendly. For those reasons, probably, people do not use earthen bowls anymore. On the other hand, there is a danger of losing the culture of donating bowls that are made in accordance with the Vinaya rules. There are advantages in using earthen bowls: although they are fragile, they are cheaper; they can keep the food warm longer; they can be hold with hot food in them for the heat-resistance is better; they are good for health; and people believe that eating the food from earthen bowls is healthy. On the other hand, raw materials for iron bowls are easily available. Asphalt barrels, that are not useful for any other purposes, can be used to make monk-bowls. Although iron-bowls do not have good heat-resistance, they are cheaper, and lighter to carry. These advantages of iron bowls may attract people. Besides, iron pieces that are cut off from the plates can be sold. This is one of the most attractive facts for the foundry-owners for they can make money out of everything. However, the art of making earthen bowls that have existed since the time of monarchical period is facing the danger of extinction. With the extinction of this art, Myanmar people will lose one of their beautiful cultures. For the medical point of view, this work is harmful for health; *thit-say*, which is allergic to some people, is necessary material in iron-bowls, and this might frighten new workers away. Besides, new job availability is also a danger for bowl-making art. Therefore, a

medical help is necessary to protect *thit-say* allergy. Workers play important role in this kind of business, and therefore, it is necessary to find out how workers can protect their skin. Then only the problem of getting new workers can be solved, and this will help to maintain the tradition of making monk-bowls. To get skilled workers is essential for bowl-foundries. The workers need to be motivated so that they realize that they are doing something wholesome. Therefore, it is assumed that workers must value their job while there are other job opportunities in Innwa.

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Early School Life: Importance of Caregivers' Role in Educational culture

Khin Moe Moe Kyu¹

Abstract

There are round about 5 million children are studying in primary level education in Myanmar. However, the paper would like to do emic research on early school life. It would like to conduct as field research in three primary schools: village school, urban community school and private school. The three schools are based on curriculum of Ministry of Education. They are different in student-teachers' ratio, and pedagogy parents' knowledge and accessibilities. As an anthropological study, children personalities are shaped by their gene and environments. The paper would like to state that "How do scaffolding nurturing environment system support to children's school life and what important factors are basic cause of out of school for children in Myanmar? It wants to focus on socialization in function of schooling, transmission of culture from home life to school life and to find out importance of caregivers in the production of equity and the possibilities of educational culture. The limitation of the study is students' environments such as peer, parents and teachers. Such research methodology conducted as participant observation, interviewing and case study of the schools. Different knowledge shapes different children life and educational culture.

Keywords: capabilities, environments, caregivers' knowledge, educational culture

1. Introduction

The main objective of the study is to provide an pinpoint to reduce out of school children quantity. It dealt with the environmental setting, a brief historical background and a description of pedagogy evolved. Educational culture is a priority for a child development and it is viewed as a key for national development. In recent years, many reforms in education have been undertaken in Myanmar. However there still remain areas of concern that will have to be addressed. In here, the study would like to define parents and teachers are care givers of a student. Although teachers' roles are as one of the "five gems" in the societies, rural area is more typical than urban school. They pay respect as teacher is regarded to be on the same reverence as the Buddha, the scriptures, the monks and parents. The teachers are usually role models in the communities. They are traditionally regarded as community leaders in rural as well as urban communities; but more in rural ones. Because of this role in the community they are often regarded as key players in any social mobilization effort. Parents and teachers, therefore, have great potential to act as agents of change children characters.

In the view of Sassi Abdelhafid on George Spindler, education is the studies of cultural acquisition and transmission of a culture. In the study, the children of educated parents are assured of a child's school life. In Myanmar there are 0.26 million are primary teachers. Now a day, Myanmar civil government tries to effort to get better education reform. In 2018, lower primary teachers' have given special refresher training course not only government's teachers but also private school teachers and community school teachers such as monastic school for new curriculum design. According to mission of Ministry of Education, every child who attend grade 4 can read, write and calculate basically. Furthermore, other qualifications need to develop.

¹ Associate Professor, Department of Anthropology, Dagon University, Email: khinmomokyu@gmail.com

Therefore, the curriculum design and teaching-learning system have to base on these. After that, life skills education will be start on grade 5. (Annually reports, 2018,)

The largest group is the students in educational culture setting. There are approximately 7.5 million students (out of a total population of over 50 million) from all levels of education. 1.2 to 1.4 million attending primary education. Now a day, the young people of Myanmar have become more aware of the world around them. They are becoming increasingly aware of what life has to offer; but many of them are very naive and unaware of the dangers and pitfalls of modern societies. Following the 1998 and 1999 education reforms towards “creative learning” and “critical thinking.” They are being encouraged to read more widely and go beyond the rigid confines of a national school curriculum that is being gradually reformed. (Professor, U Han Tin, 2004)

There is an important one that is parents, teachers, and students have to have mutual understanding and trust each other. The three groups are the same as stove-top. It means that all have to be harmony with each other and a sociological phenomenon is also referred to characteristics of a culture, social class, political views and individuals based on a part of self-identification. The changes of children’s home life to school life regarded in anthropology as a reality itself, revealing at every of its stages cultural particularity in a new sense. The children and its upbringing within family, child subcultures and peer groups, or social environment are affected on school lifestyle. (Jarema Drozdowicz, 2014, p 66-82)

2. Methodology of the study

The study would like to know emic situation in educational culture which light to education setting of a society. It also conducted on qualitative approach especially in participant observation, in-depth-interviewing and case study of some parents, teachers, and students in three basic primary schools. Data analysis is based on visual, recording, check, cross-check and double check information flow system.

3. Result and Discussion

By studying case study on the 3 schools: (1) Basic Education Middle School No-1, Dagon Township (BEMS-1 DT), (2) Basic Education Primary School, Zaw Ti Gone village (BEPS, ZTG), (3) Flower Private Education Center (FPEC), notice that there are different background environments can shape how happy and interesting in school life of a child. All the three are situated in Yangon Region.

Table 1. Characteristics of the three schools

Schools' Name	Basic Characteristics of Educational Culture
Basic Education Middle School No-1 Dagon Township	<ul style="list-style-type: none"> * Situated in crowded downtown of Yangon * Families have one or two children in each. * Parents have got one or more degree. * 1:30 to 1:40 teachers –students' ratio. * Well prepared to go school in pre-school or at home. * Proud of attending the school.
Basic Education Primary School ,Zaw Ti Gone Village, Hmawbi Township	<ul style="list-style-type: none"> * Situated in village * Parents are simple life and low knowledge in important of education. * There is not partition in school building for each class * Many parents' think that there is more important to get money for covering daily expenditure for food.
Flower Private Education Center	<ul style="list-style-type: none"> * Situated in Dagon Myothit * Not only formal education center but also physiotherapy center for disables children. * Students-teachers ration is 1:3, 1:5 to 1:15. * Recommended by neuro physiotherapy specialists. * Scaffolding system with special classes; art, music, language and etc.

Source: Field data

In the year 2014, pedagogy is as usual. Students of BEMS-1 DT are busy with much time to recite text and doing exercises. Barking and beating on palm rules for controlling class is ok. In Myanmar proverb, if you want to get best quality pot, beat again and again. From our Myanmar society, the slogan was very popular in rural and old parents in last millennium. In the year 2018, some parents' concept is changed on controlling class system by some issue of social media. As for typical Myanmar, this is problem for teachers how to control the class as big as the class size as well as typical traditional class control culture.

3.1 Different concept of care givers in the three schools

There are 3 categories in the schools.

1) Parents and students of BEMS-1 DT have higher and higher for the students. The students attend two kind of school in the same study year. They attend English language training or some of them are sitting in Cambridge Exam Course by the help of British Council Culture

Center such as Starter, Mover, and Flyer or IGCSE exams and take regular sport training; gym, aerobic, different kinds of martial art, etc. In summer time, take language class, music, painting, etc. Some of parents want to be high marks even full marks in every subject. If their children cannot effort it, they push to get more and more study hours. The parents always learn their children's lessons. A mother said that *"when her child attends KG class, she attend KG. When her child attends grade 3, she is grade 3"*.

2) Some students do not want to follow the first categories. They are weak to adaptable to the school culture. As special case in the intake of 2014 students, there is two school boys do not want to attend class because of inadaptability of the school culture. When he was grade two, he wants to quite from the school. And then, one go to private school and another is attends special need and disables class in physiotherapy center. But, a teacher who got well experience in the school said that *"a new student has to be happy, healthy and adaptability in the school culture, if it is not, the student does not want to attend the school"*. In the intake of 2017, a student is a little delay in communication skill. He attends the KG class that is new teaching learning system by the arrangement of Ministry of Education. Although new teaching learning system is coming up and utilize in the school, old cultures are there in the environment even teachers and parents. Many parents and teachers like old model of child care system. Later months of KG are very difficult for him and his mother. He feels mental depression. And then he transfer to private school. In a year later, the new child care culture and pedagogy are practice in the school. The boy reenrolled in the School. It is because, his mother and physiotherapist of the private school try to pay therapy and reconstruct on his mind. One year later, he accepts to attend his class. His mother and the school teachers try to persuade to attend his class in the school.

3) The third category is very weak to get end education for their children. Parents' concept of BEPS- ZTG is that they are poor, they have very important to get money for covering daily expenditure for food. Only few parents want to hope on their children to get a degree. Most of the villagers are cultivators, blue labour and daily workers. Some are *Kyaban Loutha* it means the people have not regular or permanent job. They said that they are *Ta Nay Lout Mha Ta Nay Sar Yar Dar*. It means when they have work on this day, they can eat their meal. Therefore, they are not interested in child education. If their children got grade 1 or 2 it is ok form them. The parents' concept is when their children go to school; they can't help their house work. If they fail in exam, it is a big failure for them. If they pass exam, it is very low profit for their family. In the student's mindset, they want to go school, but their parents can't effort it. When they go back home, they have no time to study because of helping house work. In such case, lesson home work is not appropriate for the students. In the school of FPEC, most students are special needs care. Some are Autism, CB, Down. Some have a little symptom of that syndrome. The school is not only formal education center but also physiotherapy center for disable children. Curriculum and syllabus of the school is scaffolding nurturing system and edutainment to encourage children interesting and how to find their hobby. Her slogan is the earlier, the better for children. FPEC is Basic Education Middle School. But school fee is problem for some parents.

4. Conclusion

By studying above finding, the paper would like to conclude that early school is very important for a child's education. The three schools have different educational culture; competitive, prioritize to get daily expenditure and too need to support their children. Teachers

and parents are play a major role in learner's personal, social, emotional or interpersonal problems. Therefore, to get a good interpersonal relationship between teachers and students, parents and child, feeling and emotion that everyone experiences are considered vital factors. In the case of a student who is as normal as others typical children although family culture is different from other, if the teachers bound with the students well understand on them and educate students as daily life factors will affect the quality of this interaction and communication. When parents well know value of education for their children, all children will take their classes. If not, children will end school lives. As for too care to child's education in wrong way, it is also dangerous for early school life. He can't stand himself, he stand his parents' will. It is not good education for him.

In the case of school boy who is delay in communication and intake in 2017 that is communities' school are fond of practicing in new pedagogy such as edutainment. The notion of culture tends to privilege the continuity of socialization and harmony. These current changes rises of dynamic practice and performance oriented concept of culture which begins addressing the problem of fusing home culture and class culture by the concept. Anthropological study of culture mismatch between home and school were quite influential and how class factors produced inequality.

In the case of Zaw Ti Gone Village Primary School, it is very important to get income for daily expenditure of a family is the basic factor to go out of school for a student. Education is the development of a child's personality, talents and abilities. In recognition of the fact that every child has unique characteristics, interests, abilities, and learning needs. (Aye Aye Aung, 2018).

It is important to know that child's education is not only literacy and numeracy, but also closer to apply for life. Education should also pinpoint to ensure that essential life skills are learnt by every child and that no child leaves school. In that point, care givers; parents and teachers are very careful to their children not to away from school. Whatever teaching-learning systems, whatever curriculum design, whatever teacher-students ratio, the paper would like to state that caregivers are play a vital role in children's education to overcome home life to school life. If we notice the point, our educational culture will promote and bar from children who are out of school.

Therefore, the study would like to recommend that-

- Be aware of background culture to transmit class culture.
- Every school should be second home in early education.
- Should encourage to promote knowledge among care givers that education is how important in child's future.
- A school in a township should have a special care class room in lower primary education level.

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Social Support as a Mediator between Emotional Intelligence and Job Satisfaction of Employees in Yangon

May Lwin Nyein¹, Myint Myint Khine², Tin Nwe Oo³

Abstract

The purpose of this study is to examine the role of social support as mediator in the relationship between emotional intelligence and job satisfaction of Myanmar employees in private sector organizations and companies. Participants were 200 employees from Dagon group of companies, Information Matrix Co. Ltd., Myanmar Solar Rays Co. Ltd., Myanmar Electrical Business Group Public Co. Ltd., Thukha Myanmar Co. Ltd., Citta Consultancy and VOA Burmese Service who completed a battery of self-report questionnaires, including Emotional Intelligence Scale, Multidimensional Scale of Perceived Social Support, Minnesota Satisfaction Questionnaire and the demographic variables. Regression analysis was adopted to test the mediating effect of social support between emotional intelligence and job satisfaction. The results suggested that emotional intelligence was a positive significant predictor to social support and job satisfaction. Additionally, social support was positively associated with job satisfaction. The meditational analysis revealed that social support functioned as a mediator between emotional intelligence and job satisfaction. The outcomes of this study have significant implications for the field of I/O psychology. The results also suggested that explicit interventions could be used to improve employees job satisfaction by focusing on enhancing multiple social support system such as coworker/friends, family and significant others.

Keywords: Job Satisfaction, Emotional Intelligence, Social Support

1. Introduction

Myanmar is transforming to Democracy in political approach since 2010. At the same time, Myanmar's economy open out and there is widespread agreement that the country has a huge potential for continued rapid development in the future. Simultaneously, a key challenge is to ensure that economic growth is inclusive in Myanmar. Despite there is a number of market research to gain sustainability market share, there has been only a few research work conducted understanding work-related phenomena such as job satisfaction, turnover, and employee well-being to develop human resource in Myanmar.

Employee job satisfaction is an essential ingredient to reach organizational success. Job satisfaction among employees is an indicator of organizational effectiveness, and it has got direct relationship with organizational and personal factors (Lumley *et al.*, 2011)^[1]. Majority of the employees are aware that the performance of an organization depends in part on their level of job satisfaction (Ibid). This is the cradle of the mostly widely believed maxim of management that "a happy worker is a productive worker".

Nowadays, researchers have become increasingly interested in understanding how this job satisfaction is associated with emotional and social abilities of employees beyond the job itself or the relevant environment. Emotional and social competencies seem to play a vital role in the process of networking in order to maximize job performance as "the one who has developed more relationships with others and has richer social ties is the one with greater success to

¹ Assistant Lecturer, Department of Psychology, University of Mandalay, maylwin18917@gmail.com

² Student, Post Graduate Diploma in Applied Psychology, University of Yangon, myintmyint.khine92@gmail.com

³ Associate Professor, Department of Psychology, University of Yangon, tinnweoo531@gmail.com

information” (Balwajder, 1992, pp.13) ^[2].

The concept of emotional intelligence (EI) was first proposed by Mayer & Salovey (1997) ^[3] which was then popularized by Goleman: *Why it can matter more than IQ*. Emotional Intelligence (EI), which is defined as an individual’s ability to process and treat affect information and effect problems, is an important predictor of job satisfaction (Dong et al., 2014 ^[4]; Siegling et al., 2015 ^[5]). Zacher et al. (2012) ^[6] noticed that EI has an effect on key organizational outcomes such as job satisfaction. Palmer and colleagues suggest that people’s ability to treat effect information by recognizing their own emotion and ability to manage emotion can significantly affect their job satisfaction (Palmer et al., 2002) ^[7]. Freudenthaler et al. (2008) ^[8] also found that EI can independently predict job satisfaction. Hence, people with high EI are believed to have high job satisfaction and they are also aware of their emotions and can better utilize it to regulate stress and negative emotion, which can result in positive evaluations on work or work-related situations.

Theories indicate that social support is a key factor in job satisfaction and performance of an employee. Indeed, support from friends and family can promote workers performance (Sun, Zhang, Fu, 2007) ^[9], as it buffers the stress associated with the work related illness (Zimet, Powell, Farley, Werkman, & Berkoff, 1990) ^[10]. Social support is defined as the spiritual and material help provided by various social aspects (i.e., family, relatives, and friends), that reflects one’s closeness with social relations (Oh et al., 2014) ^[11]. Perceived social support is the subjective feeling one gets from social support. This is helpful in relieving life pressure and promoting life satisfaction, and is a good indicator for measuring social adaptation (Pavlova et al., 2015) ^[12]. Research shows that the negative effects of stress are buffered by good interpersonal communication and perceived social support (Karademas, 2006) ^[13]. Meanwhile, the lack of support from colleagues, supervisors, and family members can lead to job dissatisfaction. Thus, social support can increase employees’ feelings of job satisfaction, and its absence serves as a stressor that acts as a catalyst for job dissatisfaction (Prince et al., 1997) ^[14]. Additionally, moving beyond from examining the relationships between EI with job satisfaction and social support with job satisfaction, some studies also have analyzed the direct and indirect associations between them in recent years. For example, Dawei (2018) ^[15] studied the trilateral relations among EI, social support, and job satisfaction in China.

Recognizing the essential of the three highly related variables and the lack of studies in Myanmar, this study is an attempt to contribute to understand the nature of relations among EI, social support, and job satisfaction. Therefore, the purpose of this study is to understand the nature of relations between emotional intelligence and job satisfaction by exploring the mediating effect of social support in private sector organizations in Myanmar. More specifically, based on the previous literature reviewed, we generate the following hypotheses: (1) Emotional intelligence will be positively associated with job satisfaction. (2) Emotional intelligence will be positively associated with social support. (3) Social support will be positively associated with job satisfaction. (4) The relationship between emotional intelligence and job satisfaction will be mediated by social support.

2. Methods

Participants

Surveys were distributed to 250 employees of private sector organizations and companies in Yangon, Myanmar: Dagon group of companies, Information Matrix Co. Ltd., Myanmar Solar Rays Co. Ltd., Myanmar Electrical Business Group Public Co. Ltd., Thukha Myanmar Co. Ltd., Citta Consultancy and VOA Burmese Service. A total of 200 usable data were returned; including 82 males (41%) and 118 females (59%), who were between 18 and 70 years old ($M = 31.51$, $SD = 10.49$). Among them, 32% of the participants were single and 68% of the participants were married. There were 16 % of undergraduates, 80% of graduates and 4% of postgraduates.

Measure

Emotional Intelligence Scale (EIS): The 33-item scale (EIS), developed by Schutte et al. (1998)^[16] was used to measure the total Emotional Intelligence. It was translated into Myanmar by the researcher. Each item consists of a short statement, to which participants was asked to indicate how closely they identify using a 5-point scale from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*). Some items of the scale includes: "I like to share my emotions with others", "I arrange events others enjoy", and "I know why my emotions change". The Schutte et al., (1998)^[16] reported that the internal consistency reliability of the EIS is .87.

Multidimensional Scale of Perceived Social Support (MSPSS): The 12- item self-report measure (MSPSS) developed by Zimet et al. (1988)^[17] was used to measure how one perceives their social support system. It was translated into Myanmar by the researcher. Items are responded on a 7- point scale from 1 (Very strongly disagree) to 7 (Very strongly agree) (Zimet et al., 1988)^[17]. Examples of items from this survey form include "I get the emotional help and support I need from my family", "My friends really try to help me". Internal reliability for the MSPSS, measured using Cronbach's coefficient alpha for the total scale was .90 (Zimet et al. 1988)^[17].

Minnesota Satisfaction Questionnaire (MSQ): The Myanmar version of the Minnesota Satisfaction Questionnaire (MSQ) was used to measure job satisfaction in this study (May Lwin Nyein & Nilar Kyu, 2014)^[18]. The short form of the Minnesota Satisfaction Questionnaire (MSQ) was originally developed by Weiss et al. (1967)^[19]. The MSQ taps into people's cognitive orientation toward their jobs and comprise 20 items rated on a 5-point scale ranging from 1 (very dissatisfied) to 5 (very satisfied). The total score ranges from 20 (low level of job satisfaction) to 100 (high level of job satisfaction). Cook, Hepworth, Wall and Warr (1981)^[20] stated that the short form of the MSQ appears to yield a sound measure of overall job satisfaction. The Myanmar version of the MSQ with an internal consistency reliability of .89 was reported by May Lwin Nyein & Nilar Kyu (2014)^[18].

Demographic Questionnaire: This questionnaire included demographic variables of particular interest (i.e., age, sex, marital status, family size, education, position, organization size, organization type, monthly income).

Procedure

Before the questionnaires were distributed to all participants, permission for the participants to take part voluntarily in this study during their working hours was obtained from the person in charge of the companies and private sector organizations. Then, the researcher gave

clear instructions to the participants to answer the survey questionnaires. The survey booklet contained a cover letter explaining the purpose of the study and requesting participation (Informed consent) and a battery of self-report questionnaires. Participants were told that their surveys were kept anonymous and they could refuse if they wished. Confidentiality was ensured. Valid responses were obtained from 80% of the respondents – 200 participants.

3. Results and Discussion

3.1 Results

Descriptive analysis

The final sample included 41% male and 59% female, who were between 18 to 65 years old (Mean = 31.5, SD = 10.49). In terms of marital status, 32% of the respondents were single, 68% of the respondents were married. The range of family size was 1 to 10 members, with the mean of 4.67. Among them, 16 % of the participants were undergraduates, 80% of the participants were graduates and 4% of the participants were postgraduates. There were 5 categories of position that are 17% of office staff, 32% of admin officer, 30% of engineer and media professionals, 18% of manager and project coordinator, 3% of executive and director. According to organization size, 5% were from small business organization, 39% from medium business organization and 55% were from large organization. There were 5 kinds of organization type that are 24% from service sectors, 9.5% from Manufacturing sector, 35% from Sale and Marketing Sector, 20.5% from media sector, 0.5% from agencies, 10.5% from other sectors. Regarding to the monthly income, the individual's monthly income fewer than 100,000 Kyats was 0.5%, between 100,001 Kyats and 300,000 Kyats was 47%, between 300,001 Kyats and 500,000 Kyats was 25%, between 500,001 Kyats and 1,000,000 Kyats was 19%, between 1,000,001 Kyats and 2,000,000 Kyat was 7% and the individual's monthly income more than 2,000,001 Kyats was 1.5%.

Correlation Analysis

Inter-correlations among the variables, means and standard deviations for the measures used in this study, are presented in Table 1. There is a significant positive correlation between emotional intelligence (EI) and the demographic variables of age, organization size, organization type and monthly income ($r = .16, p < .05$, $r = .21, p < .01$, $r = .14, p < .05$, $r = .14, p < .05$). Furthermore, perceived social support showed a significant positive correlation with position and monthly income ($r = .16, p < .05$, $r = .21, p < .01$). Surprisingly, a significant negative correlation was found between perceived social support and family size ($r = -.15, p < .05$). Moreover, correlation of job satisfaction with the age and organization size were all positively significant ($r = .17, p < .05$, $r = .18, p < .05$). Essentially, an examination of the relationship between emotional intelligence (EI) and perceived social support, revealed a significant high positive correlation ($r = .31, p < .001$). In addition, significant positive correlation was found between perceived social support and job satisfaction ($r = .27, p < .001$). Further, emotional intelligence (EI) had a significant positive correlation with job satisfaction ($r = .31, p < .001$), as shown in Table 1.

Table 1. Means, SDs and intercorrelations among study variables

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. Age	31.51	10.49	—											
2. Sex	1.59	0.49	-.21**	—										
3. MS	1.68	0.47	-.50***	.28***	—									
4. F Size	4.67	1.62	-.14	.01	.16*	—								
5. Edu	1.88	0.43	.18*	.06	-.06	-.11	—							
6. Position	2.57	1.05	.31***	-.28***	-.22**	-.15*	.30***	—						
7. O Size	2.53	0.67	.22***	-.14	-.05	.04	-.03	.01	—					
8. O Type	2.96	1.49	.18*	-.13	-.16*	-.04	-.03	.11	.27***	—				
9. Income	2.89	1.04	.34***	-.16*	-.22**	-.15*	.35***	.72***	.07	.05	—			
10. EI	125.87	15.25	.16*	.05	-.03	.06	.06	.12	.22**	.14*	.14*	—		
11. SS	62.43	12.06	.06	-.03	-.08	-.15*	.11	.16*	-.03	.05	.21**	.36***	—	
12. JS	75.13	9.92	.17*	.05	-.04	-.05	.00	.03	.18*	-.00	.12	.31***	.27***	—

Note: MS = Marital Status, F Size = Family Size, Edu = Education, O Size = Organization Size, O Type = Organization Type, EI = Emotional Intelligence, SS = Social Support, JS = Job Satisfaction. * $p < .05$, ** $p < .01$, *** $p < .001$.

Regression analysis

In order to test our hypotheses, regression analyses were conducted. In the first three regression analyses, age, sex, marital status, family size, education, position, organization size, organization type, monthly income were used as control demographic variables. Firstly, job satisfaction was regressed on emotional intelligence (EI). For the predictive effect of emotional intelligence (EI) on job satisfaction, result was shown in regression of Table 2. The combination of all variables accounted for 14% of job satisfaction's variance. After controlling for demographic variables, emotional intelligence (EI) significantly explained 6% of the variances. Emotional Intelligence (EI) was a positive predictor to job satisfaction ($\beta = .26$, $p < .001$). As shown in Table 3, the results of regression analysis on emotional intelligence (EI) as a predictor of perceived social support. Regression showed the combination of all the variables explained 18% of the variances. After controlling the demographic variables, emotional intelligence (EI) significantly explained 10% of the variances. Emotional intelligence (EI) was a positive predictor to perceived social support ($\beta = .34$, $p < .001$). According to Table 4, the results of regression analysis on perceived social support as a predictor of job satisfaction. Regression revealed the combination of the all the variables explained 14% of the variances. After the demographic variable had controlled, perceived social support significantly explained 6% of the variances. Perceived social support was a positive predictor to job satisfaction ($\beta = .26$, $p < .001$).

Subsequently, meditational analysis was conducted to investigate whether perceived social support could mediate for the relationship between emotional intelligence (EI) and job satisfaction. Following the method outlined by Baron & Kenny (1986)^[21], mediation is established when the following conditions are met: (1) a significant relationship is found between

Table 2 Regression Analysis with EI as predictor of Job Satisfaction

	R ²	R ² Change	β	F
Age	.08		.11	1.7
Sex			.07	
Marital Status			-.02	
Family Size			-.05	
Education			-.04	
Position			-.08	
Organization Size			.14	
Organizational Type			-.08	
Income			.11	
Emotional Intelligence	.14	.06	.26***	2.84**

p<.01, *p<.001.

Table 4 Regression Analysis with Perceived Social Support as predictor of Job Satisfaction

	R ²	R ² Change	β	F
Age	.08		.15	1.66
Sex			.10	
Marital Status			.00	
Family Size			.00	
Education			-.05	
Position			-.06	
Organization Size			.18*	
Organizational Type			-.07	
Income			.08	
Perceived Social Support	.14	.06	.26***	2.86***

*p<.05, **p<.01, ***p<.001.

Table 3 Regression Analysis with EI as predictor of Perceived Social Support

	R ²	R ² Change	β	F
Age	.08		-.11	1.78
Sex			-.01	
Marital Status			-.07	
Family Size			-.16*	
Education			.05	
Position			-.03	
Organization Size			-.07	
Organizational Type			.02	
Income			.18*	
Emotional Intelligence	.18	.10	.34***	3.95***

*p<.05, ***p<.001.

Table 5 Meditation Analysis with Perceived Social Support as mediators between Emotional Intelligence and Job Satisfaction

	R ²	R ² Change	β	F
Step 1	.10			21.88***
Emotional Intelligence			.31***	
Step 2	.13			14.46***
Emotional Intelligence		.03	.25***	
Perceived Social Support			.18*	

*p<.05, ***p<.001.

the independent variable (emotional intelligence) and the presumed mediator (perceived social support); (2) a significant relationship is found between the presumed mediator (perceived social support) and the dependent variable (job satisfaction); and (3) a significant association between the independent variable (emotional intelligence) and the dependent variable (job satisfaction) is significantly mediated after statistically controlling for the presumed mediator (perceived social support). Conditions 1 & 2 were met in all cases. Therefore, mediational model was used to test condition 3.

On the first step, job satisfaction was regressed on emotional intelligence (EI). On the second step, perceived social support was added to the regression to investigate whether the amount of variance accounted for by emotional intelligence would be mediated. In the regression, the relationship between emotional intelligence and job satisfaction was mediated and remained significant by perceived social support. The results are shown in Table 5.

3.2 Discussion

The primary purpose of the present study was to examine the mediating effect of social support on the relationship between emotional intelligence and job satisfaction among Myanmar employees from companies and private sector organizations. In doing so, regression analyses were adopted to examine emotional intelligence as a predictor of job satisfaction, emotional intelligence as a predictor of social support, social support as a predictor of job satisfaction and social support as a mediator between emotional intelligence and job satisfaction.

According to the results, it was found that emotional intelligence is a predictor of job satisfaction, which supports Hypothesis 1. This means that individuals in the workplace with higher EI are more likely to be satisfied with their job than those with lower EI. This finding supports the previous studies. There is a study which exhibits significant association between ability based EI scale and Job contentment (Trivellas, Gerogiannis, & Svarna, 2013)^[22]. EI is the ability of processing affect information and dealing with emotional problems, whereas job satisfaction is the complex and subjective experience of work (He et al. 2014)^[23]. Individuals with high EI can positively and actively adjust their own affection when facing troubles, which allows them to evaluate this work positively (Petrides and Furnham 2001)^[24]. Employees with high EI can immediately identify and perceive the causes of work-related problems upon experiencing them and develop appropriate strategies to manage their emotional response toward causes of stress. Emotional intelligence is proposed as an important predictor of key organizational outcomes including job satisfaction (Daus & Ashkanasy, 2005)^[25].

Furthermore, in this study, emotional intelligence was positively associated with social support, providing support for Hypothesis 2. Previous researches suggest that individual's confidence in their emotional skills would impact their expectation of support from others. With regard to self-report EI, individuals' perception is that they can accurately appraise the emotions of self and others and express their emotions appropriately contributed to perceived social support (Fabio & Kenny, 2012)^[26]. This means that persons who perceive more available social support report that they are better to be able to recognize emotions in themselves and in others and to express their emotions. As social support involves an exchange of resources between persons and involves recognition of the need for and ability to appropriately ask for assistance under conditions of psychological distress, perceived skill in the appraisal and expression of emotions relates logically to social support (Shumaker & Brownell, 1984)^[27]. The use of emotions in problem solving also reasonably relates to one's capacity to use emotional support in problem solving and coping.

It was also found that perceived social support is positively associated with job satisfaction, which supports hypothesis 3. Self-determination theory also points out that job satisfaction is enhanced when employees' psychological autonomy, competence, and relatedness are supported and social support fulfills the need to belong (Teixeira et al. 2012)^[28]. Other studies also found that social support is an importance job resource. When good interpersonal communication between clients, colleagues, and family members is prioritized, an increase in job

satisfaction occurs (Tooksoon 2011) ^[29]. Individuals may benefit from social support in enhancing their job satisfaction because some studies have suggested that it is an important social resource in the work environment which is more effective than other individual strategies (Lu et al. 2012) ^[30].

Regarding organization size, we found that employees who are working for large organizations would be more satisfied with their job than those in small organizations. This finding is not totally consistent with existing researches. Some previous studies found that organization size often is inversely related to job satisfaction. That is, the employees in small and medium organizations tend to be more satisfied with their jobs and working in large organization reduces the level of job satisfaction. According to Myanmar culture, people who are working for large organizations tend to be more satisfied with their jobs than those in small organizations because of the factors of job security, prestige and status. They assume that their jobs are more prestigious and working in large organization assures work and stable income which gives sense of security. In accordance with Maslow's hierarchy of needs model, safety needs such as pay, benefits and job security satisfied, an employee will be ready to achieve higher level of needs of esteem and self-actualization.

In addition, it was found that family size and social support were negatively associated. The larger the family size, the less likely that the individual will get the social support. Other researches also supported this finding. The larger the families, the less likely that it be characterized by a predominance of positive affect (Bossard and Boll, 1956) ^[31]. A study revealed that parents with multiple adult children report higher levels of collective ambivalence in relation to quality of intra-familial relationships (Ward, Spitze & Deane, 2009) ^[32].

Finally, the meditational analysis revealed that social support functioned as a mediator between emotional intelligence and job satisfaction. Current findings are also supported to previous researches. Testing the mediating effect proved the evident relationship between emotional intelligence and job satisfaction through social support, and verified that social support is also an important factor in job satisfaction. Lopes and other scholars suggested that people with high emotional intelligence have the ability of effect recognition, application and management, and are capable of adjusting their emotions (Lopes et al. 2003 ^[33], Xiao et al. 2014 ^[34]). Thus, contradictions or conflicts in interpersonal relationships can be easily relieved and become harmonious. These individuals are also competent at sensing and evaluating the work environment, allowing them to seek and use social support when problems occur. Individuals with high EI have a high frequency of social activity, they have more chances to seek help from others, realize their value in the workplace, and openly talk about their struggles; thus, job satisfaction is increased (Extremera & Fernandez-Berrocal, 2005) ^[35].

In spite of the promising results, the present study has several notable limitations. First, this study used self-report surveys that do not accurately represent the responses of the participants. While self-report EI reflects one's perception of their emotional intelligence abilities, objective forms of EI can reflect one's actual emotional intelligence potential. Thus, future research may wish to incorporate more objective measurements of emotional intelligence abilities. For the measurement of job satisfaction, we can also design and study the different dimensions under organization, job and personal factors in future research. A further limitation is that the generalizability of the findings to all types of employees is also limited. This study was limited to white collar employees. Additional research using other types of populations is

necessary to ensure the generalizability of these results. In the future, it might be better if other mediators, such as coping style and self-esteem could be explored between the relationship of emotional intelligence and job satisfaction. However, this study currently provides meaningful data for understanding the relationship between emotional intelligence, social support and job satisfaction in Myanmar.

4. Conclusions

To reiterate, the current study evidences that social support can mediate the relationship between emotional intelligence and job satisfaction among employees from private sector organizations and companies in Yangon, Myanmar. The significant relation between the three variables EI, social support and job satisfaction in this study shows that high EI is beneficial for the management of interpersonal relationship, obtaining further social support, and eventually increasing one's job satisfaction. This finding has very important applications in counseling to employees for their work related problems and interventions and focus on the importance of using multi-level social support, such as that of those from colleagues and supervisors, friends, family members and others. It is hoped that the current research can contribute in organizational behavior to appreciate Myanmar employee well-being. The significance of this study is that it provides substantial evidence for the external validity of the relationship between emotional intelligence and job satisfaction in a Myanmar cultural setting. The study also provides strong evidence that training for the emotional ability of Myanmar employees is of utmost importance in achieving happiness and favorable performance in the workplace.

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The Effect of Guided Discovery Method in Teaching Science at the Middle School Level

Khin Mar Khine¹, Khine Nyein Aye²

Abstract

The purpose of this study is to investigate the effect of guided discovery method in teaching science at the middle school level. It was an experimental study in which guided discovery method was compared with formal teaching in improving students' science achievement. It was conducted with the 120 Grade Six students from BEHS Pale and BEHS (Branch) Tanae in Pale Township, Sagaing Region. The sample schools were selected by simple random sampling method. Moreover, subjects in each school were selected by using simple random sampling method and were randomly assigned into two equivalent groups: Experimental Group and Control Group. Each group consisted of 30 students. The experimental groups were exposed to guided discovery method while the control groups were taught formally. At the end of the treatment, a posttest was administered whether there were significant differences between the two groups regarding their achievement. The obtained data were analyzed by using independent samples *t*-test. The results of this study showed superiority of guided discovery method over formal teaching. It is suggested that teachers should use guided discovery method to enhance students' science achievement and make them to be independent learners.

Keywords: effect, guided discovery method, science

1. Introduction

Education should play an important role in enabling people to live together in ways that contributes to sustainable development. In addition, science education is emphasized for scientifically literate citizens who can apply the science knowledge in their everyday decision making. According to Godek (2004) [1], there cannot be any meaningful development without science education. Science advancement has been seen as the single most important factor in sustained economic growth. It has also been described as the principal driving force behind long-term economic growth of developed countries and their rising standard of living. Thus, science education is very crucial for the development of country.

The aim of the Myanmar science curriculum is to provide students with practical experiences based on exploration of the environment and also to develop their scientific inquiry skills to gain scientific knowledge and positive attitudes towards science. To achieve effective science education, science and technology curricula should be emphasized on the process of science. This would also lead to changes in instructional techniques and methods. The formal methods used for teaching science in science classroom only transact knowledge from the head of teacher to the head of students. These methods are not sufficient to develop true knowledge and understanding of science and prove futile exercises to inculcate problem solving abilities, critical and reflective thinking among the children. Therefore, there is urgent need to reform the teaching practices and it is needed to study the Guided Discovery Method which may effect on middle school level science teaching.

¹ Associate Professor, Department of Methodology, Yangon University of Education, +959250074460, drkhinmarkhine@gmail.com

² Assistant Lecturer, Methodology Department, Sagaing University of Education, khinenyein.suoe1@gmail.com

Aim

The aim of this study is to investigate the effect of guided discovery method in teaching science at the middle school level.

Objectives

The specific objectives of this study are as follows:

- To investigate the effect of guided discovery method in teaching science at the middle school level science achievement of the students
- To compare the science achievement of the students who receive guided discovery method and those who do not receive it
- To give suggestions for the improvement of science teaching based on the data obtained from the study

Research Hypotheses

- There is a significant difference between posttest scores of experimental group and control group.
- There is a significant difference between posttest scores of experimental group and control group in answering remember level questions.
- There is a significant difference between posttest scores of experimental group and control group in answering understand level questions.
- There is a significant difference between posttest scores of experimental group and control group in answering apply level questions.
-

Definition of Key Terms

- **Effect:** Effect means having power to produce or producing a desired result (Cruickshank & Bainer, 1990) [2].
- **Guided Discovery Method:** It is one of the techniques happens when the students encounter unfamiliar situation and try to interpret the situation for understanding and comprehension (El-Kahlout, 2010, as cited in Zahara, 2017) [3].
- **Science:** Science is the system of knowing about the universe through data collected by observation and controlled experimentation (Carin & Sund, 1989) [4].

Scope of the Study

This study is intended to investigate the effectiveness of guided discovery method in teaching science at the middle school level. This study was restricted to BEHS, Pale and BEHS (Branch) Tanae, Pale Township, Sagaing Region. The participants were 120 Grade Six students from those schools. The content area was limited to Chapter 5 of Grade Six General Science Textbook for 2018-2019 Academic Year.

2. Methods

A quantitative research method is used in order to compare students' achievement between two groups: control group and experimental group.

The instrument used in this study was a posttest. The posttest items were based on Chapter 5 from Grade Six General Science Textbook. After getting validation from experts, suitable refinement was made and in order to evaluate the feasibility of the instruments for the study, pilot experiment was conducted at No.4 B.E.H.S Sanchaung, Yangon. After pilot testing, the test items of posttest were analyzed by SPSS. Cronbach's Alpha coefficient was (.718).

The main study was conducted in BEHS Pale and BEHS (Branch) Tanae in Pale Township, Sagaing Region. Sample size was 120 Grade Six students of selected schools within 2018-2019 Academic Year and each group consisted of 30 students. In each school, the control group was taught by formal teaching method and the experimental group was taught by guided discovery method. The treatment period was two weeks. At the end of treatment period, both groups had to sit for posttest.

3. Results and Discussion

Table 1 t-values for Overall Posttest Scores

School	Group	N	M	SD	MD	t	df	Sig. (2 tailed)
BEHS 1	Experimental	30	17.20	3.428	3.70	3.760	58	.001***
	Control	30	13.50	4.158				
BEHS 2	Experimental	30	17.33	2.820	2.63	3.666	58	.01**
	Control	30	14.70	2.744				
	Control	60	14.10	3.545				

Note: ** $p < .01$, *** $p \leq .001$ BEHS 1 = BEHS Pale, BEHS 2 = BEHS (Branch) Tanae

According to the results, the mean scores of the experimental groups were significantly higher than that of the control groups in each school. Thus, it showed that teaching by guided discovery method had significant effect on science achievement.

Table 2 t-values for Posttest Scores on Remember Level Questions

School	Group	N	M	SD	MD	t	df	Sig. (2 tailed)
BEHS 1	Experimental	30	6.97	1.974	1.44	2.861	58	.006**
	Control	30	5.53	1.907				
BEHS 2	Experimental	30	6.37	1.697	.10	.247	58	.806(n.s)
	Control	30	6.47	1.426				
	Control	60	5.95	1.721				

Note: * $p < .05$, ** $p < .01$, n.s = not significant

Results showed that the mean score of the experimental group of BEHS 1 was significantly higher than that of the control group in remember level scores but not in BEHS 2.

Table 3 t-values for Posttest Scores on Understand Level Questions

School	Group	N	M	SD	MD	t	df	Sig. (2 tailed)
BEHS 1	Experimental	30	5.50	1.208	0.73	2.381	58	.021*
	Control	30	4.77	1.775				
BEHS 2	Experimental	30	6.30	1.236	1.73	5.283	58	.000***
	Control	30	4.57	1.305				

Note: *** $p < .001$, * $p < .05$

As regards with understand level scores, the mean scores of the experimental groups were significantly higher than that of the control groups in each school. It showed that there was a significant difference between the experimental groups and the control groups for scores on understand level questions.

Table 4 t-values for Posttest Scores on Apply Level Questions

School	Group	N	M	SD	MD	t	df	Sig. (2 tailed)
BEHS 1	Experimental	30	4.53	1.548	1.33	3.297	58	.002**
	Control	30	3.20	1.584				
BEHS 2	Experimental	30	4.57	1.251	.80	2.659	58	.010*
	Control	30	3.77	1.073				
	Control	60	3.48	1.372				

Note: *** $p < .001$, ** $p < .01$, * $p < .05$

According to the result, the mean scores of the experimental groups were significantly higher than that of the control groups in each school. It showed that there was a significant difference

between the scores of experimental groups and control groups in answering apply level questions.

Therefore, it can be interpreted that guided discovery method has positively contributed to the 'remember, understand and apply' levels of the teaching science.

According to the result of this study, there was a significant difference between the posttest scores of the two groups in all schools. Thus, it showed that teaching by guided discovery method had significant effects on science achievement scores of the students. Hence, guided discovery method can contribute to the improvement of students' achievement in teaching science. This result is consistent with the finding of Akani (2017) [5] who investigated the use of guided discovery method to improve achievement of the secondary level students in teaching chemistry.

From the result of the posttest scores on remember level questions, there was no significant difference between the mean scores of experimental group and control group in BEHS 2. It pointed out that formal teaching method was not very much different from guided discovery method at remember level in certain conditions. However, mean score of the experimental group was significantly higher than that of the control group in BEHS (1). This result is consistent with the finding of Bamiro (2015) [6] who investigated the effects of three strategies (guided discovery, think-pair-share, and lecture) on secondary school students' achievement in chemistry.

Besides, the comparison of mean scores on understanding level questions indicated that there were significant differences between the means of the two groups in each school. This finding affirmed that there were significant differences between the performance of the experimental groups and the control groups on understand level questions. It pointed out that guided discovery method can enhance students' understanding in teaching science than the formal teaching method. This result is in line with Okwute (2015) [7] who indicated that students from guided discovery group were able to achieve greater understanding than those who weren't and built their understanding of new concepts rather than merely absorbing information.

Moreover, the results for apply level revealed that there were significant differences between the means of the two groups in each school. This proved that there were significant differences between the results of the experimental groups and the control groups on apply level questions. It can also be concluded that guided discovery method had more effect on applying what the students had learned. This is similar to the result of Herlily, Anhar, Ahda and Sumarmin (2013) [8] who studied guided discovery method to enhance student achievement in science.

3.1 Suggestions

With respect to the research findings, the following facts were suggested.

- The teachers should plan the activities to engage all the students in the activities.
- The teachers should have a firm knowledge base about the uses of this method.
- During the activity, the teacher should monitor the students and use the leading questions in asking the students because they are very important for the students to discover the concepts.
- The teachers should use guided discovery method in teaching learning process as an effective method in their classroom teaching.

4. Recommendations and Conclusion

4.1 Recommendations

- There were some limitations in this study such as time duration, and content area. The results were not representative for the whole content area of Grade Six General Science because only one content area was studied. Therefore, further studies should be extended with a large number of contents and enough time duration for reliable results.
- Although this research was concerned with science teaching, it can be applied into other subject matter contexts and the various school levels. To be more reliable, the similar research should be conducted on other States and Regions.
- Finally, the teachers and students' attitudes towards the use of guided discovery method in teaching science or other subjects at different school levels should be explored because the teachers and students are very crucial in teaching learning process.

4.2 Conclusions

This study revealed the effect of guided discovery method in teaching science at the middle school level. The sample size was 120 Grade Six students within (2018-2019) academic year from two Basic Education High Schools, Pale Township, Sagaing Region.

The instrument used in this study was a posttest. The mean scores of the two groups were compared by using the independent samples *t*-test. In each school, the control group was taught by formal teaching method and the experimental group was taught by guided discovery method. It took two weeks for the treatment. After the treatment, both groups received a posttest.

According to the quantitative results of the research, the conclusions were as follows.

1. There was a significant difference between posttest scores of experimental group and control group.
2. There was a significant difference between posttest scores of experimental group and control group in answering remember level questions.
3. There was a significant difference between posttest scores of experimental group and control group in answering understand level questions.
4. There was a significant difference between posttest scores of the experimental group and control group in answering apply level questions.

To sum up, the results of students' performance with guided discovery method did better than those with formal teaching method. Therefore, guided discovery method should be used in teaching science in order to facilitate the teaching learning process and to improve the quality of education system.

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A Study of Pre-service and In-service Teachers' Perceptions on Co-curriculum Activities

Soe Soe Thein¹

Abstract

The purpose of this study was to investigate the pre-service and in-service teachers' perceptions on Co-curriculum activities. In terms of geographical area, this study was restricted to Mandalay Region. Participants involved in this research were (322) primary and junior teachers in Aungmyaytharsan Township and (340) pre-service teachers in Mandalay and Meikhtila Education Colleges. A quantitative research method was used. A questionnaire was constructed based on Kebede (2015) and Kisango (2016). The questionnaire included (40) items on a five point Likert scale. The independent samples *t* test was used to examine whether there were differences in pre-service and in-service teachers' perceptions on co-curriculum activities in terms of funding of co-curriculum activities, organization and nature of co-curriculum activities, participation of co-curriculum activities, promoting quality education, factors affecting on co-curriculum activities, managing and encouraging of co-curriculum activities and teachers' role in co-curriculum activities. The results showed that there were significant differences in funding, organization and nature, participation, factors affecting, managing and encouraging and teachers' role in co-curriculum activities except promoting quality education between pre-service and in-service teachers' perceptions on co-curriculum activities. To sum up, it can be concluded that pre-service teachers have more positive perception than in-service teachers on co-curriculum activities.

Keywords: co-curriculum activity, perception, pre-service teacher, in-service teacher

1. Introduction

Education aims at the wholesome development of children. To become the wholesome development of children, they need to gain value education in several ways. To gain the value education, varieties of educative experiences are to be provided in the school programs which may contribute to a long, happy and normal life of the child. In this regard, educational experiences should not only be limited to formal knowledge to help him develop intellectually and mentally but also experiences for his social and physical development (Winston, 2008, cited in Mokohen, 2015). This value education can be inculcated through curriculum and co-curriculum activities.

Co-curriculum activities are aimed at providing students with the knowledge and skills required to become holistic students with superior personal characteristics, such as high self-esteem, innovativeness, creativity, productivity, competitiveness and resilience, to face the current phase of globalization, which is becoming more challenging. Co-curriculum activities are essential part of curriculum. These activities are important for the harmonious development of the personality. Co-curriculum activities facilitate all round development of children in various domains of mind and personality such as intellectual development, emotional development, social development, moral development and aesthetic development. Creativity, enthusiasm, and energetic, positive thinking are some of the facts of personality development and the outcomes of co-curriculum activities (Mohamad, 2006, cited in Mokohen, 2015).

¹ Dr. Lecturer, Department of Methodology, Sagaing University of Education, Myanmar, soesoe.sioe@gmail.com, 09256120622

Most schools did not give due attention to co-curriculum activities and co-curriculum activities management were not properly provided by most schools. As a result, students are not benefiting from the total educational aim due to lack of the part of education, co-curriculum activities (Abdulkadir, 2011, cited in Mokohen, 2015). Many teachers and even principals do not realize that they must carry out co-curriculum activities like implementing the academic curriculum in the classroom. In fact, the academic curriculum and co-curriculum activities are related and are supportive of each other. School curriculum emphasizes on the cognitive characteristics while the co-curriculum activities focuses more on acquiring affective and psychomotor skills. Thus, the importance of co-curriculum activities is equivalent to the importance of the academic curriculum. To implement the national education policy, emphasis is not only given to academic curriculum development but the areas of co-curricular development also should be given equal emphasis (Ahmad, 2008, cited in Dhanmeher, 2014).

Students also realize the importance of developing overall competences by joining co-curriculum activities and working collaboratively with their peers on academic work in order to gain hands-on experience (Fung, 2007, cited in Mokohen, 2015). Numerous researches were conducted to investigate this relationship and found that co-curriculum activities were positively correlated with academic performance. Co-curriculum activities are a very important element in teacher training which can be applied in schools where educators and students can identify and apply the theories learned (McInnis, Craing, Hartley & Robyn, 2002). All teachers (prospective teachers and trained teachers) should be equipped with knowledge and skill related to co-curriculum activities so that they are capable in the context of national education producing capable individuals. To attain the education goals and all-round development of students, co-curriculum activities are of paramount importance and these activities must be implemented effectively. Therefore, a research needed to study the perceptions of pre-service and in-service teachers' perceptions on co-curriculum activities.

2. Method

The main purpose of this study was to investigate the pre-service and in-service teachers' perceptions on co-curriculum activities. In this study, a quantitative research method was used and the participants were in total (340) pre-service teachers attending in Mandalay and Meikhtila Education Colleges and in total (322) in-service teachers (primary and junior) working in Aungmyaytharsan Township, Mandalay Region. As an instrument, a questionnaire for pre-service and in-service teachers' perceptions on co-curricular activities based on Mokohen (2015) and Kisango (2016) was constructed. It was composed of seven dimensions: funding of co-curriculum activities; organization and nature of co-curriculum activities; participation of co-curriculum activities; promoting quality education; the factors affecting on co-curriculum activities; managing and encouraging on co-curriculum activities and teacher's role in co-curriculum activities. The questionnaire consisted of (40) items on a five-point Likert scales. Simple positive items included. Then expert view and pilot study conducted. Internal consistencies of these scales for this study were (0.876) and (0.91) respectively. After pilot test, the major survey was conducted. Then obtained data were analyzed by using Descriptive statistics and independent samples *t* test.

3. Results and Discussion

3.1 Findings of Pre-service and In-service Teachers' Perceptions on Co-curricular Activities

In order to investigate the pre-service and in-service teachers' perceptions on co-curriculum activities, independent samples *t* test was used.

Table1. *t* Value of Pre-service Teachers and In-service Teachers' Perceptions on Co-curriculum Activities

Type of Teacher	N	M	SD	<i>t</i>	<i>df</i>	<i>p</i>
Pre-service Teacher	340	152.14	13.98	-3.787	660	.000***
In-service Teacher	322	148.33	11.72			

Note. ****p* < .001

According to the Table 1, the result of *t* value showed that there was a significant difference between pre-service and in-service teachers' perceptions on co-curriculum activities at .001 level (*p* < .001). This means that pre-service and in-service teachers' perceptions differ on co-curriculum activities. Based on the result of means, Figure 1 was illustrated.

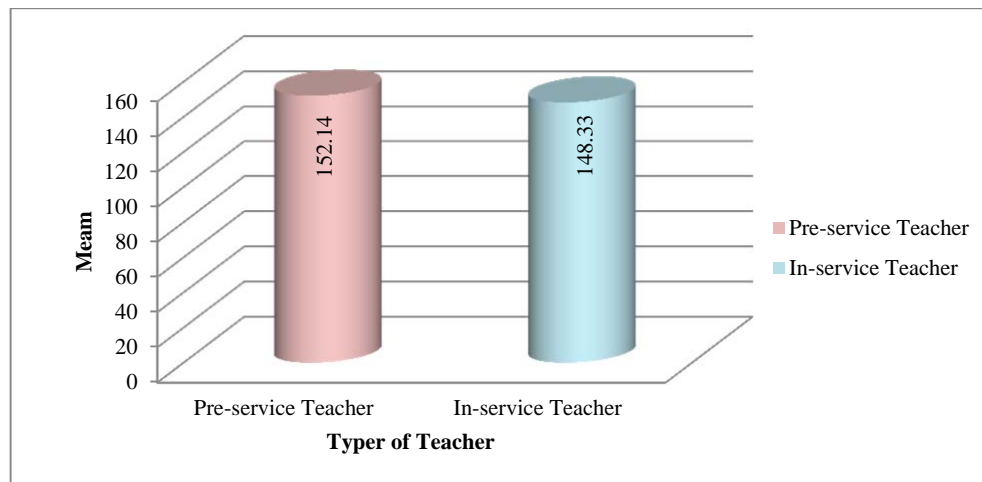


Figure 1. Means Comparison of pre-service and In-service Teachers' perceptions on Co-curriculum Activities

3.2 Findings of Pre-service and In-service Teachers' Perceptions on Co-curriculum Activities in Terms of Dimension

In the study, seven dimensions of co-curriculum activities were used to explore the differences in pre-service and in-service teachers' perceptions on co-curriculum activities. Data obtained were analyzed by independent samples *t* test.

Table 2. *t* Value of Pre-service and In-service Teachers' Perceptions on Co-curriculum Activities in terms of Dimension

Dimension	Type of Teacher	N	M	SD	<i>t</i>	<i>df</i>	<i>p</i>
Funding	Pre-service	340	19.31	2.87	-5.463	660	.000** *
	In-Service	322	18.22	2.21			
Organization and Nature	Pre-service	340	20.48	2.00	-3.331	660	.001**
	In-Service	322	19.87	1.77			
Participation	Pre-service	340	19.76	3.12	-3.361	660	.001**
	In-Service	322	19.05	2.15			
Promoting Quality Education	Pre-service	340	39.98	4.71	-1.642	660	.101
	In-Service	322	39.45	3.39			
Factors Affecting	Pre-service	340	15.74	2.87	-3.773	660	.000** *
	In-Service	322	14.81	2.84			
Managing and Encouraging	Pre-service	340	19.61	2.52	-3.958	660	.000** *
	In-Service	322	18.78	2.85			
Teachers' Role	Pre-service	340	18.20	2.38	-5.509	660	.000** *
	In-Service	322	17.21	2.21			

Note. *** $p < .001$ ** $p < .01$

In Table 2, the results of *t* value showed that there were significant differences in all dimensions except promoting quality education between pre-service and in-service teachers' perceptions on co-curriculum activities at .001 and .01 levels. In Education Colleges (ECs), co-curriculum activities are taught theoretically and practically according to the teachers' manual by educators of these subjects. In Basic Education High Schools (BEHSs), there are no co-curricular teachers particularly to teach and guide these activities. Teachers in BEHSs give more attention to academic subjects and also teachers cannot link those activities to the teaching learning process. Thus, students do not understand the benefits they can get from participating co-curriculum activities. Therefore, it was concluded that pre-service and in-service teachers' perceptions on co-curriculum activities differed except promoting quality education. In other words, pre-service teachers have better perceptions than in-service teachers on co-curriculum activities. Based on the result of means, Figure 2 was illustrated.

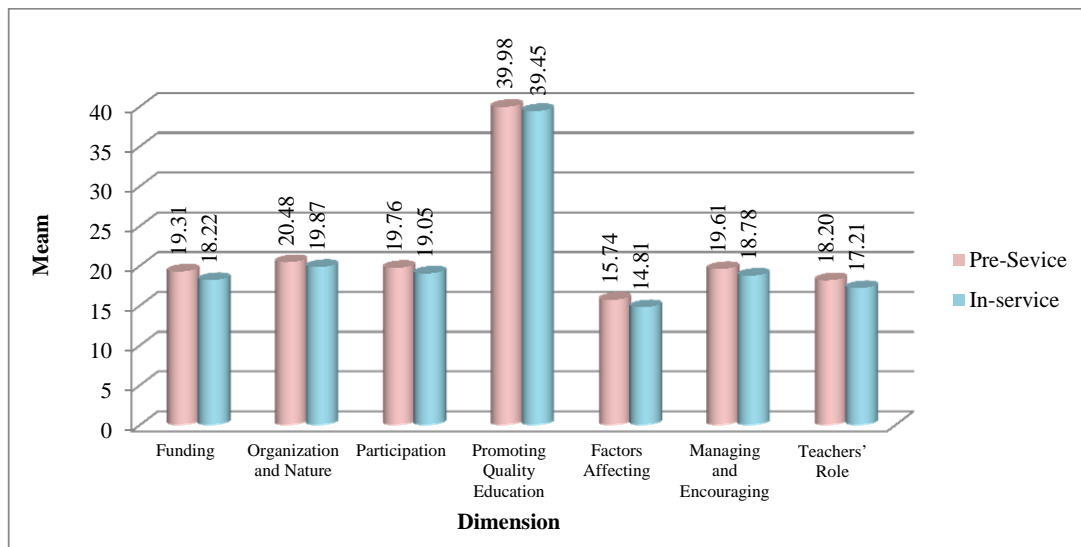


Figure2. Means Comparison of the of pre-service and In-service Teachers' perceptions on Co-curriculum Activities in terms of Dimension.

However, there was a significant difference in funding of co-curriculum activities between pre-service and in-service teachers' perceptions. This means that there was less financial support of co-curriculum activities allocated in BEHSs. School's funding influences the development of students' activities in co-curriculum activities.

Moreover, there was a significant difference in organization and nature of co-curriculum activities between pre-service and in-service teachers' perceptions. Although the activities in content of co-curriculum subjects and other co-curriculum activities are organized systematically in Education Colleges (ECs) and Basic Education High Schools (BEHSs), it was assumed that there is a weak in the implementation of co-curriculum activities at Basic Education High Schools (BEHSs).

Besides, there was a significant difference in the participation of co-curriculum activities between pre-service and in-service teachers' perceptions. Almost all students should participate actively in at least one club (Education Bureau, 1993). In ECs, all pre-service teachers have to participate in all the co-curriculum activities supervised by respective departments of the co-curriculum subjects actively. In BEHSs, most of the teachers have less competence in the activities of co-curriculum subjects. So, they cannot participate in performing co-curriculum activities. Besides, there is a lack of facilities like sport fields, working classes in the schools for co-curriculum activities.

But there was no significant difference in promoting quality education between pre-service and in-service teachers' perceptions. Co-curriculum activities promote equality education by:

- Supporting to increase academic achievement of students.
- Engaging with lessons like leadership, teamwork, organization, analytical, thinking, problem solving, time management, learning to juggle many tasks at once and it allows them to discover their talents.
- Making students' forecast their destiny in their later occupation (Mokohen, 2015).

According to the response rates, all teachers (pre service and teachers and in service teachers) know well the importance of co-curriculum activities in quality education.

Moreover, there was a significant difference in the factors affecting on co-curriculum activities between pre-service and in-service teachers' perceptions. It can be concluded that in-service teachers have low interest towards co-curriculum activities and due to high teaching load and other duties of the teachers.

Besides, there was significant difference in managing and encouraging of co-curriculum activities between pre-service and in-service teachers' perceptions. The effectiveness of co-curriculum activities depends on effective management system. In BEHSs, it was assumed that managing and encouraging of co-curriculum activities are weak.

According to the result of the findings, there was a significant difference in teachers' role on co-curriculum activities between pre-service and in-service teachers' perceptions. The role of the mentor teachers also influenced the participation and involvement of the students in the activities designed and implemented. In-service teachers have less awareness in building the students' self-confidence and interacting with students not only in the classroom but after the school and cultivating students' ability to meet school standards. Besides in BEHSs, It is necessary to have teachers particularly specialized in co-curriculum subjects. Teachers need to be skillful in the activities of co-curriculum subjects so that they can carry out different co-curriculum activities systematically throughout the year. Thus, pre-service and in-service teachers' perceptions differ and pre-service teachers have more positive perception than in-service teachers in BEHSs on co-curriculum activities.

4. Conclusion

Based on the results of data analysis, the study can be concluded that there were significant differences in funding of co-curriculum activities, organization and nature of co-curriculum activities, participation of co-curriculum activities, factors affecting on co-curriculum activities, managing and encouraging of co-curriculum activities, teachers' roles in co-curriculum activities between pre-service and in-service teachers' perceptions. The overall goal of education is not only academic achievement but also the development of students mentally, physically, psychologically, emotionally and socially. It is sure that there is no quality education without having co-curriculum activities. Thus, in ECs, co-curriculum activities are being prepared to implement them in BEHSs. Although co-curriculum activities are organized systematically, it will not be implementation of co-curriculum activities if teachers do not perform these activities in practice. In BEHSs, therefore, every students should be supplied the opportunities to participate in all the co-curriculum activities and teachers need to realized the benefits their students can get from the participation of these activities. And, teachers can be planner, leader, organizer, manager, advisor, motivator, communicator or coordinator in co-curriculum activities. Besides, teachers have to be experts in their roles. Therefore, this study will be fruitful to enhance the perception of pre-service and in-service teachers on co-curriculum activities. It is also recommended for further research in order to fill up the research gaps on this study.

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Relationship Between Achievement Goal Orientation and Approaches to Learning: A Study on Student Teachers in Sagaing District

Yar Zar Chit¹, Zaw Zaw Min²

Abstract

This study investigated the relationship between achievement goal orientation and approaches to learning. 592 student teachers from education institutions in Sagaing District were selected as participants by using simple random sampling technique. Descriptive research design and survey method were used. As the instruments, Achievement Goal Orientation Questionnaire by Midgley et al. (1998) and Approaches to Learning Inventory by Entwistle, Tait, & McCune (2000) were applied. According to the results, it was found that there were no significant differences in not only overall but also subscales of achievement goal orientation by gender. However, first year students were significantly higher than second year students in achievement goal orientation. The result also indicated that male students were significantly higher than female in surface approach. Moreover, first year students were significantly higher than second year students in approaches to learning. Besides, there was a moderate correlation between achievement goal orientation and approaches to learning. It was also found that mastery goal, performance approach goal and performance avoidance goal are the best predictors for approaches to learning. Finally, this study hopes to be able to give ideas how to promote student teachers' lifelong learning by proper approaches to learning and achievement goal orientations.

Keywords: achievement goal orientation, learning, approaches to learning

1. Introduction

The efforts to develop new generation will not be achieved without good education. The objective of education in general and at tertiary level in particular is to enable students become agents of national development. Therefore, the prediction and explanation of college students' academic success is an important area of research in education. This is because students who underperform, fail or drop out waste their own time, resources, and often become demoralized.

Although academic achievement is often associated with factors such as teachers, parents and school environments, aspects of intellectual and nonintellectual conditions of the students may also affect academic achievement [1]. Among these, achievement goal orientations and approaches to learning of students' may facilitate or hinder learner's academic achievement.

Researchers agree that goal orientation shapes how students approach and react to achievement situations [2]. As to achievement goal theory, one among social cognitive motivation theories, students in learning environments adopt different achievement goal orientations. Goals provide a framework within which individuals interpret and react to events [3]. This theory posits that students differ from each other in the purpose of their achievement behavior and that these differences are associated with distinctive emotional, motivational, cognitive, and behavioral outcomes (e.g., Covington, 2000 [4]; Elliot, 2005 [5]; Pint rich, 2000 [6]).

¹ Dr. Assistant Lecturer, Department of Educational Psychology, Sagaing University of Education, Myanmar, +95797117913, yarzar02@gmail.com

² Senior Teacher, BEHS-2 (Sagaing)

Another area of higher education which requires attention is the approaches to learning of students. How a learner approaches a learning task is dependent upon both the personality and the setting in which the learning takes place [7]. Approaches to learning refer to “the learners’ different ways of relating to the learning task- how and why a learner learns”. The ‘how’ are the strategies devised by the learner to solve the problems defined by their motives (the why of learning).

Teacher education institutions in Myanmar are expected to train teachers who are capable of achieving the intended educational goals of the region in particular and the country in general. To achieve this, it is necessary to investigate different variables which may affect the students’ success in their college education. Thus, this study mainly focuses on investigating the relationship between students’ achievement goal orientation and approaches to learning among student teachers from education institutions in Sagaing district.

Aim of the Study

The main aim of this study is to investigate the relationship between achievement goal orientation and approaches to learning among student teachers from education institutions in Sagaing District. The specific objectives are as follows.

1. To find out the achievement goal orientations and approaches to learning of student teachers
2. To explore the relationship between achievement goal orientation and approaches to learning of student teachers
3. To examine achievement goal orientation factors as the best predictors for each approach to learning

2. Methods

Sampling

Firstly, in order to complete this study, student teachers from Education Institutions in Sagaing District who were studying in the academic year of 2017-2018 were sorted out as the main population. Total numbers of the sample were 592 student teachers from Sagaing Education College (190), University for the Development of National Races (200) and Sagaing University of Education (202) by using simple random sampling technique.

Research Method

The quantitative approach of survey method and descriptive research design were used in this study.

Instruments

The researcher used two questionnaires in order to obtain information from the sample of the study concerning students’ achievement goal orientations and approaches to learning. Achievement goals were measured using Achievement Goal Questionnaire that assesses a three dimensional conceptualization of achievement goals, which includes mastery, performance approach, and performance-avoidance. This scale was developed over a period of eight years by a group of researchers at the University of Michigan (Midgley et al., 1998) [8]. Totally, it has 18

items with five scale points that ranges from 5 (agree) to 1 (disagree). The reliability of the whole scale was $\alpha = 0.802$ and that of each subscale was found as follows: mastery ($\alpha = .716$); performance approach ($\alpha = .746$); and performance avoidance ($\alpha = .715$).

The Approaches to Learning Inventory was adapted from Entwistle, Tait, & McCune (2000) [9]. This instrument has 52-items which are intended to measure the three approaches to learning: deep, strategic, and surface learning approaches. It has a 5-point Likert-type scale, ranging from 1 (disagree) to 5 (agree). Based on the pilot study, 45 items, fifteen for each sub scale were selected. The reliability of the whole scale was $\alpha = 0.70$ and that of each sub scales was found as follows: Deep ($\alpha = .715$), strategic ($\alpha = .728$) and surface ($\alpha = .720$).

3. Results and Discussion

3.1 Descriptive Statistics for Students' Achievement Goal Orientation

According to Table 1, among achievement goal orientations, mean value of “mastery goal orientation” is highest ($\bar{X}=23.86$) and that of “performance avoidance goal orientation” is lowest ($\bar{X}=19.41$). Therefore, it can be concluded that student teachers commonly try hard in their lessons to be mastered. However, they seldom study their lessons to avoid failure. Moreover, since the sample mean of the overall achievement goal orientation is 65.54, it is greater than theoretical mean (54). Therefore, it can be said that student teachers always set any goal and they intentionally try hard in their learning.

Table 1 Descriptive Statistics for Students' Achievement Goal Orientation

	Mean	Std. Deviation
Mastery Goal Orientation	23.86	3.183
Performance Approach Goal Orientation	22.27	4.292
Performance Avoidance Goal Orientation	19.41	3.993
Overall Achievement Goal Orientation	65.54	8.963

3.2 Descriptive Statistics for Students' Approaches to Learning

In order to investigate students' approaches to learning, statistical procedure was carried out by using the received data from Students' Approaches to Learning Inventory. The result was shown in Table 2. Mean value of “strategic approach” is highest ($\bar{X}=59.73$) and that of “surface approach” is lowest ($\bar{X}=48.15$). Therefore, it can be concluded that student teachers commonly learn their lessons by systematic ways. They generally make good use of their time during the day and usually plan out their week's works in advance. However, they tend to read very little beyond what is actually required to pass. In other words, their learning is just surface learning. Moreover, since the sample mean of the overall approaches to learning is 166.25, it is greater than theoretical mean (135). Therefore, it can be said that student teachers always use any approach to learn their lessons.

Table 2 Descriptive Statistics for Students' Approaches to Learning

	N	Mean	Std. Deviation
Deep Approach	592	58.38	5.612
Strategic Approach	592	59.73	6.641
Surface Approach	592	48.15	6.735
Overall Approaches to Learning	592	166.25	14.124

The Relationship between Achievement Goal Orientation and Approaches to Learning

To investigate the relationship between achievement goal orientation and approaches to learning, the Pearson Product Moment Correlation coefficient was initially calculated. The intercorrelation was reported in Table 3.

Table 3 Intercorrelation Results Between Achievement Goal Orientation and Approaches to Learning

	Deep Approach	Strategic Approach	Surface Approach	Overall Approaches to Learning
Mastery Goal	.635**	.650**	.053	.583**
Performance Approach Goal	.341**	.407**	.246**	.444**
Performance Avoidance Goal	.256**	.250**	.419**	.419**
Overall Achievement Goal Orientation	.503**	.537**	.323**	.607**

** . Correlation is significant at the 0.01 level (2-tailed)

Table 3 indicated that there was a significant moderate correlation between achievement goal orientation and their approaches to learning ($r = .607, p < 0.01$). Therefore, it can be said that students who have high achievement goal orientation will obtain better their approaches to learning. Moreover, all subscales of achievement goal orientation were significantly positive intercorrelated with the subscales of approaches to learning at 0.01 level. However, there was no significant correlation between mastery goal orientation and surface approach.

3.4 Regression Analysis Results of Achievement Goal Orientation on Approaches to Learning

In order to investigate how well students' achievement goal orientation (AGO) predicted on their approaches to learning (AL), a linear regression was computed. The results were statistically significant $F(1, 590) = 343.447$. The adjusted R squared value was .367. The result indicated that 36.7% of the students' approaches to learning can be predicted from achievement goal orientation. Therefore, it can be concluded the higher achievement goal orientation, the better approaches to learning they will get.

Table 4. Results of Linear Regression Analysis of Achievement Goal Orientation as Predictor of Approaches to Learning

Model	Unstandardized Coefficients		Standardized Coefficients	<i>t</i>	Sig.
	B	Std. Error	Beta		
(Constant)	103.61	3.412		30.370	.000
Achievement Goal Orientation	.956	.052	.607	18.532	.000

Dependent Variable: Approaches to Learning

According to Table 4, the resultant model of linear regression expressing the relationship between achievement goal orientation and approaches to learning was presented in the following equation.

$$AL = 103.61 + 0.956AGO$$

AL = Approaches to Learning

AGO = Achievement Goal Orientation

Table 5. Standardized Regression Coefficients (β) of Achievement Goal Orientation Factors on Each Approach to Learning

Predictors	Approaches to Learning		
	Deep	Strategic	Surface
Mastery Goal Orientation	0.590**	0.580**	-0.079
Performance Approach Goal Orientation	0.071	0.170**	0.016
Performance Avoidance Goal Orientation	0.063	0.007	0.407**
Adjusted R^2	0.413	0.446	0.177

Note: ** $p < 0.001$.

Then and there, in order to find out the best orientation predictors for each approach to learning, multiple linear regression analysis was conducted. The results and standardized beta coefficients are described in Table 5. The R^2 values suggested that 41.3% of the variability in deep approach, 44.6% of the variability in strategic approach and 17.7% of the variability in surface approach can be explained by the three achievement goal orientations.

Specifically, the results of the regression advocated that among the three achievement goal orientations, only mastery goal orientation can significantly predict student teachers' deep learning. However, it was found that mastery and performance approach goal orientations are the best predictors for strategic learning and only performance avoidance goal orientation is the best predictor for surface learning.

4. Conclusion

First of all, according to the result of the descriptive statistics, it can be concluded that students' overall achievement goal orientation scores were good enough and satisfactory in this study. Moreover, it can also be said that students' overall approaches to learning scores were good enough in this study.

In the correlation matrix, there was significant moderate correlation between achievement goal orientation and their approaches to learning ($r = .607$, $p < 0.01$). Moreover, mastery goal, performance approach goal and performance avoidance goal are best predictors for approaches to learning. Therefore, it can be said that students who have high achievement goal orientation will use better approaches to learning. It is consistent with the results of Shih (2005) [10] and Geta (2012) [11]. They found that there was positive correlation between achievement goal orientation and approaches to learning.

According to the results of this study, it is obvious that the students' achievement goal orientation largely depends on their approaches to learning. For this reason, the following suggestions and recommendations would like to be conveyed to students and teachers for the improvement of learning.

- Early identification of students' goal orientation type is important to develop the desired goal
- Student teachers are needed to be equipped with study skills to organize their study more effectively and to understand their learning materials at a deeper level.
- Teacher educators should help their students desire to be mastered and to perform in learning so that their learning becomes deep and strategic.
- Teachers should improve the students learning by employing active learning methods, using assessment techniques that place more emphasis on understanding of the subject and avoiding inappropriate workload on learners.

To sum up, in order to upgrade education system, the teachers' qualities are needed to be improved. Therefore, they should be well trained since their student teacher life. Only if they have well constructive motivation to achieve, their learning will be more effective and successful. Therefore, this study highlighted student teachers' approaches to learning in keeping with their achievement goal orientations. Therefore, it is hoped that these valuable results can be any help and support for Myanmar teacher education sector.

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The Sociolinguistics Study of Myanmar Syntax Error from Current Myanmar Journals

Mon Mon Aung¹

Abstract

This paper deals with the sociolinguistic study of common Myanmar syntax errors in current Myanmar journals. The aim of this paper is to find out how Myanmar syntax errors relate to Myanmar syntax standards. The standards of Myanmar language were considered in 1947, 1974 and 2008. A **syntax error** is an error in the grammar of a sentence that goes against this grammar. This paper studies Myanmar language journals published between 2016 and 2018 in the Union of Myanmar. Sociolinguistics is a branch of linguistics which studies all aspects of the relationship between language and society. The research questions are (1) how do we solve the Myanmar syntax error? And (2) Which effect can influence of Myanmar syntax error in Myanmar social media? This paper is focused on sociolinguistics as a descriptive method.

Key Words: Myanmar syntax, Myanmar syntax error, Myanmar Journals, Language and Society.

1. Introduction

This paper will present the sociolinguistics of Myanmar syntax errors in current Myanmar journals. It has two parts, firstly sociolinguistics and the role of sentence in Myanmar language and then secondly, the analysis of syntax error of current Myanmar Journals. In this paper, the errors are taken from Journals published 2016 to 2018 in the Union of Myanmar.

Aim

The aim of this paper is to find out how Myanmar syntax errors relate to Myanmar syntax standards.

Research Problem and Research Design

Myanmar language is the national language of Myanmar, spoken and written also by Myanmar many ethnic minorities. 1947 Constitution Article 216 described Myanmar language must be an official language. In Article 152(B) of a law passed in 1974 Constitution, it is described Myanmar language should be considered a public language. In Article 450 of a law passed in 2008 Constitution, it is described how the Myanmar language must be treated as the official national language of Myanmar. So, Myanmar language is a standard language. Although it is standard language, the syntax error can be found in some current Myanmar Journals.

The research questions are

- (1) How do we solve the Myanmar syntax error?
- (2) Which effect can influence of Myanmar syntax error in Myanmar social media.

This paper is focused by descriptive method of Sociolinguistics.

¹ Dr. Professor, Department of Myanmar, University of Dawei, Union of Myanmar

Hypothesis

If the positions of phrase will correct place, Myanmar sentence will be corrected and every Myanmar can easily read the correct meaning in social life.

2. Sociolinguistics and The role of Sentence in Myanmar language

This paper will be solved by Descriptive Research Method from the aspect of Sociolinguistics.

Sociolinguistics is a branch of linguistics which studies all aspects of the relationship between language and society.¹

In Linguistics terms and Concepts,

Sociolinguistics, or the study of Language in relation to society, is a relative newcomer to the linguistic fold. It was not until the early 1960s, largely as a result of William Labov's work in America, and Peter Trudgill's in Britain, that it developed into a recognized branch of Linguistics.²

According to this point, Sociolinguistics is the study of the relationship between Language and its society.

In sociolinguistics, it has language functions.

It has been pointed out that apart from conveying information from one person to another, language may be used to express emotions from one person to another, language may be used to express emotions and to direct the activities of other people.³

Language has its functions in sociolinguistics. C- Criper and H.G. Widdowson (1975) distinguished seven factors of language functions. They are

- (1) Referential function
- (2) Expressive or emotive function
- (3) Directive function
- (4) Phatic or contact function
- (5) Contextual function
- (6) Metalinguistic function
- (7) Poetic function.⁴

This paper will be analyzed the Myanmar syntax error by seven language functions of sociolinguistics.

The syntax is the grammatical arrangement of words in a sentence. The **syntax error** is an error in the syntax of a sequence of sentence.

¹ Crystal, 2003, 422.

² Finch, 2000, 193.

³ Criper & Widdowson, 1975, 195.

⁴ Criper & Widdowson, 1975, 195-197.

In that, sentence is defined as Myanmar Grammar Volume 3,

Sentence is a systematically arrangement of phrases to become a meaningful sentence.¹

In Oxford Dictionary

A sentence is a set of words that is complete in itself, typically containing a subject and predicate, conveying a statement, question, exclamation, or command, and consisting of a main clause and sometimes one or more subordinate clauses.²

According to the above points, Sentence is a set of words that is systematically arrangement to become a meaningful sentence. So, position of phrase is the impact of sentence.

In this case, the positions of phrase is impact of Myanmar grammar. So, the association of Myanmar academy of Arts and science had described the meaning of the position of phrases.

(1) Position of Subject

The position of subject is a start of sentence or in front of the verb.³

(2) Position of Adjective

The adjective with 'thaw' (aom) particle is in front of noun modifier.⁴

(3) Position of Adverb

The position of adverb is in front of verb.⁵

The position of phrase is the impact of Myanmar sentence. If the position of phrase is right, the sentence will be right.

2.1 Literature Review

The research concerning with Myanmar syntax can be found in the Ph.D. Thesis of Maung Ko Lay (2003) at University of Yangon, 'Myanmar Grammar'. In that, he described word, phrase, sub- sentence and Sentence classifying aspects of linguistics.

Besides, University of Yangon Ph.D. Thesis of Ma Choon Ma Ma (2006), 'Sentence's meaning and context in Myanmar language' showed Sentence's meaning and context in Myanmar language aspects of pragmatics.

Similarly, University of Yangon Ph.D. Thesis of Ma Moe Moe (2007), 'The study of Sentence's meaning' that is described the sentence's meaning aspects of semantics and sociolinguistics.

The above researches can be found the study of Myanmar syntax aspects of linguistics, semantics and sociolinguistics. But they did not analyze syntax error aspects of sociolinguistics. So this paper will be fulfilled a part of this blank.

¹ jrempmtz 1988? 62/

² Wehmeier, 2000, 1165.

³ jrempmtz 1992? 90/

⁴ jrempmtz 1992? 93/

⁵ jrempmtz 1992? 95/

3. Analysis of Myanmar Syntax error in current Myanmar Journals.

Some of the Myanmar current journal can be found syntax error. If the syntax is error, the meaning will be wrong.

(1) In the news of 7 Days news Journal¹

ရှေးဟောင်းမြို့တော် ပုဂံဒေသကို ယူနက်စကို၏ကမ္ဘာ့အမွေအနှစ်စာရင်း ဝင်နိုင်၊ မဝင်နိုင် အစီရင်ခံစာရေးရန် လာရောက်စစ်ဆေးသော ပညာရှင်ကစာမေးပွဲ အောင်ဟုပြောကြောင်း သာသနာရေးနှင့် ယဉ်ကျေးမှုဝန်ကြီးဌာန ပြည်ထောင်စုဝန်ကြီး သူရဦးအောင်ကိုက စက်တင်ဘာ ၂၇ ရက်တွင် ပြောကြားသည်။

On 27th September, Thura U Aung Ko, the minister of Ministry of Religious Affairs and Culture said that 'the scholar who is writing the report and examine of Ancient Bagan city can involve or not in UNESCO's heritage list told pass the examination'.

Syntax error -အစီရင်ခံစာရေးရန် လာရောက်စစ်ဆေးသောပညာရှင်က စာမေးပွဲအောင်
Grammar classifier - Subject and Verb

Language function- Referential function, Emotive function, Contextual function,

Metalinguistic function

Correct syntax- ယူနက်စကို၏ကမ္ဘာ့အမွေအနှစ်စာရင်း ဝင်နိုင်၊ မဝင်နိုင် အစီရင်ခံစာရေးရန် လာရောက် စစ်ဆေးသော ပညာရှင်က ရှေးဟောင်းမြို့တော် ပုဂံဒေသကို စာမေးပွဲ အောင်သည်ဟု ပြောကြောင်းသာသနာရေးနှင့် ယဉ်ကျေးမှုဝန်ကြီးဌာန ပြည်ထောင်စုဝန်ကြီး သူရ ဦးအောင်ကိုက စက်တင်ဘာ ၂၇ ရက်တွင် ပြောကြားသည်။

On 27th September, Thura U Aung Ko, the minister of Ministry of Religious Affairs and Culture said that 'the scholar who is writing the report and examine of Bagan can involve or not in UNESCO's heritage list told Ancient Bagan city is passed the examination'.

Analysis

In the above case, Syntax error is 'အစီရင်ခံစာရေးရန် လာရောက်စစ်ဆေးသော ပညာရှင်က စာမေးပွဲအောင်' (the scholar who is writing the report and examine told pass the examination). So, the reader can think this meaning is the scholar pass the examination. The correct sentence is 'On 27th September, Thura U Aung Ko, the minister of Ministry of Religious Affairs and Culture said that 'the scholar who is writing the report and examine of Bagan can involve or not in UNESCO's heritage list told Ancient Bagan city is passed the examination'. The omit object is ရှေးဟောင်းမြို့တော် ပုဂံဒေသကို (Ancient Bagan city).

အစီရင်ခံစာရေးရန်လာရောက်စစ်ဆေးသော ပညာရှင် (the scholar who is writing the report and examine) and ယဉ်ကျေးမှုဝန်ကြီးဌာန ပြည်ထောင်စုဝန်ကြီး သူရဦးအောင်ကို (Thura U Aung Ko, the minister of Ministry of Religious Affairs and Culture) performed contextual function, it described Ancient Bagan city is passed the examination, performed referential function, emotive function and metalinguistic function.

¹ 7 Day News Journal, (3.10.2018),11.

(2) In the news heading of 7 Days news Journal¹

ရဲမှူးချုပ်ငါးဦး နေရာအပြောင်းအရွှေ့ပြုလုပ်

The five chief police officers do transfer.

Syntax error - ရဲမှူးချုပ်ငါးဦး

Grammar classifier - Subject

Language function- Referential function, Emotive function, Directive function, Contextual function

Correct syntax- ရဲမှူးချုပ်ငါးဦးကို နေရာအပြောင်းအရွှေ့ပြုလုပ်

The five chief police officers are done transfer.

Analysis

In the above sentence, the error is the subject ရဲမှူးချုပ်ငါးဦး (The five chief police officers). So, it must be object ရဲမှူးချုပ်ငါးဦးကို နေရာအပြောင်းအရွှေ့ပြုလုပ် (The five chief police officers are done transfer).

In that, ရဲမှူးချုပ်ငါးဦး (The five chief police officers) performed contextual function and referential function. These officers are done transfer so it performed emotive function, directive function.

(3) In the news heading of Newsweek journal²

ဆူးလေရှန်ဂရီလာ အဆောက်အအုံသစ်မှ အများသုံးသန့်စင်ခန်းခွဲထားရှိမှုအပေါ်
ပန်းပဲတန်းပြည်သူများ ကန့်ကွက်

Pabedan people demur the public toilet from the new building of Sule Shangarilar.

Syntax error - ဆူးလေရှန်ဂရီလာအဆောက်အအုံသစ်မှ

from the new building of Sule Shangarilar

Grammar classifier - Noun phrase

Language function- Referential function, Emotive function, Directive function, Contextual function

Correct syntax- ဆူးလေရှန်ဂရီလာအဆောက်အအုံသစ်မှာ အများသုံးသန့်စင်ခန်းထားရှိမှုအပေါ်
ပန်းပဲတန်းပြည်သူများ ကန့်ကွက်

Pabedan people demur the public toilet at the new building of Sule Shangarilar.

Analysis

In the above sentence, မှ is the departure showed particle and the place showed particles are တွင်၊ ဌာ၊ မှာ ၊ ဝယ် in Myanmar. So, the correct sentence is (ဆူးလေရှန်ဂရီလာ အဆောက်အအုံ

¹ 7 Days News Journal, (6.10.2017), 1.

² Newsweek Journal, (20.10.2016), extra sheet.

သစ်မှာ အများသုံးသန့်စင်ခန်းထားရှိမှုအပေါ် ပန်းပဲတန်းပြည်သူများ ကန့်ကွက်) Pabedan people demur the public toilet at the new building of Sule Shangarilar.

In that, it is intended 'the public toilet at the new building of Sule Shangarilar', so it performed referential function. ပန်းပဲတန်းပြည်သူများ (Pabedan people) performed contextual function. 'Pabedan people demur the public toilet at the new building of Sule Shangarilar' that performed emotive function and directive function.

(5) In the news heading of News watch Journal,¹

တိုင်ကြားခံထားရသော ဘုတလင်မြို့နယ်ဆေးရုံအုပ်ကြီးက စစ်ဆေးသည့်အခါ အမှန်
တရား ပေါ်ပေါက်လာလိမ့်မည်ဟုပြော

He said, when the complained Butalin township Medical superintendent have examined, the truth will be formed.

Syntax error - ဘုတလင်မြို့နယ်ဆေးရုံအုပ်ကြီးက

Butalin township Medical superintendent

Grammar classifier - Subject

Language function- Referential function, Emotive function, Contextual function

Correct syntax- တိုင်ကြားခံထားရသော ဘုတလင်မြို့နယ်ဆေးရုံအုပ်ကြီးကို စစ်ဆေးသည့်အခါ
အမှန်တရား ပေါ်ပေါက်လာလိမ့်မည်ဟုပြော။

He said, when the complained Butalin township Medical superintendent have been examined, the truth will be formed.

Analysis

In the above sentence, the error is ဘုတလင်မြို့နယ်ဆေးရုံအုပ်ကြီးက 'Butalin township Medical superintendent'. The correct sentence is တိုင်ကြားခံထားရသော ဘုတလင်မြို့နယ် ဆေးရုံ အုပ်ကြီးကို စစ်ဆေးသည့်အခါ အမှန်တရား ပေါ်ပေါက်လာလိမ့်မည် ဟုပြော။ 'He said, when the complained Butalin township Medical superintendent have been examined, the truth will be formed.'

In that, the sentence intended 'Butalin township Medical superintendent', so it performed referential function and contextual function. The sentence, 'when the complained Butalin township Medical superintendent have been examined, the truth will be formed' intended emotive function.

4. Conclusion and Finding

This paper was presented the sociolinguistics study of Myanmar syntax error from current Myanmar Journals. It has two parts, sociolinguistics and the role of sentence in Myanmar language and then the analysis of syntax error of current Myanmar Journals.

¹ News watch Journal, (2.6. 2018), extra sheet.

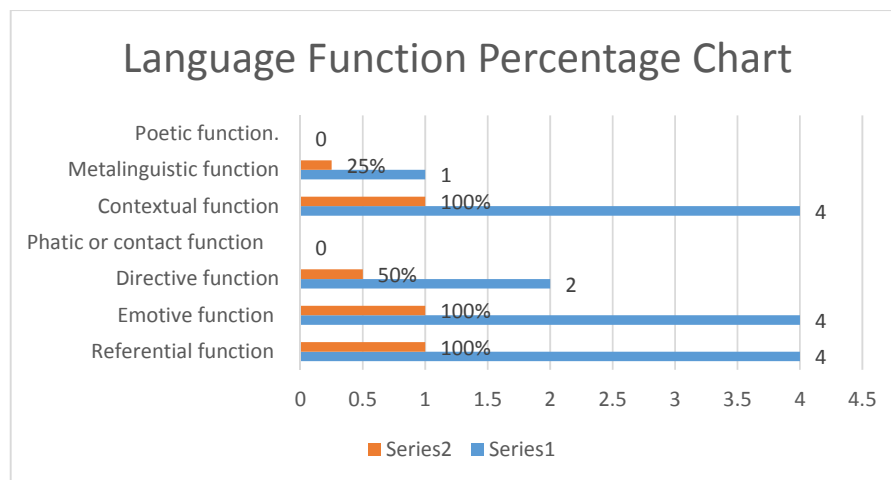
In that, it is analyzed the syntax errors from 7 Day News Journal, Newsweek journal and News watch Journal.

The syntax errors can be found, they are

- (1) The omitting object (e.g, ပုဂံဒေသကို)
- (2) The omitting the object particle (e.g, ရဲမှူးချုပ်ငါးဦးကို)
- (၃) The wrong usage of the departure showed particle (မှ) and the place showed particle (မှာ)
- (၄) The wrong usage of subject and object (ဘုတလင်မြို့နယ်ဆေးရုံအုပ်ကြီးက၊ ဘုတလင်မြို့နယ်ဆေးရုံအုပ်ကြီးကို)

These sentences are performed language functions.

No.	Sentences	Language function	Times	Percentage
1.	Four sentences	Referential function	4	100 %
		Emotive function	4	100%
		Directive function	2	50%
		Phatic or contact function	-	
		Contextual function	4	100%
		Metalinguistic function	1	25%
		Poetic function.	-	



According to the above chart, the analysis of four sentences, there are not poetic function and phatic or contact function because of the news and heading. There are 25% of Metalinguistic function, 50% of directive function, 100% of emotive function, contextual function and referential function.

In the syntax errors, one is the news and three are the news' heading. Why they are wrong, because of the summary writing style. The errors are the position of phrase wrong and omitting the phrase.

After reading the syntax error consists of the news in Journals, the readers took a photo of this error and then posted to the face book. People who are reading that error in social media, they will laugh and think Myanmar people cannot able to write for understanding Myanmar audients. So, they can notice the phrase errors and they can repair the error. If the positions of phrase will correct place, Myanmar sentence will be corrected and every Myanmar can easily read the correct meaning in social life.

Therefore, the syntax becomes to right in Myanmar Journals, Myanmar language and literature will be developed.

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- ခင်မင်၊မောင်(ခန့်ဖြူ)။(၂၀၁၈)။ *ဘာသာစာပေသုတေသနစာတမ်းများ*။ ရန်ကုန်၊ ရာပြည့်စာအုပ်တိုက်။
- ချုံမမ။(၂၀၀၆)။ *မြန်မာဘာသာစကားရှိ ဝါကျများ၏ အနက်အဓိပ္ပာယ်နှင့် အဆက်အစပ်သဘော*။ ပါရဂူဘွဲ့.အတွက်တင်သွင်းသောကျမ်း၊ ရန်ကုန်တက္ကသိုလ်။
- ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်။(၁၉၄၇)။*ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်ဖွဲ့စည်းအုပ်ချုပ်ပုံအခြေခံဥပဒေ*။
- ပြည်ထောင်စုဆိုရှယ်လစ်သမ္မတမြန်မာနိုင်ငံတော်။(၁၉၇၄)။*ပြည်ထောင်စုဆိုရှယ်လစ်သမ္မတမြန်မာနိုင်ငံတော်ဖွဲ့စည်းပုံအခြေခံဥပဒေ*။
- ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်။(၂၀၀၈)။*ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်ဖွဲ့စည်းပုံအခြေခံဥပဒေ*။
- မိုးမိုး။(၂၀၀၇)။*မြန်မာဝါကျများ၏အနက်အဓိပ္ပာယ်လေ့လာခြင်း*။ပါရဂူဘွဲ့.အတွက်တင်သွင်းသောကျမ်း၊ရန်ကုန်တက္ကသိုလ်။
- မြန်မာစာအဖွဲ့။(၁၉၈၈)။ *မြန်မာသဒ္ဒါ အတွဲ(၃)*။ ရန်ကုန်၊ မြန်မာစာအဖွဲ့ဦးစီးဌာန။
- မြန်မာစာအဖွဲ့။(၁၉၉၂)။ *မြန်မာသဒ္ဒါ အတွဲ(၂)*။ ရန်ကုန်၊ မြန်မာစာအဖွဲ့ဦးစီးဌာန။
- အောင်မြင်ဦး၊ဒေါက်တာ။(၂၀၀၃)။*လူမှုဘာသာဗေဒမိတ်ဆက်*။ရန်ကုန်၊ပညာတန်ဆောင်ပုံနှိပ်တိုက်။
- အောင်မြင်ဦး၊ဒေါက်တာ။(၂၀၀၅)။*လူမှုဘာသာဗေဒသဘောတရား*။ရန်ကုန်၊ပညာတန်ဆောင်ပုံနှိပ်တိုက်။
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Myanmar Language Practice: Brief Approach to Myanmar Linguistic Culture

Aung Myint Oo¹

Abstract

This paper gives an analysis of the practice of language being used and spoken within Myanmar society. Area studies conducted and answered which language use or language variety is suitable and should be used within Myanmar Society. This studies based on the scope of sociolinguistics. During the survey, the method of literature survey, excursion and interviews are mostly emphasized. Throughout the studies of language spoken within Myanmar society, it mainly focused on 5 main areas. 1. Practice of language using in introducing each other, greeting and leave taking. 2. Practice of address term 3. Practice of linguistic politeness. 4. Linguistic behaviour concerns with gender. 5. Practice of paralinguistic behaviour. In this paper, I propose an assemble approach of Myanmar society and language among the society. It helps to understand the way of using Myanmar language properly and according to situations. Moreover, Myanmar Language Practice can be compared any other language practice of other countries.

Keywords: language practice, greeting and leave-taking, address term, linguistic politeness, gender, using sociolect

1. Introduction

This paper gives an analysis of the practice of language being used and spoken within Myanmar society. What is language practice? Language practice is the working with language and linguistic behaviour of speakers in society. It is one of the study area of Sociolinguistics. Sociolinguistics reveals the correlation between a society and its language. It is derived from linguistics. Learners of a language, if they have studied sociolinguistics, they will understand the language and its correlation with the society and it will be easier to study the language and also to apply, what has been learnt in a more efficient or useful manner. This paper is mentioned Myanmar language variation and use in Myanmar society.

2. Background

Language is a social phenomenon. Language and society are always combined. Those who are studying a language must also do the same to the corresponding society. In a society, depending on social situations, the use of language differs from time to time. Sociolinguistics is a study of the relation between the language and the society. Those who studying the Myanmar language and not only must understand the Myanmar language but also Myanmar society.

Myanmar language is in Tibeto-Burman language family, sub-family of Sino-Tibetan language. Lewis (2009) expressed class of Myanmar is “Sino-Tibetan, Tibeto-Burmese, Lolo- Burmese, Burmish, Southern” (p.482). Tone is very important in Myanmar language. Myanmar language can be classified as tone/tonal language. Tone language is a language which the tone or pitch on a syllable is phonemic, so that words with identical segments but different tones are different words (Formkin, 2003, p.597). Myanmar language has three tones. There are many dialects in Myanmar such as Myeik, Dawae, Yaw, Danu, Inthar. Preferred variety is spoken in Mandalay. Many ethnic groups are monolinguals in Myanmar language and some are bilinguals.

¹ Dr. Professor/Head, Department of Myanmar, University of Yangon.

3. Greeting and Leave-taking

Firstly this paper is presented concerning with language practice of greeting and leave-taking in Myanmar society. Greeting and leave-taking have an important role in society. They are acts of communication in which people intentionally make their presence or absence known to each other. These expressions don't usually add new or important information, but they are polite and friendly. They help people feel comfortable. The way this is done is slightly different in formal and in formal situations.

In Myanmar language, according to social traditions, there are many words of greeting. The most usual way of greeting someone both formal and informal situation is to say ၵုၵ်ႉမိၵ်ႉ /nī g/ la ba /. It means 'Auspiciousness to you'. ၵုၵ်ႉမိၵ်ႉ was deliberately created as an all-purpose greeting for teacher and pupils in school. It is used mostly to foreigners and public announcements. Myanmar people use the greeting ၵုၵ်ႉမိၵ်ႉ, ၵုၵ်ႉမိၵ်ႉ /twe. ja. da wūt θa ba de/, when we want to greet someone who are meeting each other for the first time. ၵုၵ်ႉမိၵ်ႉ, ၵု means "Glad to see you" or "Happy to see you" or "Nice to see you" or "Nice to meet you". It is usually accompanied by a hand shake like the English.

Unlike the English, most of Myanmar greetings are based not on the time of day "Good morning", "Good afternoon", "Good Evening" but on the situation. Myanmar use according to the situation ၵုၵ်ႉမိၵ်ႉ / bē θwa: m lo. lē: /, ၵုၵ်ႉမိၵ်ႉ / bē lē: / (Where are you going?), ၵုၵ်ႉမိၵ်ႉ / bē ga. pjā la da lē: / (From where are you returning?), ၵုၵ်ႉမိၵ်ႉ / sa: pi: bi la: / (How is your lunch/ dinner?/Have you eaten yet?), ၵုၵ်ႉမိၵ်ႉ / ma twe. ja. da t̃a bi nō / (Haven't seen you for a long time?), and so on. The answers to these questions can be quite vague, the questions are not meant to be intrusive. In Myanmar society, greeting can start by asking or talking about other's health. For example; ၵုၵ်ႉမိၵ်ႉ / ne kau: jē. la: /, ၵုၵ်ႉမိၵ်ႉ / ne kau: la: / (How are you?), ၵုၵ်ႉမိၵ်ႉ / peī θwa: de nō / (You become thin./You seem to have slimmed down), ၵုၵ်ႉမိၵ်ႉ / wa. la de nō / (You become fat /You seem to have gained weight), ၵုၵ်ႉမိၵ်ႉ / pju la de nō / (You become white), ၵုၵ်ႉမိၵ်ႉ / jo θwa: de / (You become brown skin) and so on.

A more informal way of greeting someone is to say ၵုၵ်ႉမိၵ်ႉ / heī / and ၵုၵ်ႉမိၵ်ႉ / he /. These exclamations are used in very informal situations when people who know intimately each other meet. These words of greeting when two friends meet. These must be chosen to suit various situations. It depends on time, place, situation, speaker and the hearer.

In Myanmar society, there are different ways of saying goodbye depending on situation. ၵုၵ်ႉမိၵ်ႉ / θwa: ba oū: mē /, ၵုၵ်ႉမိၵ်ႉ / pjā ba oū: mē / (I've to go now) can be used only when we are leaving someone. If we expect to see again the other person soon, we can use the expression ၵုၵ်ႉမိၵ်ႉ / nau? hma. twe. d̃a. da pō. / (be seeing you), ၵုၵ်ႉမိၵ်ႉ / nau? ne. twe. d̃a. da pō. / (see you tomorrow) etc. We can also say ၵုၵ်ႉမိၵ်ႉ / dā di. t̃a: θwa: nō / (take care) when we are saying leave-taking to someone. When we are saying goodbye to someone we do not know well, we can use more formal expression such as ၵုၵ်ႉမိၵ်ႉ / pjā k̃h wī. pju. ba k̃h bja, ၵု / (May I go back now). Sometimes Myanmar people use English loan words "Ta-ta" and "Bye-bye" informal situation.

3.1 Address Term

Nick name address terms such as 𐌲𐌵𐌹𐌺𐌹𐌸𐌰 / pjaũ dʒɪː / (bald head), 𐌲𐌵𐌹𐌺𐌹𐌸𐌰 / ə ʔe dʒɪː / (tall person), 𐌲𐌵𐌹𐌺𐌹𐌸𐌰 / leː loũː / (person with spectacles), 𐌲𐌵𐌹𐌺𐌹𐌸𐌰 / pʰeɾ tiː / (fat

person), [Og:jcrfjym] / w/ $\text{tə}^h\text{ä: bja:}$ / (skinny person), $\text{[a\&\tilde{a}c\eta]}$ / $\text{əwe k}^h\text{ə:}$ / (person with protruding teeth), etc.

Pet name address terms such as [təŋfəv] / θe: le: / (little sweet heart), [təpəv] / ətəhɪ? le: / (little honey), $\text{[O\text{̃}təpəv]}$ / $\text{waɪ: tə}^h\text{ɪ? le:}$ / (a person beloved by all), [Owkwəv] / wa. tou? le: / (little lovely fatty), [rəbəv] / mɪ: mɪ: le: / (little lovely daughter), $\text{[pɪu\text{̃}u]}$ / $\text{tə}^h\text{ɪ? ko dʒɪ:}$ / (dear elder brother), etc.

General address term such as $\text{[a\text{̃} m]}$ / he. lu/ (hey man), $\text{[a\text{̃} b\text{̃}u mi]}$ / he. kaɪ / (hey boy), $\text{[a\text{̃}u mi əv]}$ / kaɪ le: / (little boy), $\text{[a\text{̃}u mi fəv]}$ / kaɪ ma. le: / (little girl), etc.

As such, there are many forms of address terms. When speaking to each other, a pronoun suitable with the social situation has to be spoken with. An address term is important because, the start of a conversation is to speak with the address term for the hearer. The address terms reflects the social situation, social relationship and the social opinion. For example, sometimes rather of a name lovingly shows more intimacy or friendliness. Its more respectful to the hearer to use $\text{[O\text{̃}]}$ / $\text{u\text{̃}t}$ / , [a' :] / də / , $\text{[u\text{̃}]}$ / ko / , [a mi] / maɪ / , [r] / ma. / , before his or her name. But this cannot be taken consistently, the social situations are important.

3.2 Linguistic Politeness

Thirdly this paper is mentioned the practice of linguistic respect. It is concern with hierarchical organization, transaction domain, symmetrical social relationship, asymmetrical social relationship, conversational turn-taking, using euphemism and avoiding taboo words etc.

Linguistic politeness can be defined as the ways in which can language or language variety is employed in conversation to show consideration for the feelings and desires of one's interlocutors, to create and uphold interpersonal relationships and to comply with the rules for what society or one's culture. Linguistic politeness is a great virtue. A person who behaved towards others is not only respected but loved also. People speak well of him or her on all occasion with linguistic politeness.

There are many polite phrases in Myanmar such as $\text{[a\text{̃}u sZi wi ygw]}$ / təe: zu: ŋ ba dɛ / (Thank you), $\text{[a\text{̃}u sZi tɪ m\text{̃} b\text{̃}u wi ygw]}$ / $\text{təe: zu: / mja: dʒɪ: tɪ̃ ba dɛ}$ / (Thank you very much), $\text{[a\text{̃}u sZi j\text{̃}y\text{̃}y\text{̃}y\text{̃}y]}$ / $\text{təe: zu: pju. pji:}$ / (Please), $\text{[t\text{̃}m\text{̃} e my gw]}$ / a: na ba dɛ / (Excuse me for troubling), $\text{[t\text{̃}m\text{̃} r e my ge]}$ / a: mə na ba nɛ. / (Don't feel awkward), $\text{[t\text{̃}m\text{̃} e m p\text{̃} m\text{̃} b\text{̃}u]}$ / a: na zə ja dʒɪ: / (You are so kind), $\text{[p\text{̃} l\text{̃} u yg]}$ / gə ju. sai? pa / (Take care), $\text{[p\text{̃} w\text{̃} r a\text{̃} u mi yg b\text{̃}t]}$ / $\text{sei? mə ka: ba bu:}$ / (I'm so sorry), $\text{[u\text{̃} p\text{̃} r \& yg b\text{̃}t]}$ / $\text{kei? sa. mə ɛi. ba bu/}$ (I don't mind), $\text{[p\text{̃} w\text{̃} r \& yg e]}$ / $\text{sei? mə ɛi. ba nɛ.}$ / (I beg your pardon), [y gw] / ja. ba dɛ/ (It's all right), and so on. It can be used to show politeness in Myanmar society.

Word choosing is important in linguistic politeness. In Myanmar language, according to social situations such as hierarchical organization, transaction domain, symmetrical social relationship, asymmetrical social relationship, even speaking with the use of language differs. As example the uses of pronouns in Myanmar language. Various pronouns for speaker (addresser), listener (addressee) are used in concerning social situations. These are $\text{[u\text{̃} l\text{̃} ə w m]}$ / təu də / ,

[[u^{le}]] / tɔ̃ ma. / , [[i]] / ɲa / , [[u^y]] / tɔu / , [[u^{le}]] / tɔ nou? / , [[u]] / ko / , [[ʔ]] / do. / , [[o^o]] / θə mɪ / , [[om]] / θa / etc. The speaker or the addresser has to choose correctly a pronoun for him-self or her-self having in mind whom the one has to speak to. Concerning with linguistic politeness, the suitable choice has to be done in according with the age, social status, role of relation, and gender of the hearer. If the hearer or addresser is younger than the speaker, pronoun [[i]] / ɲa / can be used to represent the speaker. If the hearer is younger but his or her social status is his higher than the speaker it's not suitable and impolite to use the pronoun [[i]] / ɲa / for himself or herself. In that situation it is only suitable to use [[u^{le}]] / tɔ̃ ma. / if the speaker is a female and [[u^{le}]] / tɔ̃ do / if the one is a male. Then, if the hearer though is older in age and his or her social status is higher, the speaker can use [[i]] / ɲa / , if the speaker and the hearer are very friendly or intimate. This manner is the same in choosing a pronoun for the hearer.

Minimum responses are essential for linguistic politeness in conversation. Language practice studies in sociolinguistics besides the common speaking forms, minimum responses which is used according to discourse and conversation. Minimum responses show respect of hearer during conversation. Myanmar language learners if they know and study the minimum responses they would be more convenient in speaking the Myanmar language. Some minimum responses in Myanmar conversation are: [[at]] / ɔ / , [[at^{at}]] / ɔ ɔ / , [[ti]] / ɿ / , [[ti^{ti}]] / ɿ ɿ / , [[ti^{av}]] / ɿ le / , [[at^{av}]] / e le / , [[at^{at}]] / e e / , [[ti^{ay}]] / ɿ pɔ / , [[at^{ay}]] / e pɔ / , [[ti^{aem}]] / ɿ nɔ / , [[at^{aem}]] / e nɔ / , [[at^{ay^{aem}}]] / e pɔ nɔ / , [[ti^{ay^{aem}}]] / ɿ pɔ nɔ / , [[[w^u]] / hou? kɛ. / , [[[w]] / hou? / . If the hearer do not make any minimum responses it seem to be impolite behaviour.

In speaking with the Myanmar language, there are many euphemism applied to form a polite form in accordance with the social situation. Euphemism is a word or phrase that replaces a taboo word or is used to avoid reference to certain acts of subject (Fromkin, 2003, p.581). For example, [[u^{le}]] / ko le? θã. ʔi k^hã / (cleaning room) for [[t^o]] / ɛ̃ ða / (toilet) in Myanmar. If there is a pregnancy, its more polite to say [[u^{le}]] / ko wū ðe / (carry a pregnancy), [[u^{le}]] / ko wū ɛ̃. ði / (there's a pregnancy), [[u^{av}]] / k^hə le. ɛ̃. ði / (there is a child), than to say [[u^u]] / bai? tɛ̃ ði / (big belly). It's more polite to say [[p^wu^{se}]] / sei? tɛ̃ ma je m/ kaũ ðu / (to have a mental illness), than [[t^u]] / ɔ ju / (idiot). It's more polite to say [[u^{le}]] / ko le? θã. ʔi ði / (clean the body and hands), than [[t^o]] / ɛ̃ ða tɛ? θi / (going to toilet). Similarly taboo (impolite dirty terms) can be changed into polite forms by use of euphemisms. In learning Myanmar language it is also need to study euphemism.

3.3 Language and Gender

In sociolinguistics, language and nature of gender is studied as a chapter. Myanmar language and nature of gender, "Is there gender in Myanmar language?" is a question commonly raised by Myanmar language learners. Unlike German, France and Pali, there is no grammatical gender system in Myanmar language. But there is a natural gender system to show the difference

in gender. It is required to address correctly the type of gender (male, female) with the nature of gender system. In Myanmar language the words which separate the male and female are-

၂၁, မူမံး / jau? tɕa: / (man) - ၂ရဲး / merɕ ma. / (woman)

၂ဝံး / θa: / (son) - ၂ဝဲး / θ/ mɪt / (daughter)

၂ဝဲး / ɾ / (husband) - ၂မံး / m/ jaɪ / (wife)

၂ဝဲး / k^h bu / (husband) - ၂ဝဲး / z/ nɪt / (wife)

၂ဝဲး / p^hoũ: / (monk) - ၂ဝဲး / θɪ la. ɕ / (nun)

၂ဝဲး / lu. ɾ / (lad) - ၂ဝဲး / loũ ma. / (lass)

၂ဝဲး / lu bjo / (boy virgin) - ၂ဝဲး / pjo / (girl virgin), etc.

For other words, the particles indicating male sex ၂ဝံး / θa: / (son), ၂မံး / maũ / (boy) may be suffixed to nouns and the particles indicating female sex ၂ဝဲး / θə mɪ: / (daughter), ၂မံး / ma. / (girl), ၂ဝဲး / θu / , / ðu / (a person), ၂မံး / me / (a gentle woman, a female) are usually suffixed to nouns of the common gender where there are need to do so. For example ၂ဝဲး / mjo: θa: / (a gentleman), ၂ဝဲး / mjo: θə mɪ: / (a lady) , ၂ဝဲး / sɪ? θa: / (soldier) , ၂ဝဲး / sɪ? θə mɪ: / (woman soldier), ၂ဝဲး / mɪ: ða: / (actor/prince), ၂ဝဲး / mɪ: θə mɪ: / (actress/princess), ၂ဝဲး / ðə do. θa: / (bridegroom), ၂ဝဲး / ðə do. θə mɪ: / (bride), ၂ဝဲး / tɕaũ: ða: / (male student), ၂ဝဲး / tɕaũ: ðu / (female student), ၂ဝဲး / joũ: ða: / (male office staff), ၂ဝဲး / joũ: ðu / (female office staff) , ၂ဝဲး / shə ja wũ / (man doctor), ၂ဝဲး / shə ja wũ ma. / (female doctor), ၂ဝဲး / s^hə ja / (male teacher), ၂ဝဲး / s^hə ja ma. / (female teacher) , ၂ဝဲး / sa je: s^hə ja / (man author), ၂ဝဲး / sa je: shə ja ma. / (female author), ၂ဝဲး / ɕɪ ɕɪ / (male house owner), ၂ဝဲး / ɕɪ ɕɪ ma. / (female house owner), ၂ဝဲး / le ɾ maũ / (man air hostess), ၂ဝဲး / le ɾ ma / (woman air hostess), ၂ဝဲး / jeɪ ða: / (policeman), ၂ဝဲး / je: me / (police woman) and so on.

There are words by which the addresser shows his or her gender. Pronouns such as ၂ဝဲး / tɕu dɔ / (I) for male, ၂ဝဲး / tɕu ma. / (I) for female, ၂ဝဲး / də bɪ. dɔ / (your disciple for male) - ၂ဝဲး / də bɪ. dɔ ma. / (your disciple for female), etc.

There are also objects for ending of sentences. ၂ဝဲး / k^h bja / , ၂ဝဲး / k^h bja. / , ၂ဝဲး / bja / , ၂ဝဲး / bja. / , ၂ဝဲး / ɕɪ / , ၂ဝဲး / ɕɪ. / etc. If the speaker is a man ၂ဝဲး / k^h bja / , ၂ဝဲး / k^h bja. / , ၂ဝဲး / bja / , ၂ဝဲး / bja. / are used and if the one is a woman ၂ဝဲး / ɕɪ / , ၂ဝဲး / ɕɪ. / are chosen to use. It is made according to the basic of gender.

3.4 Using Sociolects

One of the language practice or linguistic behaviour of Myanmar society is using sociolects like other societies. Sociolect is a variety of language that differs from one social class or social status to the next. Crystal (2008) defined that “A term used by some sociolinguists

refers to a linguistic variety (or lect) defined on social (as opposed to regional) grounds, e.g. correlating with a particular social class or occupational group” (p. 440). Sociolect is applied in accordance with the social boundary. Sociolects are used every society in Myanmar.

For Example, in the transportation situation we can heard many sociolects by bus drivers and spares and taxi drivers. Passengers coming along in a bus holding hands to something at the entrance of the car are called *tʷɔ̃ ftwɔ̃* / ə tʷɛ ə ta / (the original meaning is dearly loved and hard to be parted), a traffic policeman is called *bɔ̃* / bɛ: u. / (duck egg) because the round white hats they wear look like duck egg and so on.

The group of earners buying and selling in trading, is growing and people of the group have their own words to be used within their group. For example, wanting to sell for urgent need of money is called *Aluɛm* / baɪ? na / (belly pain-in a sense that the person's belly is aching and a latrine is urgently needs to release his bowel), a price lower than the usual value is called *a tmuəpɔ̃* / au? ze: / (sub price), a good thing obtained with an unreasonably low price is termed *aygacmiəumiɔ̃* / pɔ̃ tɕʰaũ kaũ: / (cheap, easy and good), selling a bad thing fraud is termed *tɪxɔ̃* / tɪxɔ̃ / (apply in wood- in a sense that selling out a bad wood with a good price).

Slangs are mostly used by young people from urban area in Myanmar. For example, to scold is called *yɔ̃* / pʷā / (the sound of the beep of a car), *yɔ̃* / pə lɛt kha. / (descending of pearls) for crying, *i kʷɔ̃ kʷɔ̃* / ɲou? tou? me. / (become unconscious while sitting) for being stunned, *ɔ̃* / lɛɪ. / (roll), and , *ɛɪ* / jũ: / (change position), and ' *ɔ̃* / do: / (a child playing pebble which easily rolls) for coming or going, *wiɪ* / tɪ: / (tense) and *ɛɪ* / hna kɪ? / (an uneasy feeling in the nose) for getting angry. *uɪ* / tɔ̃: / (broken) for a tiredly and sound sleep, *ʒɪ* / pʰɛ. / (to breach out a part) for a physical or mental assault, and so on are used very commonly. These usages are taste of the age group. Some old people also apply the usage to become a friendly person in the group. But if an old person is applying these usage in abundance, he will be graded an indecent speaker.

4. Conclusion

The Myanmar are generous, genial and open people. Myanmar language and Myanmar society are always combined. Those who are studying Myanmar language must also do the same to the corresponding the society. In the society, depending on social situations, the use of language differs from time to time. Those who studying the Myanmar language and not only must understand the Myanmar language but also Myanmar society. In this presentation We've look at five of the main areas of Myanmar language practice: greeting and leave -taking, address terms, linguistic politeness, language and gender, and using sociolect. All these areas are connected with Myanmar society. This paper support to understand Myanmar language more and more and to use Myanmar language well in the Myanmar society.

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A Comparative Study of the Usage of "에/에, 에서/에서 sò/" in Korean Language and "ၫᄃᆞᆫ/ , ၫᄃᆞᆫ" in Myanmar Language

Htwe Su Hlaing¹

Abstract

The research analyses and presents about the usages of “에/에, 에서/에서 sò/” in Korean Language and “ၫᄃᆞᆫ (hma) ၫᄃᆞᆫ (θó)” in Myanmar Language comparatively. The aim of this study is for students learning Korean Language to comprehend well about the complex usages as well as for effective teaching. The principles of Myanmar and Korean Grammar to apprehend similarities and differences of practical use of above mentioned two languages though they are derived from the same root and have same grammatical use are briefly and firstly described, and errors committed by students are followed as examples. It is comparatively presented how aforementioned “ၫᄃᆞᆫ (hma) ၫᄃᆞᆫ (θó)” and “에/에, 에서/에서 sò/” usages are used in Myanmar and Korea Languages. With the objective of revealing the effective and comprehensive methods for students in teaching the usages “에/에, 에서/에서 sò/” in Korean Language, this research is presented. Unlike Korean Language, Myanmar Language has written and spoken usages. Hence, relating with “ၫᄃᆞᆫ (hma) ၫᄃᆞᆫ (θó)” usages in Myanmar Language, some Myanmar daily usages, the way in written and spoken usages, are presented.

Keywords: Korean Grammar, Myanmar Grammar, auxiliary particle

1. Introduction

This research aims to contrast differences between two adverbial particles in Korean '에/에, 에서/에서 sò' and postpositional markers in Myanmar “ၫᄃᆞᆫ (hma) ၫᄃᆞᆫ (θó)” in terms of their usages, grammatical functions and the use.

While studying a language, four skills (speaking, writing, listening and reading) must be studied. Nowadays, technology for various fields is developing and it is necessary to communicate with each other by means of language. It is necessary to use the grammar of a language systematically for the correct language use since grammar is the basic standard of a language. In a language, correct usage of basic grammar is necessary to communicate successfully. Therefore, it is important for people who use a particular language to understand its grammatical structures for successful social interaction. In writing or speaking, noun and verb play important roles in a sentence, yet the sentence cannot be created without particles. The reason is that in speaking and writing, particle plays a vital role in combining nouns and verbs to form a sentence. Particle defines whether a noun is a subject or an object, and it helps to state the meaning of a sentence well, so the role of particle is the most important in creating a sentence. Therefore, it is important for learners studying Korean as a foreign language to know the use of particles in Korean grammar. Moreover, learners studying basic Korean have to study case ending first, but even advanced learners make mistakes in the use of case ending, which seems to be easy.

¹ Dr. Lecturer, Department of Korean, Mandalay University of Foreign Languages, Myanmar.
htwesuhlaing98@gmail.com

Learners who are studying Korean as a foreign language compare and contrast it with the mother tongue. Korean and Myanmar belongs to different language families, yet they have a lot of similarities. According to language system, Korean belongs to the Altaic family of languages, and Myanmar belongs to sino-tipet system. However, both languages have same word order (Subject+ Object + Verb) and they both have a wide use of part of speech. However, students have difficulties in using particles and they make mistakes because adverbial particles in Korean have different usages and a variety of meanings ,they have mother tongue influence and two languages have different case endings. For the above reasons, the usages of adverbial particle in Korean and Myanmar particles “*ᄃᆞ(hma) ᄃᆞ(ᄃᆞ)*” will be examined in this study.

2. Methods

The use of two case endings in Korean ‘ “*ᄃᆞ/ᄃᆞ, ᄃᆞᄃᆞ/ᄃᆞᄃᆞ*” and Myanmar particles “*ᄃᆞ(hma) ᄃᆞ(ᄃᆞ)*” will be compared and contracted in this study. While studying Korean as a foreign language, case endings “*ᄃᆞ/ᄃᆞ, ᄃᆞᄃᆞ/ᄃᆞᄃᆞ*” in basic grammar semasiologically have many connotations and semasiology synth of case endings “*ᄃᆞ/ᄃᆞ, ᄃᆞᄃᆞ/ᄃᆞᄃᆞ*” in the book “The Use of Korean Grammar for Foreigners” (2005) is used. The use of Myanmar particles “*ᄃᆞ(hma) ᄃᆞ(ᄃᆞ)*” is extracted from Myanmar Grammar book published by Department of Myanmar and Language Education, Ministry of Education in 2005. Different meanings of particles in Korean and Myanmar are classified and the unique features of case endings are highlighted in this study. The meanings of Korean case endings “*ᄃᆞ/ᄃᆞ, ᄃᆞᄃᆞ/ᄃᆞᄃᆞ*” and their functions are analysed. Likewise, the meanings of Korean case endings “*ᄃᆞ(hma) ᄃᆞ(ᄃᆞ)*” and their functions are analysed. Based on the results, similarities and differences between particles in Myanmar and Korean languages are compared and contrasted.

3. Results and Discussion

3.1 Meaning and Classification of Particles in Korean

Particle is one of the parts of speech in Korean. Parts of speech indicate different grammatical features of a word. There are nine parts of speech in Korean, namely – noun, pronoun, numeral, verb, adjective, unanjugation adjective or modifier, adverb, exclamation, interjection and postposition¹.

Postposition can be classified into three parts – case ending, special postposition and joining postposition. Case ending is a postposition which describes grammatical features of independence morpheme. There are nominative subjective case, objective case, meter, predicative, the vocative case, an adverbial and adjective. Special postposition is a postposition which describes the meanings of the combination of words which can stand independently whereas joining postposition has the function of associating two words. There are nine parts of speech in Myanmar. Parts of speech indicate the function of a word spoken to get the meaning. Nine parts of speech in Myanmar are classified as noun, pronoun, verb, adjective, adverb,

¹ The Use of Korean Grammar for Foreigners, 2005, pp.18

postpositional marker, conjunctions, particles and interjection.¹ Myanmar Grammar(2005) focuses on written grammar. Postpositional markers are used as suffixes after nouns or pronouns and they identify whether the given noun or pronoun is subject or object. Moreover, they are used as suffixed after verbs and they indicate time and types of verbs. Conjunctions are words that connect either other words or sentences or meaning reciprocally. Particles support the meanings of noun, pronoun, adjective, verb and adverb.

Myanmar Grammar (2005) is used to study grammar while learning Myanmar as a second language, yet the book only focuses on written grammar. There are differences in spoken language and written language in Myanmar and there is no stability of grammar usage. Therefore, the grammatical function of “ရှ်(hma) ဝါ(ဝံ)” in Myanmar is different depending on the sentence. This research analyses different functions of “ရှ်(hma) ဝါ(ဝံ)” in a sentence. Grammatical usages in Myanmar Grammar (2005), which is traditionally used, are found to have different grammatical functions in spoken languages.

3.2 The Meaning of “에/에/, 에서/에ś/” in Korean Language

The meaning of Korean case ending “에/에/” is semantically analysed. The Use of Korean Language for foreigners published by national Korean Center (2005) states that the meaning of “에/에/” shows location, time, reason, direction, purpose, object, standard, unit, receiver of a behavior, abstract fact and state and quality. It is used to support the superior word or add the front word. “에/에/” is used as a comparison when more than two things are combined. Its usages can be seen in the following sentences.

e.g (1). 부모님은 대전에 살고 계십니다.(shows location)

(2). 내일은 한시에 만나요. (shows time)

(3). 서울에 오니 사람도 많고 공기도 탁해 답답하군요.(shows direction)

(4). 비에 옷이 다 젖었네. (shows reason)

(5). 돈을 지갑에 넣어 두어라.(shows receiver)

(6). 옷이 마음에 안 들어요. (shows behaviour)

(7). 칼에 손을 베었어요. (identifies object)

(8). 보약은 허약해진 몸에 특히 좋다. (identifies purpose)

(9). 그의 실력은 전문가에 가까웠다.(identifies purpose)

(10). 더운 날씨에 건강히 잘 지내시는지요? (identifies situation)

¹ Myanmar Commission, Myanmar Grammar, 1975-2005, pp-69

- (11). 수박은 한 개에 만 원입니다. (shows number)
- (12). 총무에 그 사람이 제격이다. (shows position)
- (13). 이 문제에 관한 의견을 말씀해 바랍니다. (shows indication)
- (14). 3 에 5 를 더하면 8 이 된다. (shows combination)
- (15). 영수는 생일 선물로 연필에 가방에 장난감에 이것저것 많이 받았다.
(shows comparison)

According to the book “ The Use of Korean Grammar”(2005) for foreigners published by National Korean Center, " 에서/ésð/" shows location, departure, time etc.

- e.g (16). 보통 오전에는 학교에서 공부해요. (shows location)
- (17). 학교에서 가면 얼마 걸리겠어요? (shows departure)
 - (18). 너에게 조금이나마 도움이 되고자 하는 뜻에 한 마디만 하겠다. (shows reason)
 - (19).세상에 가장 아름다운 것이 바로 사랑이다. (shows collectivity and background)
 - (20).이 상황에서 어떻게 더 좋아질 수가 있겠어요?(shows compared thing)
 - (21).정부에서 실시한 조사 결과가 발표되었다. (shows subject)

3.3 Comparison of “에/é/” and “에서/ésð/”

In Korean language, “에/é/” is used to show location, destination, place of arrival, reason and situation, whereas “에서/ésð/” is used to shows location, departure, reasons and comparison. They have semantically same grammatical usages when they are used to show location.

e.g. (22) 나는 양곤에 산다.

(23) 나는 양곤에서 산다.

Both “에” in sentence (22) and “에서/ésð/” in sentence (23) have the same grammatical usage when they are used with the verb “살다” which means “live”. Although they have the same grammatical functions, they have different meanings in the sentence.

e.g.(24) 친구가 밖에 서 있다.

(25) 친구가 밖에서 서 있다.

In sentence (31), “*ၵၵ(hma)*” is used to emphasize the speaker’s immediate thought to call the teacher and it is used as a particle that is used after a sentence. Besides, in sentence (32), “*ၵၵ(hma)*” has different grammatical function, joining two sentences “*ၵၵၵၵၵၵ*” and “*ၵၵၵၵၵၵ*”.

“*ၵၵ(ၵၵ)*” in Myanmar is semantically analysed. According to Myanmar Grammar (2005) by Department of Myanmar and Language Education, Ministry of Education, it is used as a postpositional marker to show destination or arrival. Its usages can be found in the following sentences.

e.g (33) *ၵၵၵၵ ၵၵၵၵ ၵၵၵၵၵၵၵၵၵၵၵၵ* Mg Ba goes to school.

(34) *ၵၵၵၵ ၵၵၵၵ ၵၵၵၵၵၵၵၵၵၵၵၵ* Mg Ba goes to school.

In the above sentences, “*ၵၵၵၵၵၵၵၵၵၵၵၵ* (school)” is Mg Ba’s destination or the place of arrival. “*ၵၵ(ၵၵ)*” is used after the noun “*ၵၵၵၵၵၵၵၵၵၵၵၵ* (school)” to emphasize that Mg Ba arrives there. However, “*ၵၵ(ၵၵ)*” is widely used as a postpositional marker ,that shows arrival, only in written language. In spoken language, “*ၵၵၵၵ*” is used instead of “*ၵၵ(ၵၵ)*”. This can be found in sentence (34).

The usages, unique features and different usages of particles and postpositional markers in two languages are analysed with example sentences, by comparing two adverbial particles “*ၵၵၵၵ/ၵၵၵၵ, ၵၵၵၵၵၵၵၵၵၵၵၵ*” in Korean and “*ၵၵၵၵ(hma), ၵၵၵၵ*” in Myanmar. This can be found as follows:

It is found out that two case ending in Korean language “*ၵၵၵၵ/ၵၵၵၵ, ၵၵၵၵၵၵၵၵၵၵၵၵ*” have various meanings. “*ၵၵၵၵ/ၵၵၵၵ*” in Korean language shows location, destination, arrival, reason and situation whereas “*ၵၵၵၵ/ၵၵၵၵၵၵၵၵၵၵၵၵ*” shows location, departure, reason and comparison. Both of them can be used to show location, yet they have different meanings in term of the whole sentence. “*ၵၵၵၵ/ၵၵၵၵ*” shows location while “*ၵၵၵၵ/ၵၵၵၵၵၵၵၵၵၵၵၵ*” shows the place where the action happens, so they are not interchangeable. In Korean grammar, words have same lexical meaning but in a sentence, they have different grammatical functions. Moreover, non-native speakers of Korean language can make mistakes in using particles since they have many grammatical functions.

Korean case ending “*ၵၵၵၵ/ၵၵၵၵ*” is used as a postpositional marker that shows arrival. Likewise, “*ၵၵၵၵ*” in Myanmar has same grammatical function. There is instability in Myanmar grammar because postpositional marker used in written language can be substituted by another one in spoken language. Korean grammar has stability because there are same particles for both spoken and written language.

Case ending “*ၵၵၵၵၵၵၵၵၵၵၵၵ*” in Korean shows departure and it has the same grammatical function with Myanmar word “*ၵၵၵၵ(hma)*”. However, “*ၵၵၵၵ*” is only used in written language, not in spoken language. Besides, “*ၵၵၵၵ(hma)*”, one of the postpositional marker, which is used to show departure has other grammatical functions in a sentence.

4. Conclusion

This study helps Myanmar students who are studying Korean understand the usages of “에/에/, 에서/에스/” in Korean language and “(h)ma O(θó)” in Myanmar, the use of particles in two languages, their unique features and different usages. It is found out that particles in Korean language have different connotations. Korean grammar is stable because there is no change in the usage of grammar both in spoken and written language. Postpositional markers in Myanmar have different meanings and different grammatical function when they are in isolation and within a sentence. Moreover, Myanmar grammar is instable because different grammatical units are used in written language and spoken language. Myanmar students who are studying Korean have difficulties in Korean grammar exercises because of the differences stated above. Furthermore, mother tongue influence is one of the cause of committing errors. Therefore, this study highlights similarities and differences of two languages by comparing usages of particles in two languages. People should use a language systematically because language is the main part of the society. Moreover, there are many things that should be studied in a language because language is always improving. Therefore, further researches concerning particles in Korean language and Myanmar language will be conducted in the future.

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Relationship between Women's Empowerment and Socioeconomic Status in Myanmar: An Emphasis on Participation in Household Decision Making and Experience of Domestic Violence

Mya Thandar¹, Hlaing Hlaing Moe²

Abstract

Women's empowerment is one of the United Nations Sustainable Development Goals (SDGs). The Goal 5: "Achieve gender equity and empower all women and girls" is especially aimed at improving the status of females. Women's rights and issues have become a subject of serious concern among both academicians and policymakers. This paper explores how socioeconomic characteristics shape two aspects of women's empowerment: decision making in the household and experience of domestic violence. Data for currently married women age (15-49) from the 2015-2016 Myanmar Demographic and Health Survey (MDHS) are analyzed using logistic regression analysis. This study shows that household decision-making is associated with women's employment status, age, residence, education and wealth index. Women's experience in domestic violence is related to women's employment status, residence, education, and wealth index as well as husband-wife age difference. The study highlights that age and women's employment status are major determinants of women's participation in household decision making while wealth index mainly influences on experiencing domestic violence. In acceptance of traditional gender roles, it is not sufficient to assert women's empowerment in Myanmar and there would be under reporting the prevalence of domestic violence. The results of this study could contribute to the government's efforts to mainstream the gender dimension into the country's development policies and programs.

Keywords: women's empowerment, socioeconomic status, decision-making in the household, domestic violence

1. Introduction

Since the 1990s, women have been identified as key agents of sustainable development, with women's empowerment and equity viewed as important aspects of social and economic progress. At the UN Fourth World Conference on Women, held in Beijing in 1995, women's empowerment was introduced to an expanded audience of state actors and governments.

The UN Human Development Report ranks Myanmar as 80th of 159 countries in the 2015 gender inequality index (UNDP 2016)¹. The government has been striving to achieve women's empowerment and gender equality by collaborating with the UN, non-governmental organizations (NGOs), and international nongovernmental organizations (INGOs). The government makes concerted efforts through the National Strategic Plan for the Advancement of Women (2013-2022) by the Ministry of Social Welfare, Relief, and Resettlement to empower women and to integrate gender equity in policies and programs. Research on women's empowerment supports the view that it is a multidimensional, complex and context-specific issue (Kabeer 2005)². Therefore, what is valid in one region may not be valid for other regions, while socio-cultural systems vary considerably from one setting to another, and even within the

¹ Professor, Department of Statistics, Yangon University of Economics, myathandaryie@gmail.com

² Lecturer, Department of Statistics, Yangon University of Economics, hlainghlaingmoe.moe@gmail.com

same country (Pambè et. al., 2014)³. It is necessary to study women's empowerment from the perspective of women's socioeconomic characteristics. This paper thus raises the question as to how socioeconomic factors shape two aspects of women's empowerment in Myanmar, namely decision making in the household and experience of domestic violence. Reducing violence against women, as well as enhancing their capacity to decide for themselves, is important in empowering women. This paper aims to advance the understanding of women's empowerment and domestic violence in Myanmar to contribute the government's efforts to mainstream the gender dimension into the country's development policies and programs.

2. Method

2.1 Data

Data for the analysis are drawn from the newly available national 2015-16 Myanmar Demographic and Health Survey (MDHS), which collected data for multiple indicators of demographic and health information (Ministry of Health and Sports and ICF 2017)⁴. Approval was obtained from Myanmar Ministry of Health and Sports and The DHS Program to use the datasets for this study. The MDHS data are publicly available free of charge from The DHS Program in the form of standard recode data files, at <https://www.dhsprogram.com/Data/>.

The data analysis of this study focuses only on currently married women age 15-49. Although data on 12,885 women are available from the 2015-16 MDHS, among them 7,870 are currently married women age 15-49. To obtain nationally representative estimates, sampling weight was applied and the final weighted samples included 7,758 currently married women age 15-49 were considered.

The MFDHS 2015-16 provides information on participation in decision making and domestic violence, among other things, in Myanmar. Our research focuses on women who were currently married and who successfully completed the interview on domestic violence, yielding a sample size of 3059 which is only 40% of currently married women. The main concerns are that questions concerning domestic violence might not be response due to of cultural norms, among other reasons and women might be hesitant these issues to strangers, as it is seriously perceived in the community.

2.2 Key Variables

The two outcome variables analyzed in this study are women's participation in decision making and women's report of their experience of domestic violence. Women's participation in decision making was assessed through three types of household decision-making: woman's own health care, major household purchases, and visits to family or relatives. For each of these three dimensions of decision-making, women are asked who usually makes the decisions. Each question had five response options: respondent alone, respondent and husband/partner, husband/partner alone; someone else; and others. We created a binary variable for each type of decision-making by grouping together the first two responses in which women participate in decision-making, coded as 1, and other responses together in which she has no say in decision making, coded as 0.

In the DHS domestic violence module, women were asked a series of questions about their experience of domestic violence by husband/partner, i.e. physical (if the respondent has ever been: pushed, shook or had something thrown at; slapped; punched with fist or hit by something harmful; kicked or dragged; strangled or burnt; threatened with a weapon); emotional (if the respondent has ever been humiliated or threatened with harm) and sexual violence (if the respondent has ever been physically forced into unwanted sex or other unwanted sexual acts). Each question has four responses for married women: never, often, sometimes, yes but not in the last 12 months. In this study, we considered experience of domestic violence within the last 12 months prior to the survey. Women reporting that they experienced violence “often” or “sometimes” were categorized as having experienced domestic violence in the last 12 months and coded as 1, and other responses were categorized as no experience of domestic violence in the last 12 months and coded as 0.

The key independent variables used in the study are women’s education, employment status, and household wealth index. Women’s education is coded into four categories: not educated, primary, secondary and higher. Employment status includes two categories: not employed, and employed. Wealth index is categorized as, poor, middle, and rich. The wealth indexes are constructed using information on household ownership of consumer items. This recoded variable is included in the MDHS 2015-16 data.

2.3 Statistical Analysis

A binary logistic regression model is used when the dependent variable is dichotomous such as participation in decision-making and experience domestic violence (Fox, 1999)⁵. Logistic regression provides odd ratios, which represent the ratio of two probabilities: the probability that the event occur (P) and the probability that it does not occur (1-P) (Wooldridge, 2013)⁶. The odds ratio is interpreted in terms of deviation from a reference category. For women’s participation in household decision making, three separate models are fitted, one for each of the three variables. For the three domestic violence outcomes – physical violence, sexual violence and emotional violence, separate logistic regression models were built to examine their association with women’s socioeconomic characteristics. A number of socioeconomic and demographic variables were controlled for in the regressions, including women’s age, education, employment status, wealth index, spousal age difference, spousal education difference and area of residence.

3. Results and Discussion

3.1 Descriptive Analysis

Table 1 shows that information on socioeconomic and demographic characteristics of women included in this study as well as descriptive statistics on their participation in household decision making and experience of domestic violence in last 12 months. It is found that nearly 75% of the women are likely to live in rural areas, about 50% of those have only primary level of education, around two-third of the women are younger than their husbands and more than 40% of those are poor. Approximately two-third of women is employed and more than half of them have equal education level with their husbands.

Table 1. Percent Distribution of Women who Participate in Household Decision Making and who Experienced Various Forms of Domestic Violence by Measures of Socioeconomic Status and Background Characteristics

Characteristics	Percent	Decision making			Domestic violence		
		oman's own health care	aking major household purchase	isits to family or relatives	Physical violence	Emotional violence	Sexual violence
Socioeconomic Status							
Education							
No education	15.4	81.1	73.3	86.7	10.5	15.9	4.2
Primary	47.1	82.6	74.8	87.3	13.2	14.4	3.5
Secondary	29.5	84.1	73.5	87.5	10.8	13.8	3.1
Higher	8.0	90.5	76.6	89.4	7.9	7.4	0.9
Employment							
No	36.3	82.0	72.1	85.1	10.7	13.3	3.6
Yes	63.7	84.2	75.6	89.2	12.3	14.3	3.1
Wealth index							
Poor	41.3	79.9	74.3	85.3	14.0	17.2	4.1
Middle	20.1	84.9	73.0	88.9	11.4	11.9	3.4
Rich	38.6	86.5	75.1	89.6	8.9	11.3	2.1
Background Characteristics							
Age							
15-19	3.0	69.7	54.4	81.1	12.9	20.3	2.7
20-24	10.7	76.1	62.1	81.9	12.6	13.9	4.3
25-29	16.2	84.2	72.9	85.8	12.2	15.2	3.8
30-34	19.4	85.7	75.4	87.6	12.1	13.0	2.8
35-39	19.1	84.3	77.0	89.9	11.2	13.1	3.0
40-44	16.5	84.7	79.5	89.5	12.7	13.3	3.4
45-49	15.1	85.0	78.1	90.3	9.0	14.9	3.3
Residence							
Rural	73.9	81.8	73.7	87.2	12.2	14.1	3.4
Urban	26.1	88.1	76.3	89.0	10.1	13.4	3.1
Husband-wife age difference							
Wife is same age	10.5	84.7	75.0	88.5	13.1	16.4	2.2
Wife is older	21.5	84.8	75.8	89.0	8.5	13.4	3.0
Wife is young	68.0	82.8	73.8	87.2	12.5	13.7	3.6
Husband-wife education difference							
Both have equal education	54.6	83.5	74.2	87.4	11.9	13.9	3.7
Wife has more education	20.0	84.5	74.4	88.3	11.2	16.2	3.1
Husband has more education	25.4	82.4	74.6	87.9	11.7	12.3	2.7

Source: Authors' Calculations from 2015-16 MDHS Data

Women's participation in Household Decision Making

Analysis of women's participation in household decision making shows that women with higher level of education and employed women are more likely to participate in all three types of decision making, similar to rich women and those from urban area. The older the women the more they participate for visits to family or relatives. Also, the younger the wife, the lower the women's involvement in all three types of decision making. When the wife has more education, they are more likely to participate in all three types of decision making.

Women's Experience of Domestic Violence

As to women's experience of domestic violence, women with higher level of education, rich women and those from urban are less likely to experience all three types of domestic violence. When considering physical violence and emotional violence, employed women are more likely to report these forms of domestic violence while the older the wife, they are less likely to report them. Concerning sexual violence, employed women are less likely to report their experience. When wife has more education, they are less likely to report physical violence whereas if husband has more education, women are less likely to report emotional violence. However, the sexual violence does not show clear patterns by background characteristics except for residence.

3.2 Multivariate Analysis

Table 2 provides the results on the binary logistic analysis on the determinants of both three aspects of decision making and domestic violence. The results present the adjusted associations between each of the three measures of socioeconomic status and each of the aspects of two outcomes variables, after controlling for key characteristics that could confound the association.

Socioeconomic Determinants of Decision Making

Conditional on these key background variables, it is found that employed women are more likely to participate in all three types of decision making. Woman's decision making on own health care appears higher among women with higher education. The women participating in decisions for visits to family and relatives are higher among women living in middle and rich household quintile than poor women, but wealth status does not have a significant association with women's decision making on large household purchases. The results also highlight women's age as an important determinant of household decision making. Older women are more likely to participate in all three types of household decision making. In terms of place of residence, women in urban are more likely to participate in decision making on own health care. However, findings do not reveal significant differences between women by spousal age difference and education difference.

Socioeconomic Determinants of Domestic Violence

Of the three measures of socioeconomic status, only wealth quintile is significantly associated with women's experience of all three types domestic of violence. The rich women are less likely to experience the physical and sexual violence. Similarly, wealth status' effect is significant for middle and rich women for emotional violence. After adjusting for control variables, women with higher education have less likely to experience emotional violence than women with no education. But, the results do not show significant association between education level of women and experiencing other two types of domestic violence. Unexpectedly, employed women are more likely to experience the physical violence than those are unemployed. The differences are not significant for urban-rural residence, except that experiencing emotional violence is greater for urban women. As for background variables, age of women and education difference are not statistically significant for all three types of domestic violence. Regarding husband-wife age difference is significant for physical and emotional violence. If wife is older than husband, she is less likely to experience physical and emotional violence than the wife's age is same with husband. Similarly, wife is younger than husband; she is less likely to experience emotional violence than woman' age is same with him.

Table 2. Relationship between Measures of Socioeconomic Characteristics and Women's Participation in Household Decision Making, and Women's Experience of Domestic Violence among Married Women Age 15-49 in Myanmar

Characteristics	Decision making			Domestic violence		
	Woman's own health care	Making major household purchase	Visits to family or relatives	Physical violence	Emotional violence	Sexual violence
Constant	1.71**	1.02	2.96***	0.13***	0.31***	0.02***
Socioeconomic Status						
Education						
No education (reference)	1	1	1	1	1	1
Primary	1.11	1.11	1.14	1.40	1.05	0.96
Secondary	1.11	1.16	1.07	1.18	0.83	0.75
Higher	1.51*	1.17	1.00	0.92	0.42**	0.63
Employment						
No (reference)	1	1	1	1	1	1
Yes	1.16*	1.16**	1.39***	1.34**	1.12	1.13
Wealth index						
Poor (reference)	1	1	1	1	1	1
Middle	1.32***	0.86	1.29**	0.86	0.55***	0.76
Rich	1.26**	0.93	1.44***	0.58***	0.58***	0.29***
Background Characteristics						
Age						
15-19 (reference)	1	1	1	1	1	1
20-24	1.36*	1.38*	1.04	0.99	0.71	1.81
25-29	2.19***	2.23***	1.33	0.98	0.88	1.31
30-34	2.45***	2.53***	1.51*	0.94	0.62	0.83
35-39	2.15***	2.76***	1.85***	0.90	0.71	1.17
40-44	2.21***	3.22***	1.77***	0.92	0.69	1.07
45-49	2.23***	3.00***	1.89***	0.70	0.66	1.1
Residence						
Rural (reference)	1	1	1	1	1	1
Urban	1.42***	1.15	1.03	1.06	1.43**	1.31
Husband-wife age difference						
Wife is same age (reference)	1	1	1	1	1	1
Wife is older	0.98	0.98	1.01	0.57**	0.71*	1.76
Wife is young	0.94	0.99	0.94	0.82	0.63**	1.72
Husband-wife education difference						
Both have equal education (reference)	1	1	1	1	1	1
Wife has more education	1.06	1.03	1.15	1.20	1.19	0.86
Husband has more education	0.93	1.02	1.01	0.95	0.87	0.74

Note: ***, **, * represent 1%, 5% and 10% level of significance Source: Authors' Calculations from 2015-16 MDHS Data

4. Conclusions

This paper focuses on the relationship between women's socioeconomic characteristics and their empowerment in the household (participation in decision making in the couple and experience of domestic violence) in Myanmar. It could be that the socioeconomic factors included in this study are more closely related to women's decision making, than to domestic violence. The overall findings of this study raise questions about the poor link between domestic violence and socioeconomic status and the low prevalence of reported domestic violence in Myanmar. Factors surrounding women's empowerment form part of the causes of domestic violence. Whatever their level of education or contribution to household wealth, having a conjugal home is a central issue for women in Myanmar. It might be that regardless of the level of education and financial contribution to household wealth, women in Myanmar are respectful of the traditional gender norms and consequently might not dispute the authority of the husband as chief of the family, what glaringly contributes to an apparent harmony in couple relationships. One of the major concerns highlighted by this study is that domestic violence in Myanmar might be under-reported because of cultural norms, among other reasons. Women might be reluctant to disclose intimate issues to strangers, as it is badly perceived in the society (Randall et al. 2013)⁷. Some studies have also found that the estimated prevalence of domestic violence is lower in the DHS than in focused surveys (Ellsberg et. al., 2001)⁸. Other caveat might be that DHS data are cross-sectional and therefore do not help capture causal relationships between explanatory factors and main outcome variables. This study adds an insight into the understanding of women's empowerment in Myanmar, where to our knowledge there is a scarcity of studies on this issue. Our findings confirm the major role of education for improving women's status in terms of participation in the decision making in the household. It provides thus additional arguments for the continuity of actions in favour of girl's education at higher levels of schooling in addition to the primary level. The development of national policies and programs aiming to substantially increase women's status in Myanmar should foster positive socio-cultural attitudes toward gender equality.

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A Critical Study of Gender Representation in Life (Intermediate) Coursebook

Su Khine Oo¹

Abstract

Life is a six-level series which focuses on communicative skills in English through the use of real-world content. It encourages students to think critically through informative topics from real-life communication. This paper investigates a critical study of gender representation found in listening comprehension exercises along with pictures in Life (Intermediate). Mixed method which includes descriptive qualitative as well as quantitative approach was used to reveal visibility, gender firstness, gender neutral and gender specific nouns, and gender stereotypes with reference to Porreca's (1984) framework. The importance of gender-based characters was measured using Leiskin's (2001) framework. The results of the research showed that dominance of female representation can be found in dialogues related to beliefs and traditions whereas male dominance can be found in dialogues concerning doubtful thoughts. Only limited number of gender stereotypes was found due to the fact that being published by National Geographic Learning, recording includes characters who are created as authentic as possible to the current trend in which most male and female share the same interest like travelling and music. It is hoped that this paper will be useful for language instructors and students who study English from the point of view of gender representation and stereotypes.

Keywords: gender representation, visibility, gender firstness, gender neutral and specific nouns, gender stereotypes

1. Introduction

Tannenbaum et al. (2016) claimed that "Gender roles, gender identity, gender relations, and institutionalized gender influence the way in which an implementation strategy works, for whom, under what circumstances and why." Gender representation has become one of the most controversial topics in language learning and teaching continuum especially in the 21st century. People no longer go along with the outdated sayings and proverbs like *Let women stay at home and hold their peace* by Aeschylus in 467 B.C., *Woman's place is in the kitchen* by Morrison in 1878, *Woman's place is in the home* by Levesen in 1945. Söğüt (2018) raised the awareness on gender representation in teaching and learning process by insisting that it has "the potential to affect learners and teacher in terms of their attitudes, mindsets, and values." This paper therefore attempts to find out gender representation in listening comprehension exercises of Life (Intermediate) Course book which has been used at English Language Proficiency Course (Basic II) by CHRD in Yangon University of Foreign Languages. It is found that most previous works on gender representation were based on coursebooks specifically written to fit the culture of respective learners. For this reason, contents are culture-bound and reflect their own culture as these coursebooks were designed for local use. However, in this paper, the material chosen to analyze is a coursebook meant for international adult English learners and therefore Myanmar culture is not found in this coursebook. Therefore, the results of this research are also dramatically different from those of previous researches.

¹ Dr., Assistant Lecturer, Department of English, Yangon University of Foreign Languages, dkosyuf@gmail.com

1.2 Aim and Objectives

The aim of this paper is to engage in critical analysis of gender representation found in the coursebook *Life* (Intermediate).

Objectives of this paper are:

- (1) To identify gender visibility, gender firstness, gender neutral and specific nouns, gender stereotypes in selected coursebook
- (2) To explore different jobs and interests based on gender
- (3) To observe attitudes and beliefs of different gender from their dialogues
- (4) To highlight how both men and women share the same role in society

This paper attempts to answer the following research questions:

- (1) How did the coursebook writer assign roles to men and women?
- (2) To what extent do men and women share same interests and attitudes towards different topics used?
- (3) What are the roles of men and women based on content of different units?

1.3 Literature Survey

Gender representation in ELT context

In general, gender is a naturally gifted criterion which pre-defines the abilities of males and females. In this 21st century, Gender Equality Commission of the Council of Europe (2015) ascertains that the historical relations of power of men over women as well as sexist attitudes impeded the advancement of women. Gender representation goes beyond simply being male or female but is related to implied meanings and expectations in terms of society and culture.

According to the research done in Asian and Middle Eastern countries by Ansary and Babaii (2003) cited in Hall (2014), gender stereotypes found in some coursebooks like men jobs are related to science, arts, army, politics and medicine. The most significant job allocation for women in most ELT coursebooks are related to education like teachers, educational consultants, research consultants and to government like government officers.

According to Mustapha and Mills (2015), "some teachers and students are minimally aware of gender stereotyping in their coursebooks while others deny or ignore its existence." They also pointed out the importance of gender issues in ELT context related to society, religion and culture. ELT teachers should be aware and should raise awareness among students to such differences in terms of target language relativity and determinism, and those of mother tongue.

1.4 Porreca's (1984) framework

Porreca (1984) proposed different aspects of gender representation known as the frequency of occurrence of males and females, gender firstness, or the frequency of context in which males or females are presented first and the frequency of nouns designating male or female characters or gender stereotypes. In doing critical analysis of gender representation, she suggested finding out how many times male and female characters are found, how many times male or female characters appear first and how these characters are assigned roles in society.

In addition, she focused on omission of gender in the text, occupational visibility, masculine generic constructions and adjectives used in gender representation. She highlighted some situations in coursebooks in which male or female is not important and therefore omission of gender is found. She believed that some roles like teacher, accountant and housekeeper are commonly designated to female characters whereas those such as politicians, computer programmers and soldiers are assigned to males. She attempted to take linguistic forms that are used mostly by men into consideration in observing gender differences. In accordance with Yule (2014), generic words and constructions vary from gender to gender. Women language is poised and polite whereas that of men is dominant and influential on others.

1.5 Leiskin's (2001) framework

Leiskin (2001) proposed systematic method of analysis in measuring the importance of roles the characters have. She claimed that gender bias did exist in communicative dominance and social dominance. Communicative dominance is characterized by frequent turns of speaking in dominant manner where as social dominance refers to "the maintenance and stability of group-based social hierarchies."

Leiskin insisted that "People who are centers of conversations, topics of writing, or the information focus would seem to have more social prominence than people who are not." She elaborated the dominance of gender depending on different contextual background. For example, if the theme of conversation is about environmental conservation, it is likely that men will lead the floor whereas women-led conversations are mostly about babysitting and beauty.

1.6 Life (Intermediate) Coursebook

Life is a coursebook which comes in six levels as adult series published by National Geographic Learning. It helps adult learners improve their English language proficiency through exploration of the world. All of its series include real-life experiences, attractive visuals, interesting articles and interactive videos which certainly help adults learn English in creative atmosphere. Main components of every series are comprehensive grammar, language functions, vocabulary, pronunciation and language skills which are designed to enrich communicative and creative skills. At the end of every unit, in Review sections, self-reflective checklists are included so that students can reflect whether they can do things in checklist efficiently. This can serve as a ruler to measure the success of teaching and learning processes.

In terms of CEFR, the level of Life (Intermediate) chosen to analyze is B1. Although most grammar sections are familiar to adult learners of CHRD evening class, they can gain benefit from vivid grammar explanations and practice exercises. In addition, most students believe that they can engage in vocabulary enrichment because of interesting topics used. What is more, they can practise all four language skills of English in addition to critical thinking and creative skills.

1.7 Previous Researches

Nagatomo (2010) investigated "A Critical Analysis of Gender Representation in an EFL Textbook," using Conversation Topics for Japanese University Students in accordance with theoretical frameworks by Porreca (1978) and Leiskin (2001). The findings of her research showed that female characters were more significant and were given more active roles, and that social dominance was not found in terms of sentence structure.

Hall (2014) did a research on "Gender Representation in Current EFL Textbooks [Right Path to English I and II] in Iranian Secondary Schools" through systematic quantitative approach. His focuses were on gender visibility and gender-oriented dialogues using the framework of of Porreca (1984). He then used qualitative approach in identifying "(1) male-centred language including: (a) firstness and (b) masculine generic construction; (2) gender-linked occupation possibilities; (3) distribution of household responsibilities, and (4) distribution of spare time and leisure activities" The results of his research proved that there was unequal distribution of gender representation in selected textbooks.

Hafidhoh, et.al. (2018) conducted a research on Gender Representation on Reading Texts, Dialogues and Pictures in "When English Rings a Bell" for Grade VII Junior High School." Their focus was on gender representation found in reading texts, dialogues and illustrations found in the coursebook. Descriptive qualitative approach and Porreca's (1984) gender analysis was used to identify differences and similarities in both representations. Outcomes of their research ascertained that female dominance was found in reading texts and dialogues, but that male dominance was observed in illustrations.

2. Research Methods

Research methods serve as a foundational framework for the emergence of reliable research results. Being the lifeblood of an effective research, research methods have been given the first priority in conducting every empirical research. This paper was carried out using both quantitative and descriptive qualitative research methods. Firstly, the data on gender representation were collected from selected coursebook Life (Intermediate) and were statistically entered. Then using Porreca's (1984) and Leiskin's (2001) frameworks, collected data were analyzed. Analysis section was divided into sections: (1) Gender-linked nouns used for designation, (2) Gender-related leisure activities, (3) Gender visibility, and (4) Gender firstness. The third step known as interpretation of analyzed data was done through descriptive qualitative method. Gender stereotypes, Communicative dominance and social dominance found in this coursebook were discussed in Results and Discussion section.

2.1 Analysis of Gender Representation in Life (Intermediate)

Gender representation plays a vital role in coursebooks as it can affect the beliefs and attitudes of teachers and learners in teaching and learning processes. Coursebooks which are not specifically meant for target learners are designed as scrupulously as possible not to have negative impact on gender representation in different cultures.

The following is the table which shows gender-linked nouns related to designations for males and females. M refers to Male and F refers to Female.

Table 1: Gender Representation Related to Occupations

No	Unit	Occupation	M	F	No	Unit	Occupation	M	F
1	1a	IT student	0	1	33	6d	Waiter	1	0
2		Finance assistant	1	0	34	7	Architect	0	1
3		Sales assistant	0	1	35	7a	Photographer	4	0
4	1c	Anthropologist	2	0	36	7b	Presenter	0	1
5		primate researcher	0	1	37	7b	Ecologist	1	0
6	1d	art director	1	0	38	7d	estate agent	1	0
7		electronics company staff	0	1	39	8b	Artist	1	0
8	1f	Peruvian weaver	1	0	40	8c	Aviator	0	1
9		Gold-medal winning swimmer	0	1	41		Navigator	1	0
10	2a	Presenter	1	0	42		Archaeologist	0	1
11	2b	Dancer	1	0	43		Geneticist	1	0
12	2e	Film director	1	0	44	9	market researcher	1	0
13	2f	Taiko master	1	0	45	9a	police officer	1	0
14	3	Radio presenter	0	1	46	9b	shopping expert	0	1
15	3a	Raft woman	0	1	47	9d	Sales assistant	1	0
16	3c	Marine ecologist	1	0	48		Sales operator	0	1
17	3f	Project Manager	1	0	49	10	marathon athlete	1	0
18	4	Office staff	1	2	50	10a	Presenter	1	0
19	4a	Accountant	0	2	51	10b	President of the Mars society	1	0
20		Nurse	0	1	52	10c	Runner	0	1
21		Senior Technician	1	0	53		Hitchhiker	1	0
22		Farmer	1	0	54	11a	Survival International Spokesman	1	0
23		Manager	1	0	55	11b	travel journalist	0	1
24	4b	Gas station Attendant	0	1	56	11c	Technician	1	0
25		factory worker	0	1	57	11d	Secretary	0	1
26		Student	0	1	58	11R	Google's executive chairman	1	0
27	5a	Biologist	1	0	59	12	Interpreter	0	1
28		Conservationist	1	0	60		Fisherman	1	0
29	5b	Holidaymaker	1	0	61	12a	wildlife researcher	0	1
30	5d	Tour guide	0	1	62		Biologist	0	1
31	6c	Neuroscientist	1	0	63	12b	Explorer	1	0
32		restaurant owner	1	0	64	12c	Samurai	1	0
					65	12R	wildlife photographer	1	0

It is said that depending on gender, they have different interests for pastime activities. For instance, teenage boys would consider playing football while girls would think of going shopping for clothes.

Table 2: Gender Representation Related to Leisure Activities

No	Unit	Leisure	M	F	No	Unit	Leisure	M	F
1	2d	Going out	1	1	5	5b	Going on a trip	2	2
2	3b	Travelling	0	1	6	9c	mountaineering	1	0
3	3e	Picnic	1	0	7	11f	Skiing	0	2
4	5	Going on a round-the-world trip	0	1					

Gender visibility was analyzed using significant visual aids in all 12 units of coursebook. Gender visibility based on visuals in Life (Intermediate) coursebook is as follows.

Table 3: Frequency of Gender Visibility in Visuals

No	Unit	Description	M	F	No	Unit	Description	M	F
1	1	Family event	0	2	30	7f	Immigrants	3	0
2	1a	Using mobile phone	1	0	31	8c	Pilot	0	1
3		Quechua high school student	1	0	32	9b	Shopping expert	0	1
4	1b	Birthday party	0	2	33		Shopper	0	1
5	1d	Job interview	1	2	34	9f	Buyer	1	0
6	1f	Peruvian weaver	1	0	35		Seller	1	0
7	1R	Olympic athlete	0	1	36	10	Marathon runners	1	1
8	2	Mexican folk dancer	0	2	37	10a	Doctor	1	0
9	2a	musician	4	0	38		Patient	0	1
10	2b	Singer	1	0	39	10c	Skier	1	0
11		Hip Hop dancer	3	2	40		Refugee	1	0
12	2d	Film director	1	0	41	10d	Police	1	0
13	2f	Taiko master	1	0	42		Victim	1	0
14	3	Water fetcher	0	12	43	10f	Hiker	1	0
15	3a	Raft rower	3	0	44	11	Koro language speaker	0	1
16	3c	Adventurer	1	0	45		Linguist	1	0
17	4	Children playing inside old jeep	3	0	46	11a	Tribe	4	1
18	4a	Bikers	3	0	47	11e	Residents' meeting	1	2
19	4b	Gas station attendant	0	1	48	11f	Antarctic walkers	0	2
20		Factory worker	0	1	49	11R	Newspaper reader	1	0
21		Graduate	0	1	50	12	Fisherman	1	0
22		Student	0	1	51	12a	Wildlife researcher	0	1
23	4c	Chinese factory workers	11	7	52		Biologist	0	1
24	4f	Dancer	0	1	53	12b	Man eating his boots	1	0
25	4f	Businessmen	2	0	54	12c	Samurai	1	0
26	5a	Long walker	1	0	55	12d	Man looking at his watch	1	0
27	5c	Hiker	1	0	56	12e	Au pair	0	1
28	6b	Man engaging in imaginary eating	1	0	57		Host	2	2
29	7c	Amateur singer	4	0					

The following table shows the frequency of gender firstness in listening comprehension of Life (Intermediate) coursebook.

Table 4: Frequency and Percentage of Gender Firstness

Male (%)	Female (%)
38 (47.5%)	42 52.5%)

3. Results and Discussion

With regard to the analysis, it was found that coursebook writer of Life (Intermediate) attempted to give equal role of importance in most parts of the coursebook although standard deviations of occupation and visibility were higher than other areas. To start with, it was observed that the role of office assistant was shared by both males and females in Unit 4 Open-up. What was surprising in findings of this research is culture-bound. Some gender-linked occupations are no longer confined to gender but their professionalism and discipline. For instance, according to Table 1, it was seen that an IT student, aviator, archeologist, travel journalist, and wildlife researcher are females. It deviated the widely accepted relativism that those jobs are mostly done by males. It was even noted that people doing extreme sports like white water rafting in Unit 3a and walkers in Antarctica in Unit 11f are females. These extreme sports are done mostly by male athletes but this coursebook tends to highlight gender equality in terms of physical ability and mental strength. This wanes the power of male dominance over females as the latter have engaged in such male-related activities nowadays.

With regard to analysis of this paper, it can be observed that occupations like weaver are confined to females only in Myanmar society. There is a substantial number of occupations which fit the view of Myanmar society as well. Most females' jobs are related to public relations like interviewer, dancers, secretaries, radio presenters and so on. Most males' jobs are related to hard infrastructure like technicians, neuroscientists and navigators, and to politics and those at the top of hierarchical position like President of the Mars society, spokesman and executive chairman. In addition, all musicians and singers illustrated in this coursebook like those in Unit 2a are males.

In terms of leisure activities, it was obvious that both males and females are interested in going out for dinner or for fun in Unit 2d, and in going on a trip or travelling in Unit 3b and 5b. Due to diachronic changes in beliefs and attitudes, females are no longer absorbed in their household activities but in outdoor activities like going out for shopping and travelling to different places. It was found that gender-linked designations were assigned to males and females based on widely accepted values in that native society. For instance, in Unit 1a, Quechua high school student wearing traditional costume is male as only males are allowed to complete their studies until high school. In Unit 2f, Taiko master is a male because of common beliefs and culture in Japanese society as it is related to Buddhist and Shinto religions, and Taiko is regarded as a sacred instrument to be play by males only. 12 female water fetchers from Indian villages in Unit 3 Open-Up still reflects females from some distant villages of Myanmar. Occupations which are considered dangerous like Hiker in Unit 10f, fishermen in Unit 12 and explorer in Unit 12b are normally done by males mostly in societies.

Although most Asian society gives more role to males in conversations, results of this paper proved that both males and females were given equal importance to reinforce gender equality. It was

found that even conversations related to extreme sports and adventures like in Unit 3a were led by females and they had communicative dominance over males as they served the central role in these conversations. The following Table 5 and Figure 1 show the overall results of the research.

Table 5. Gender Representation in Life (Intermediate) Coursebook

Gender Representation	Male	Female	Standard Deviation
Occupation	44	28	11
Leisure Activities	5	7	1
Visibility	69	51	13
Firstness	38	42	3
Total	156	128	20
Overall Percentage	55	45	7

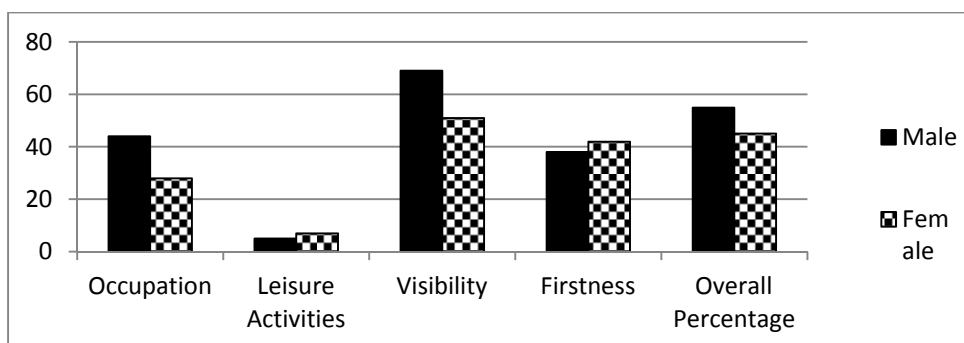


Figure 1: Gender Representation in Life (Intermediate) Coursebook

Overall results of this research as shown in Table 5 and Figure 1 are in line with those of Hafidhoh, et.al. (2018) in that male dominance (a total of 69 times) over female (a total of 51 times) was found in visibility through illustrations. It is likely that coursebook writers attempt to preserve widely accepted values and at the same time raise awareness on coursebook users that the role of women has become as significant as that of men in different cultures these days. It attempts to balance gender representation in terms of gender visibility, gender firstness, gender-free occupations and gender-free activities as much as possible. However, male dominance was found in Occupation (44) and Visibility (69) whilst female dominance was observed in Leisure Activities (7) and Firstness (42). Coursebook writers did not give dominance to only one type of gender. It is one of the factors which make this coursebook applicable and acceptable by both teachers and learners from different countries.

Similar to findings of Nagatomo (2010) in "A Critical Analysis of Gender Representation in an EFL Textbook," female characters (52.5%) were slightly more significant than males in terms of gender firstness found in selected coursebook. Unlike the results of Nagatomo's research, gender-related household activities except fetching water were not found in selected coursebook. As the main purpose of National Geographic Learning is to help its users learn English through exploration of the world, the coursebook does not stick to only one culture but to those around the world.

Like the findings of Hall (2014), male dominance (55%) was found in overall percentage of gender representation. As the standard deviation for overall percentage was only 7, it can be assumed that significant dominance was not found. Unlike the research done by Hall, the significance of male-centered language was not found as more or less equal importance was given in different contexts in the coursebook. Contrary to his research, both men and women shared most of the spare time and leisure activities like going out and travelling. Approximately equal distribution of gender representation was observed through values and traditions around the world.

4. Conclusion

To wind up briefly, this paper attempts to highlight gender representation in Life (Intermediate) with focus on gender-related designations, gender-related leisure activities, gender visibility and gender firstness. With regard to statistical data and data interpretation based on frameworks of Porreca (1984) and Leiskin (2001), it can be concluded that an effective coursebook meant for general adult users is free from gender imbalance and bias on gender representation so that it does not have negative impact on understanding of widely accepted values and beliefs of users around the world who are trying to improve their language proficiency through observing different contexts worldwide. Further researches can be done on other coursebooks relating representation of gender and cultural notes. It is hoped that this paper will be useful for those who are interested in observing the role of gender representation in Life series.

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A Study on Attitude towards Science and Achievement of Grade 8 Students from Chanayetharzan Township

Ohnmar Win¹

Abstract

The main purpose of this study is to investigate the attitude towards science and achievement of Grade 8 students from Chanayetharzan Township, Mandalay Region. Descriptive Survey method and quantitative approach were used. The students in this study were selected by using simple random sampling technique. A total of 543 Grade 8 students (223 males and 320 females) from selected schools participated. As research instrument, questionnaire of Test of Science-Related Attitude (TOSRA) developed by B. J. Fraser (1981) was used. According to the result findings, the level of attitude towards science was satisfactory. There were significant differences in attitude towards science and science achievement by gender and school. Moreover, based on the results, attitude towards science was found to be significantly and positively correlated with their science achievement ($r = .406, p < .01$). As a result, attitude towards science is really important for students. Research findings proved that science attitude have an effect on science achievement and it is necessary to improve science attitude among students.

Keywords: Attitude, Science, Achievement

1. Introduction

In the present technology dominated world, science subject is among the crucial subject of the school curricula in terms of preparing educated human power for the overall development. Studying science play a very important role in developing human thinking more creative, reasonable, and able to analyze problems and to forecast future. Hence, quality of science education would be at the heart of quality education assurance endeavors around the globe. Performance of students in sciences subject highly implicated towards their overall cognitive development and performance in other subjects.

Attitude is related to coping with and management of the emotions occurring during learning process, and they play an important role in directing human behaviour. Whether attitudes occurring as part of a system of values and beliefs are positive or negative affects learning process in a direct manner and influences future lives of individuals (Seferoglu, 2004). And attitudes are the best predictor for estimation of students' success (Hendrickson, 1997).

Expected achievement is factor that heavily influenced by attitudes towards science. As would be expected, positive attitude towards science lead to better results on achievement measures of science capability (Weinburgh, 1998). A student's attitude towards science is more likely to influence achievement in science than achievement influencing attitude (Schibeci & Riley, 1986). There were strong positive relationships between attitude towards science and science achievement. According to this fact, it is an interesting thing whether the students' academic achievement depends on their attitudes towards that subject or not. Hence, the study about the correlation between students' science attitude and their science achievement is also one of the essential studies for promoting the students' attitude related with their lessons and their educational benefits.

¹ Lecturer, Department of Educational Psychology, Sagaing University of Education, linnlattedu@ gmail.com,

This study can also provide the essential supports for students' learning science. And then, the students' academic achievement in science will be improved and then carried out the welfare of the society as much as possible. So, it is obvious that the investigation of middle school students' attitude towards science is significantly important for the basic education sector in Myanmar.

1.1 Aim of the Study

The main aim of the study is to investigate the attitude towards science and achievement of middle school students (Grade 8 students) in Chanayetharzan Township. The specific objectives are:

1. to study the differences in attitude towards science and achievement by gender
2. to investigate the differences in attitude towards science and achievement by school
3. to explore where there is relationship between attitude towards science and achievement of Grade 8 students

1.2 Research Hypotheses

1. There is no significant difference in attitude towards science and achievement by gender.
2. There is no significant different in attitude towards science and achievement by school.
3. There is no significant relationship between attitude towards science and achievement of Grade 8 students.

2. Methods

2.1 Sampling

By using simple random sampling technique, the schools and students were selected from Chanayetharzan Township, Mandalay Region. Total five State High schools and five State Middle schools were selected. A total of 543 students participated in this study. The sample of Grade 8 students included 223 males and 320 females.

2.2 Research Method

Quantitative approach was used in this study. Survey method and descriptive research design were employed.

2.3 Instrumentation

The instrument used in this study was Test Of Science-Related Attitude (TOSRA) questionnaire developed by B. J. Fraser (1981). The science attitude were categorized into seven dimensions, which are social implication of science, normality to scientists, attitude to scientific inquiry, adoption of scientific attitudes, enjoyment of science lessons, leisure interest in science, career interest in science. Cronbach's alpha of the whole scale of science attitude was 0.852. Science achievement of Grade 8 students in this study was assessed by the students' score on science subject in first semester examination.

3. Results and Discussion

Table 1 Descriptive Statistics of Attitude towards Science

Variable	N	Minimum	Maximum	Mean	Standard Deviation
Attitude towards science	543	48	137	105.45	12.779

Table 1 indicated that the total mean score (105.45) was higher than the theoretical mean score (87.5). Therefore, the students' attitude towards sciences was somewhat satisfactory.

Table 2 Descriptive Statistics of Attitude towards Sciences by Subscales

Variable	N	Minimum	Maximum	Mean	Standard Deviation
Social Implications of Science	543	5	20	16.71	2.133
Normality to Scientists	543	5	20	12.79	2.433
Attitude to Scientific Inquiry	543	7	20	16.36	2.537
Adoption of Scientific Attitudes	543	5	20	14.68	2.252
Enjoyment of science Lessons	543	5	20	15.91	3.051
Leisure Interest in Science	543	5	20	15.15	3.111
Career Interest in Science	543	5	20	13.85	3.211

According to the Table 2, students have the highest in the first subscale (social implication of science) and the lowest in the second subscale (normality to scientists).

Table 3 Result of Independent Sample t-test for Attitude towards Science by Gender

Variable	Gender	N	Mean	SD	MD	t	df	p
Attitude towards Science	Male	223	103.63	13.961	-3.097	-2.796**	541	.005
	Female	320	106.73	11.742				

Note: **The mean difference is significant at .01 level.

According to the Table 3, the results mentioned that there were significant differences between male and female students in attitude towards science at .01 level. And, it can be concluded that female students had significantly higher than male students in attitude towards sciences ($p < .01$).

Table 4 Results of ANOVA for Attitude towards Science by Schools

Variable		Sum of squares	df	Mean Square	F	p
Attitude towards Science	Between Group	3210.083	9	356.676	2.229*	0.019
	Within Group	85304.469	533	160.046		
	Total	88514.552	542			

Note: * The mean difference is significant at .05 level.

Table 4 revealed that there was significant difference in students' attitude towards science according to schools at .05 level.

Table 5 Descriptive Statistics of Science Achievement

Variable	N	Minimum	Maximum	Mean	Standard Deviation
Science Achievement	543	4	97	69.31	17.656

According to the results of Table 5, the average mean score of the Grade 8 students' achievement was 69.31 while the minimum and maximum score were 4 and 97. Therefore, Grade 8 students' academic achievement in the present study was somewhat satisfactory.

Table 6 Result of Independent Sample t-test for Science Achievement by Gender

Variable	Gender	N	Mean	SD	MD	t	df	p
Science Achievement	Male	223	65.23	18.998	-6.914	-4.571***	541	.000
	Female	320	72.15	16.088				

Note: ***The mean difference is significant at .001 level.

According to the Table 6, the results mentioned that there were significant differences between male and female students in science achievement at .001 level. And, it can be concluded that female students were significantly higher than male students in science achievement ($p < .001$).

Table 7 Results of ANOVA for Science Achievement by Schools

Variable		Sum of squares	df	Mean Square	F	p
Science Achievement	Between Group	21377.285	9	2375.254	8.578***	0.000
	Within Group	147588.354	533	276.901		
	Total	168965.639	542			

Note: ***The mean difference is significant at .001 levels

The result from ANOVA showed that there were significant differences by their schools concerning science achievement ($p < .001$).

Table 8 Correlation Matrix between Attitude towards Science and Science Achievement

Variables	Attitude towards Science	Science Achievement
Attitude towards Science	1	.406**

Note **Correlation is significant at .01 level (2-tailed).

According to Table 8, the correlation between attitude towards science and science achievement was moderate and significant correlation ($r=.406$, $p<.01$). So, it could be interpreted that attitude towards science was positively correlated with science achievement of Grade 8 students.

4. Conclusions

According to result, female students had higher in science attitude and achievement than male students. In order to develop attitude of male students towards natural science education and to minimize the gender gap, teachers should give special attention for male students starting from secondary school level up to higher education. The teacher should try to help male students to set academic goal and to plan effectively for academic work.

And, there was significant difference in students' attitude towards science and achievement by school. It may also be differed by the location and environment of the schools, favourable classroom atmosphere, supporting materials and motivation strategies on their learning. Moreover, teachers should apply various interesting teaching methods and many kinds of teaching aids to become alive the teaching-learning situation.

The present study indicated that science attitude and science achievement had the positive relationship. Therefore, significant positive correlation was established between students' science attitude and their achievement. It meant that students who have high science attitude scores tend to receive higher scores in science achievement.

For the better achievement in natural science, willingness and positive reaction are important. Lack of interest can negatively influence the achievement of students. So changing the attitude of the students is vital. Thus teachers should try:

- To change the attitude of the students towards sciences.
- Motivate students to participate in the science education.
- Create conditions in which students learn to participate in science education.

As a result, student can develop confidence in sciences. Once they acquire the interest to participate in different science education activities, they can easily involve in different science related fields.

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Measurement of the Neutron Fluxes in Two Irradiation Channels of Isotopic Neutron Source Facility using Neutron Activation Analysis (NAA) Method

Khin Ye Lwin¹, Khin Cho Cho², and Moe Phyu Hlaing³

Abstract

The neutron flux is very important factor in data analysis. The accuracy of the measurement is partly depends on the accuracy of neutron flux measurement. The thermal and epithermal neutron fluxes in two irradiation channels in the ²⁴¹Am-Be isotopic neutron source irradiation facility were measured by using neutron activation analysis (NAA) method. The activity of ²⁴¹Am-Be neutron source was 0.27 Ci. Gold and indium foils were used as the activation foils and the reactions are ¹⁹⁷Au (n,γ) ¹⁹⁸Au and ¹¹⁵In (n,γ) ^{116m}In. The respective emitted gamma ray spectrums from activated foils were measured by using Falcon 5000 HPGe detector system. The measured data were compared with the MCNP simulation. The measured neutron fluxes are agreed with the MCNP results. The results of the neutron fluxes were low but stable and sufficient to use for research and education on elemental analysis and reaction cross section measurement by using neutron activation analysis method.

Keywords: ²⁴¹Am-Be isotopic neutron source, neutron flux, neutron activation analysis(NAA), HPGe detector

1. Introduction

Neutron Irradiation facility is one of the important educational tools for the research centers and university laboratories. In many developing countries, one of the major drawbacks is the lack of appropriate neutron sources, either a nuclear research reactor or a neutron generator. With the purpose to assess the feasibility of using other alternative neutron sources, isotopic neutron sources of an appropriate design and characteristics in terms of neutron flux and spectra could be used to carry out interesting and meaningful training and research oriented projects based on neutron activation and radiochemistry. Although neutron flux is not high, isotopic neutron sources are effective for many research institutions without nuclear research reactors or neutron generators. The advantages of isotopic neutron sources are extremely small size, relatively low purchase and maintenance costs, long and short term stability of the neutron output, possibility to use thermal and fast neutron fluxes, ease and low cost of shielding with a negligible health hazard [1].

Therefore the small-sized neutron irradiation facility using ²⁴¹Am-Be isotopic neutron source has been assembled to perform the several measurements such as neutron flux measurement, reaction cross-section measurement, qualitative and quantitative multi-elemental analysis by neutron activation analysis (NAA) technique. The accuracy of the measurements partly depends on the accuracy of neutron flux [2]. The objective of the research is to measure thermal and epithermal neutron fluxes in two irradiation channels of isotopic neutron source facility by neutron activation method and compare with the MCNP simulation.

¹ Dr. Division of Atomic Energy, Ministry of Education, [123, Natmauk Road, Bahan, Yangon, Ph: 09448023448, Fax: 01 545065 ms.khinyelwin@gmail.com](#).

² Division of Atomic Energy, Ministry of Education, cho.khincho@gmail.com

³ Material Science and Research Division, Ministry of Education, 19moephyu@gmail.com

system is to protect operation personnel from possible injury by escaping radiation. The water is the most effective neutron shielding materials which has a plenty of light atoms (e.g. hydrogen atoms). In the irradiation facility, water was used for the dual purpose; moderating the fast neutrons and reducing the radiations to acceptable levels.

2.4 Gamma Ray Spectrometry

In the experiment, Falcon 5000 gamma ray spectrometer was used to measure the gamma radiation emitted from the induced materials. It is the portable electrically-cooled HPGe Spectrometer which provides radiation monitoring and nuclide identification and quantification. There are four modes of operation providing dose and count rate measurements, locating radioactive material or a radiation hotspot, nuclide identification (NID) with activity measurements. For the spectrum acquisition and analysis, Genie 2000 basic spectroscopy and gamma analysis packages included. The Falcon 5000 components are housed in a single unit and consist of HPGe detector, GM tube detector, cryostat cooler and controller, InSpector 2000 MCA, WLAN/LAN module, internal battery charger, and Global Positioning System. The 5 cm thick lead bricks were used as detector shield to reduce the effect of background.



Figure 2. The experimental setup for the measurement of the gamma ray

2.5 Measurements Neutron Flux by Neutron Activation Method

In this study, a foil activation method was applied for neutron flux measurement. Two types of foils were used; ^{115}In and ^{197}Au [4, 6, 7], and the physical characteristics of each are summarized in Table 1.

Table 1. Physical parameters of activation foils

Foils	Size	Purity (%)	Thickness (mm)	Weight (g)
¹¹⁵ In	[1 x 1] cm ²	99.99	0.5	0.68
¹⁹⁷ Au	[1 x 1] cm ²	99.47	0.5	0.30

For thermal neutron flux measurement, each of bare ¹¹⁵In activation foils were irradiated in two irradiation channels which were far 4 cm and 8 cm from the source respectively. After the foils were irradiated, gamma rays from the induced activities were measured with the HPGe detector, whose detection efficiency had been calibrated with standard gamma sources and the obtained data were used to calculate the neutron flux. Experimental arrangement for ¹⁹⁷Au was similar also. For the measurement of epithermal neutron flux, each of ¹¹⁵In and ¹⁹⁷Au activation foils were sandwiched between two cadmium sheets of 1 mm thick and were also irradiated in two channels. Experimental procedure was also similar to bare foils.

2.6 Neutron Flux Calculation

The neutron fluxes can be deduced by the following equations. The detailed theoretical expression for specific activity and neutron flux of bare foil and foil with cadmium cover was presented in the works which referred to as [6,7].

Specific counting rate (or specific activity) of A_{sp} is defined as

$$A_{sp} = \frac{N_p \lambda}{w(1-e^{-\lambda t_c})e^{-\lambda t_t}(1-e^{-\lambda t_d})} \dots \dots \dots (1)$$

Where N_p is gamma peak area (count) of interest; λ is decay constant; t_c is irradiation time; t_t is cooling time; t_d is counting time; and w is irradiated sample mass. Therefore, the epithermal neutron flux is

$$\Phi_{epi} = \frac{A_{sp}(cd)}{G_{epi} I_0(\alpha) \cdot N_A \cdot \theta \cdot y_{\gamma} / M} \dots \dots \dots (2)$$

And for thermal neutron flux is

$$\Phi_{th} = \frac{G_{epi}}{G_{th}} (R_{cd} - 1) Q_0 \Phi_{epi} \dots \dots \dots (3)$$

Where ϕ_{th} and ϕ_{epi} (n.cm⁻²s⁻¹) are thermal and epi-thermal neutron fluxes, respectively; G_{th} and G_{epi} are self-shielding coefficients for thermal and epi-thermal neutrons, respectively (for thin foils, $G_{th} \approx G_{epi} = 1$); $I_0(\alpha) = \int_0^\infty \frac{\sigma(E)dE}{E^{1+\alpha}} (1eV)^\alpha$ is resonant integral for distribution of epi-thermal neutron fluxes without obeying the rule of 1/E; α is spectrum coefficient expressing spectrum deviation from the rule of 1/E; $\sigma(E)$ is neutron capture cross-section for reaction (n, γ) at energy E; N_A is Avogadro number; θ is isotope abundance; y_{γ} is gamma-emitting probability of

interest; ε_p is counting efficiency at energy peak of interest; M is atomic mass of element: $Q_0 = \frac{I_0(\alpha)}{\sigma_0}$; σ_0 is capture cross-section for thermal neutron of interest; and $R_{cd} = \frac{A_{sp(bare)}}{A_{sp(cd)}}$ is cadmium ratio.

Thermal and epithermal neutron fluxes were deduce from measured gamma activities of irradiated indium and gold foils. The nuclear characteristics of the foils are listed in Table 2.

Table 2. The nuclear characteristics of the activation foils [4, 7, 8, 9, 10]

Reaction	t_c	t_r	t_d	$T_{1/2}$	θ (%)	γ -ray nergy (keV)	γ (%)	σ_0 (b)	I_0 (b)
$^{115}\text{In}(n,\gamma)^{116m}\text{In}$	3 h	2 min	1800 s	54.13 min	95.71	1293.5	84.4	201.2	3209
$^{197}\text{Au}(n,\gamma)^{198}\text{Au}$	72 h	15 min	3600 s	2.697 d	100	411.8	96	98.65	1571

2.7 Monte Carlo Simulation

The MCNP code developed in Los Alamos carries out the radiation transport, relating to neutrons, photons and electrons with energetic and temporal dependence in a three-dimensional geometry by using the Monte Carlo method [3, 11]. In this work, the MCNP4C code was used to estimate thermal and epithermal neutron fluxes in two irradiation channels of ^{241}Am -Be isotopic neutron source facility. Total energy range considered was from 10^{-5} MeV to 1.1×10^1 MeV. For the neutron flux calculations, the F4:N tally card was used. This tally allows the calculation of the average neutron flux in the volume (particles/cm²). In this Monte Carlo simulation, 10^7 particles were stimulated for each cycle.

3. Results and Discussion

The measured thermal and epithermal neutron fluxes in two irradiation channels of isotopic neutron source facility by neutron activation analysis method and the simulated results by MCNP code were shown in Table 3.

Table 3. Neutron flux values in two irradiation channels of isotopic neutron source facility

Channel	$\phi_{th} (^{115}\text{In})$ (n.cm ⁻² .s ⁻¹)	$\phi_{th} (^{197}\text{Au})$ (n.cm ⁻² .s ⁻¹)	$\phi_{th}(\text{MCNP})$ (n.cm ⁻² .s ⁻¹)	$\phi_{epi} (^{115}\text{In})$ (n.cm ⁻² .s ⁻¹)	$\phi_{epi} (^{197}\text{Au})$ (n.cm ⁻² .s ⁻¹)	$\phi_{epi}(\text{MCNP})$ (n.cm ⁻² .s ⁻¹)
Channel 1 (4 cm)	6.45×10^3	8.59×10^3	6.32×10^3	3.30×10^1	6.56×10^1	1.74×10^3
Channel 2 (8 cm)	1.84×10^3	2.74×10^3	2.10×10^3	2.79×10^0	1.54×10^1	4.55×10^2

The results are shown that the measured thermal neutron flux by ^{115}In foil is agreed with the MCNP calculation and that of ^{197}Au foil is a bit higher than calculation result. It can be proved that the neutron fluxes measured by ^{197}Au foil are higher than those measured by ^{115}In

foil in other research papers [4]. For epithermal neutron fluxes, the measured results by activation foils are lower than that of MCNP calculation. It is observed that values of thermal neutron flux in both channels are moderately high but the values of epithermal neutron flux are very small at channel 2. As the neutron flux are many order of magnitude lower than that of a nuclear reactor or of a particle accelerator, large samples must be irradiated in order to achieve good sensitivity.

4. Conclusion

The thermal and epithermal neutron flux in the two irradiation channels have been determined by using NAA method and MCNP simulation. The measured neutron fluxes are agreed with the MCNP simulation for thermal neutron fluxes. The neutron flux is higher in the closer channel than in the further channel. The facility is low cost but very useful. Water as moderator is also easily available and cheap. This neutron irradiation facility has very stable neutron flux that can be used to measure the induced activity in the specified material and sufficient to use for several measurements such as elemental analysis, reaction cross-section measurement, etc. As the neutron flux in an isotopic neutron source is usually quite modest, large samples are often required to obtain a reasonably high induced activity [1]. This irradiation facility is suitable to use as research and educational tool.

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A Morphophonemic Analysis of Myanmar Language

Tun Aung Kyaw¹

Abstract

The purpose this paper is to analyze the morphophonemic system of Myanmar language. The procedure for morphophonemic analysis is (a) to examine the data, consulting the glosses, and make a provisional division of the forms into morphemes, (b) to find each morpheme that alternates, and locate all of its allomorphs, (c) within each allomorph, to locate the particular segment or segments that alternate, (d) to consider the logical possibilities, setting up the underlying representations so that all the allomorphs of each morpheme can be derived from a single underlying representation by general phonological rules. The results of this analysis are that we can establish a morphophonemic system of Myanmar language and this result will be very useful for Myanmar language learners around the world. The key findings are aspiration rules, voicing rules and grammatical tone rules in Myanmar phonology.

Keywords: morphophonemic system, allomorph, segment, underlying representation, phonological rules.

1. Introduction

Morphophonemics is a branch of linguistics referring to the analysis and classification of the phonological factors which affect the appearance of morphemes, or, correspondingly, the grammatical factors which affect the appearance of phonemes.

In the European tradition, morphophonology (or morphonology) is the preferred term; in the American tradition, it is morphophonemics. In some theories, morphophonemics is seen as a separate level of linguistic structure intermediate between grammar and phonology. In early versions of generative grammar, morphophonemic rules were distinguished as a separate component in the derivation of sentences, whereby a terminal string of morphemes would be converted into their correct phonological form. In later generative theory, the term systematic phonemics became standard.

In morphophonemic analysis, there are two levels which are segmental level and suprasegmental level. I would like to present segmental level analysis only in this paper.

2. Methods

2.1 Morphophonology (segmental)

In this section, I want to indicate the conditioning factors for the morphophonology. There are three assimilatory processes in the phonology (morphophonology) of the Myanmar language. I want to present details of such processes that involve alternations between different phonemes (indicating whether or not productive), and any others involving significant phonetic changes.

¹ Dr. Professor, Department of Myanmar, Yangon University of Distance Education

2.2. Non-causative Verb versus Causative Verb

Causative is a term used in grammatical description to refer to the causal relationship between alternative versions of a sentence. For example, the pair of sentences *The cat killed the mouse* and *The mouse died* are related, in that the transitive *kill* can be seen as a ‘causative’ version of the intransitive *die*, viz. ‘cause to die’ (*The cat caused the mouse to die*); similarly, some affixes have a causative role, e.g. *-ize*, as in *domesticize* (= ‘cause to become domestic’). This is a relationship which is clearly established in the morphological structure of some languages (e.g. Japanese, Turkish), where an affix can systematically distinguish between **non-causative** and **causative** uses of a verb (‘causative verbs’ or ‘causatives’), e.g. ‘she eats’, ‘she causes (someone) to eat’, which is similar to English *she makes him eat*. Some linguists have also tried to apply the notion of causative systematically to English, seeing it as an abstract underlying category from which sets of ‘surface’ verbs (such as *kill* and *die*) can be derived.

In Myanmar verb construction, there are many pairs of verb; one version is non-causative version and another is causative version. Some causative version of each verb is composed by aspiration and some causative version of other verbs is composed by devoicing. Examples are as follows:

Non-causative Verb

/kwe` / ‘break’

/tea’ / ‘fall’

sou? ‘be torn’

pau? ‘be a hole’

ti? ‘be block’

Non-causative Verb

/lu?/ ‘be free’

/ne` / ‘bend’

/mwa’/ ‘be crispy’

/ŋa’/ ‘enough’

/pu?/ ‘bend’

Causative Verb (aspiration)

/khwe` / ‘cause to break’

/teha’/ ‘cause to fall’

/shou?/ ‘tear’

/phau? / ‘make a hole’

/thi?/ ‘block’

Causative Verb (devoicing)

/ hlu?/ ‘cause to be free’

/hne` / be bent’

/hmwa’/ ‘make crispy’

/hŋa’/ ‘share’

/hpu?/ ‘make bent’

According to above examples, plosive consonants in non-causative verbs become aspirated plosive consonants in respective counterparts of causative verbs. Moreover, liquid consonants in non-causative verb become devoiced liquid consonants in counterparts of causative verbs.

However all the pairs of this type do not follow this morphophonemic rule. Examples are as follows:

/teo` / ‘welcome’

/jo’/ ‘be reduced’

/wĩ ‘enter’

/ʔei?/ ‘sleep’

/teho` / ‘be sweet’

/eɔ’/ ‘reduce’

/Θwĩ’/ ‘cause to enter’

/Θei?/ ‘cause to sleep’

/maũ maũ' khwè 'the dog of Maung Maung

4. Conclusion

The results of this analysis are that we can establish a morphophonemic system of Myanmar language and this result will be very useful for Myanmar language learners around the world. The key findings are aspiration rules, voicing rules and grammatical tone rules in Myanmar phonology.

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Economic Development and SME Policy in Lao PDR

Souksavanh Vixathep¹, Nobuaki Matsunaga²

Abstract

Following their economic reforms in the late 1980s, the Lao economy has developed as favourably as Vietnamese. Yet, despite the similarities in political regime, economic performance, and economic and legal reforms, Laos has not been as highly recognized as Vietnam. Applying qualitative and quantitative approaches on a comparative analysis, the paper aims to shed more light on the challenges of Laos in economic development and poverty eradication. To our knowledge this study is among the pioneer works for these two economies.

The study focuses on economic growth, legal reform, and small and medium enterprise (SME) policy. It reveals that SMEs in Laos and Vietnam are very small in employment size. However, the number of enterprises, particularly in the larger category, is much smaller in Laos than in Vietnam even after taking into consideration the difference in population size. Moreover, the business environment for 'starting a business' and 'getting credit supply' is more restrictive in Laos than in Vietnam. Since 2004 the government of Laos has implemented SME promotion policies and most entrepreneurs evaluate them helpful. However, the policies are found ineffective in this analysis. The findings imply that effective implementation of SME policies is a pressing issue for Laos.

Keywords: Laos, Vietnam, economic development, SME policy, economic reform

1. Introduction

In the last three decades, upon the introduction of the *Doi Moi* reform in 1986, the economic development in Vietnam has achieved noticeable success. Real gross domestic product (GDP) per capita (at 2010 prices) increased from \$382 in 1985 to \$1,835 in 2017 (8-fold increase), while real GDP grew by 7.5 times at an annual growth rate of 6.5%. The proportion of the extreme poor, who live with \$1.9 or less per person a day (2011 international dollar), decreased dramatically from 52.9% in 1992 to 2.8% in 2012. There is sufficient evidence for the Vietnamese economy to be evaluated as highly successful. At the same time, the Lao economy has not been evaluated as successful as Vietnamese, although Laos' economic performance is deemed comparable to that of her neighbor. Specifically, from 1985 to 2017, GDP per capita (at 2010 prices) increased from \$432 to \$1,730 (4-fold increase), and real GDP grew by 7.4 times at an annual growth rate of 6.5%*. [1].

From 1985 to 2005 the annual growth rate in Laos was somewhat lower than Vietnam. However, it surpassed Vietnam in 2005 and has since been somewhat higher. Their GDP per capita in terms of international dollar (PPP) is practically equal, although that of Laos was slightly higher than that of Vietnam up until 1993 (Figure 1). Laos and Vietnam (LV) achieved around 6% of real annual economic growth after 1960 with some fluctuations caused by Asian Financial Crisis in 1997 and the World Financial Crisis in 2008, as well as the post-reform turmoil and University of Hyogo, svixathep@em.u-hyogo.ac.jp natural disasters.

¹ University of Hyogo, svixathep@em.u-hyogo.ac.jp

² Kobe University, matsu@kobe-u.ac.jp

* Unless otherwise noted, all statistics applied for this study are taken from World Development Indicators (various issues), World Bank.

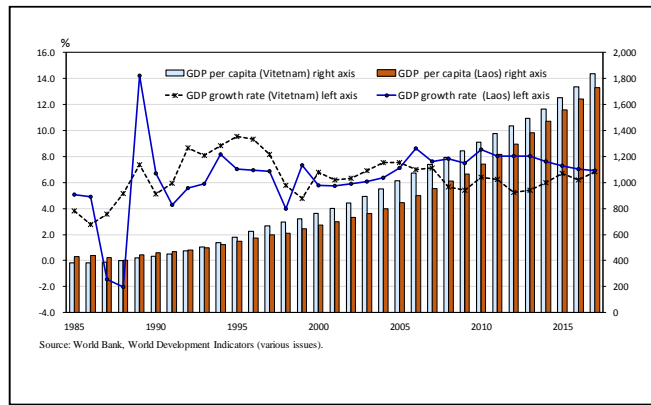


Figure 1. GDP per capita and GDP growth rate of Laos and Vietnam (\$2010 prices)

Why Laos is not as highly evaluated as Vietnam with her comparable economic performance? One of the reasons might be her smaller size in population (6.86 million compared to Vietnam's 95.54 million in 2017) and GDP (\$16.85 billion compared to Vietnam's \$223.78 billion in 2017), which has a much smaller impact on the world economy. However, these two countries have many things in common. Hence, the study will analyze the Lao economy by comparing it to the Vietnamese, in order to shed more light on the challenges facing Laos. The main objective is to find a way for Laos to relieve from the present situation with many people suffering from extreme poverty. The study focuses on the status quo and policies on small and medium enterprise (SME) development, which directly influence the lives of the majority.

2. Comparative Analysis of Lao and Vietnamese Economy

2.1 Economic and agricultural reform

There are many similarities between the two countries: they were colonized by France in the late 19th century until the declaration of independence in 1945; they endured another 30 years of civil war. Finally, in 1975 Laos established the Lao People's Democratic Republic (Lao PDR) and Vietnam the Socialist Republic of Vietnam.

Following independence and unification, LV adopted the Soviet-style economic model (collectivization of agriculture, nationalization of private enterprises, price control and rationing system of most goods, state monopolization of external trade, etc.) aimed at rebuilding the war-depleted economies. However, under the centrally planned economic system, their economies faced the declining, impoverishment, famine problem, and social disorder. Thus, in the late 1980s both governments embarked on a drastic economic reform to resolve the deadlock, namely the *Doi Moi* in Vietnam and *Chintanakan Mai* (New Economic Mechanism) in Laos. LV aimed to transform the centrally planned economy to a market-oriented one. [2].

Major elements of *Doi Moi* are a full-fledged introduction of market economy, including the recognition of multi-ownership of productive means, price liberalization, and emphasis on international division of labor. More specifically, the program includes contract farming, reform of state-owned enterprises (SOEs), recognition of private and foreign enterprises, respect for market prices including interest rates and foreign exchange rates, liberalization of foreign trade and investment, etc. The main elements of the reforms in Laos are similar to those of *Doi Moi*.

Both countries have adopted a gradual approach for reforms. [3] [4].

The food production indexes were very much comparable for both countries at the start of reforms in 1986, followed by a smooth increase the agricultural production. During 1985–2005 agricultural production increased by 2.5 times in LV, and the production grew more rapidly in Laos after 2010. Food supply per capita increased by 53.9% in Laos and 78.1% in Vietnam, since population grew by 56.0% and 38.1%, respectively. The upward trend in cereal production (metric tons per hectare) implies an enhancement in land productivity upon the start of the reforms, although land productivity is higher in Vietnam than Laos. Therefore, it can be concluded that reforms in agriculture were successful in LV.

2.2 Legal Reform

Due to space limitation, this section discusses only legal reforms related private enterprise and excludes the SOEs. Under the socialist regime, only household enterprises were allowed to coexist with SOEs until the end of 1970s. In 1979 the Government of Laos (GOL) came out with a new direction to utilize private and individual economies to expand the production and improve people's lives. This was followed by a further diversification of ownership forms of productive means and the abolition of collectivization in agriculture.

The Constitution promulgated in 1991 formally allowed the ownership of state, groups and individuals, and stipulated the protection of the ownership. The Constitution revised in 2003 clearly states that “All types of enterprises are equal before the laws (Article 13); The State protects and promotes all forms of property rights: State, collective, private domestic and foreign investment (Article 16).” These points are maintained in the 2015-revised Constitution. [5].

In Laos, the Business Law was promulgated in 1994, which states that “The right and interest of local and foreign businesspeople investing in business ... are protected” (Article 2) and that “All types of operations conducted by enterprises in all economic sectors are inter-related and competing on an equal footing before the law” (Article 5). In 2005 the Enterprise Law was enacted to replace the Business Law. However, the contents are almost the same except for one point: The Enterprise Law “applies to private enterprises, both domestic and foreign, state enterprises and joint enterprises established and operating in the Lao PDR” (Article 8), while the “Business law is applicable in the context of business with a registered capital from 1,000,000 kip and over” (Article 8; 1,000,000 kip was equivalent to \$94.00 in 2005). [5].

In Vietnam, private enterprises were formally allowed to exist by the Government Decree No.27 and No.28 regarding the ownership, and Government Decision No.19 in 1988. In 1990, private enterprises were formally approved by the Law on Enterprises. The existence of private enterprises and private ownership of productive means were formally guaranteed by the Constitution in 1992. The new Law on Enterprises became effective in 2000, which covered all types of domestic private enterprises (limited liability companies, shareholding companies, partnerships and private enterprises). This law was epoch-making in that it recognized the lawful profit-making nature of business activities, except for those clearly banned by the law, and that the enterprise registration was drastically changed from the approval to autonomous basis. The procedure was so simplified that the number days required for registration dropped from 20 days to 7 days and that the necessary cost decreased to one-twentieth. The new Constitution in 2002 stipulated that the equal conditions were guaranteed to private enterprises to compete with SOEs.

[5].

With respect to investment promotion, in the late 1980s the laws on promoting foreign direct investment (FDI) in LV initially aimed to control and manage FDI, which did not promote investment as expected. However, since the mid-2000s these laws have been revised to unify domestic and foreign investment and promote FDI, and these have a positive impact on investment in both countries. It is worth noting that the percentage share of FDI in Vietnam has consistently been higher than that of Laos and that Laos started the legal reforms a few years later than Vietnam. [6].

3. SME Policy in Laos

This section starts with understanding the status quo of SMEs in Laos. Table 1 represents the number of firms and their composition by sector and by number of employees in Laos (data from the Economic Census conducted in 2006 and 2013). There is no other comprehensive data which can better illustrate the status quo of SMEs in Laos.¹

Table 1. Number of firms and their composition by sector and number of employees in Laos

	Year of census	2006						2013						
	Sector	1-4	5-9	10-99	100+	Total by industry		1-4	5-9	10-99	100+	Total by industry		
A	Agriculture, forestry and fishing	81.3%	12.5%	6.0%	0.2%	4,318	3.4%	A	63.3%	25.1%	10.4%	1.1%	2,188	1.8%
B	Mining and quarrying	55.6%	17.8%	23.9%	2.7%	297	0.2%	B	22.6%	29.6%	43.2%	4.7%	257	0.2%
C	Manufacturing	90.1%	5.6%	3.8%	0.5%	24,331	19.2%	C	70.8%	18.0%	10.4%	0.7%	15,573	12.5%
D	Electricity, gas, steam and air conditioning supply	29.8%	28.1%	33.3%	8.8%	114	0.1%	D	23.5%	18.5%	47.1%	10.9%	119	0.1%
E	Water supply, sewerage, waste management	70.1%	12.9%	16.7%	0.4%	264	0.2%	E	38.8%	33.5%	24.1%	3.5%	170	0.1%
F	Construction	45.5%	20.2%	32.0%	2.1%	628	0.5%	F	23.1%	24.1%	48.6%	4.2%	642	0.5%
G	Wholesale and retail trade	97.5%	2.0%	0.5%	0.0%	81,780	64.4%	G	89.5%	8.6%	1.8%	0.0%	78,407	62.8%
H	Transportation and storage	92.4%	4.5%	2.9%	0.1%	3,799	3.0%	H	85.9%	9.1%	4.6%	0.4%	3,509	2.8%
I	Accommodation and food service activities	68.1%	22.4%	9.3%	0.2%	3,439	2.7%	I	75.9%	17.7%	6.3%	0.1%	14,549	11.7%
J	Information and communication	91.6%	2.4%	5.4%	0.6%	872	0.7%	J	64.3%	12.8%	21.3%	1.6%	375	0.3%
K	Financial, banking and insurance activities	47.8%	29.1%	21.4%	1.7%	299	0.2%	K	30.1%	36.3%	30.5%	3.0%	531	0.4%
L	Real estate activities	91.3%	4.9%	3.4%	0.0%	618	0.5%	L	84.8%	8.0%	6.9%	0.3%	712	0.6%
M	Professional, scientific and technical activities	82.7%	8.9%	8.4%	0.0%	359	0.3%	M	64.3%	22.5%	12.7%	0.5%	409	0.3%
N	Administrative and support service activities	74.8%	13.9%	10.5%	0.8%	755	0.6%	N	59.8%	27.4%	12.2%	0.6%	854	0.7%
O	Education and training	29.9%	28.2%	41.9%	0.0%	298	0.2%	O	14.6%	24.7%	59.2%	1.4%	417	0.3%
P	Human health and social work activities	87.2%	9.1%	3.7%	0.0%	375	0.3%	P	76.2%	17.8%	5.9%	0.0%	421	0.3%
Q	Arts, entertainment and recreation	85.3%	9.7%	4.9%	0.1%	1,013	0.8%	Q	65.7%	21.7%	12.2%	0.3%	866	0.7%
R	Other service activities	97.2%	2.1%	0.7%	0.0%	3,353	2.6%	R	90.2%	7.7%	2.0%	0.1%	4,809	3.9%
	Total by number of workers	93.4%	4.2%	2.2%	0.2%	126,913	100.0%		83.4%	11.8%	4.6%	0.2%	124,808	100.0%

Source: National Statistics Center (2007) Report of Economic Census 2006. Volume I : Lao Statistics Bureau (2015) Report of Economic Census II, 2013 .

Source: National Statistics Center (2007) Report of Economic Census 2006, Volume 1: Lao Statistics Bureau (2015) Report of Economic Census II, 2013.

It is revealed that in 2013, micro enterprises with 1-4 workers occupy 83.4%, small with 5-9 workers 11.8%, medium with 10-99 workers 4.6%, and large with more than 100 workers only 0.2% of all enterprises. Thus, the *striking small size* is a characteristic of Lao enterprises.

¹ For the Economic Census 2013 the total number of primary economic units were 178,557, of which 134,577 units were surveyed by personal interview. The following economic units are excluded from survey: villages with fewer than 10 economic units, economic units without a permanent address (mobile shops, street vendors, lottery sellers, Tuk-Tuk or taxi driver, mobile fruit carts and other temporary retail shops), other production units with only one labor such as handicraft, weaving, agriculture, forestry and animal breeding. Some 9,704 NPOs and 15 economic units of 'public administration and defence' were excluded. For the Economic Census 2006, out of 209,484 primary economic units, 126,913 units located in the villages with road access were surveyed. Therefore, both censuses are not "census" with 100% samples in the country.

This characteristic, however, was more salient in 2006: micro enterprises with 1-4 workers occupy 93.4%. Reviewing the changes in the composition reveals that all sectors but ‘Accommodation and food service activities’ have decreased the percentage share of the micro enterprises and increased the share of the larger-sized firms between 2006 and 2013. Large sectors, such as ‘Wholesale and retail trade’ and ‘Manufacturing’, occupy 62.8% and 12.5%, respectively, while the share of micro enterprises from 97.5% to 89.5%, and from 90.1% to 70.8%, respectively. However, with 95.1% share in 2013, micro or small enterprises with fewer than 10 workers are still the dominant size in Laos. [7].

Derived from the data of 2013 Economic Census in Laos (Table 1) and 2012 Establishment Census in Vietnam², the sectoral classification in LV is practically the same, while the classification of size (number of workers) and the number of firms are different. It is revealed that regardless of the larger population size (*13.9 times*), Vietnam has disproportionately more enterprises than Laos (4,537 thousand enterprises in Vietnam vs. 125 thousand enterprises in Laos; *36.4 times*): for large enterprise 26.1 times in all 18 categories under study and 251.4 times in manufacturing; for medium enterprises 67.4 times in commerce/services sectors and 21.0 times in manufacturing. [8], [9].

In summary, Laos and Vietnam share a common characteristic (striking small size of enterprises), while the number of large or medium firms are very much different. Hence, there is a need for Laos to have more enterprises, especially large or medium ones, for economic development. Here it is apparent that the challenges for SME policy in Laos are to increase the number of enterprises and to help micro and small firms grow to larger ones by providing better business environment.

The GOL has formulated and implemented SME policy since 1996. The recent SME Development Plan (2011-2015) identifies 7 priority areas to be implemented³. In this section, the SME policy of GOL is evaluated and discussed in two aspects: first, by the objective indicator of doing business; and second, by the subjective evaluation of government services provided by entrepreneurs.

3.1 Ease of doing business

The World Bank has published *Doing Business* every year from 2004, which is the annual report measuring the regulations that enhance business activity and those that hamper it. *Doing Business* measures regulations in each country affecting the ease of doing business. A virtual domestic SME with 10-50 employees located in the largest business city is assumed to make a comparison of the ease of doing business across countries⁴. [10].

The two most important indicators for SME development in the report are ‘starting a

² Due to space limitation data from 2012 Establishment Census cannot be presented in this paper. However, they are available upon request. The discussion in this section largely refers to this data set.

³ Department of SME Promotion, Ministry of Industry and Commerce (2017, p7)

⁴ To ensure comparability of the data across countries, the following standardized case scenarios and assumptions are applied. It is a limited liability company or its legal equivalent; operates in the economy’s largest business city; is 100% domestically owned and has five owners, none of whom is a legal entity; has start-up capital of 10 times income per capita; performs general industrial or commercial activities, and does not perform foreign trade activities; leases the commercial plant or offices and is not a proprietor of real estate; has a turnover of at least 100 times income per capita; does not qualify for investment incentives or any special benefits; has 10-50 employees, all of them domestic nationals; has a turnover of at least 100 times income per capita, etc. <https://www.doingbusiness.org/en/methodology/starting-a-business>

business' and 'getting credit'. With respect to 'starting a business', it is apparent that the situation in Laos improved slightly in 2007 and became substantially better in 2012, before deteriorating in 2015. In Vietnam, the ease of getting credit has improved substantially in 2007-2008 and maintained the level through 2014, and then enhanced slightly in 2015. In sum, the business environment for SMEs regarding 'starting a business' and 'getting credit' was more restrictive in Laos than Vietnam, and the ease of getting credit improved substantially in Laos only as recently as 2015. [10].

3.2 Evaluation of government assistance by entrepreneurs in Laos

This analysis relies on the survey data of the GIZ⁵. The GIZ has conducted the large-scale enterprise survey in every two years from 2005 to 2013 for the major regions in Laos (Vientiane Capital, Luang Prabang Province, Champasack Province, Luang Namtha Province, and Savannakhet Province). This survey series provides the subjective assessment of the central and local government services as well as other information of firms based on questionnaires for entrepreneurs. [11].

The GIZ's *Enterprise Survey* asked entrepreneurs about the helpfulness of government services with five scales: very helpful; helpful; neutral; unhelpful; and very unhelpful. The survey results⁶ reveal that government services are rated as being 'helpful' or 'very helpful' by 61-75% (central government assistance) and 64-80% (local government assistance) by entrepreneurs. It has also been revealed that the perception of entrepreneur has improved from 2005 to 2013. It is worth noting that larger firms tend to rate government services as 'helpful' or 'very helpful', while micro and small firms with less than 20 workers tend to evaluate government services as 'unhelpful' or 'very unhelpful'. In sum, government services have generally been *highly* rated and the positive rating has risen except for micro firms. However, SMEs tend to rate government services *lower* than larger firms, and a number of micro firms rate government services as 'unhelpful' or 'very unhelpful'. [11].

4. Concluding Remarks

Laos and Vietnam are neighboring countries with a long borderline and several similarities in political regime, economic performance, economic and legal policies and reforms. Following the reforms started in the late 1980s, Laos has achieved comparable economic performance to Vietnam. However, there is still a big difference between these two countries, for example in life expectancy, poverty incidence, and human development. The gap between economic performance and social indexes arouses suspicions that a remarkable economic performance of Laos may be a "goldbrick," that the fruit of economic development may concentrate in a small number of people, and that economic development is not sufficiently inclusive.

Recent development in Laos appears to concentrate on big projects, such as special economic zones, buildings, hydro-power dams, roads, railways, etc., which could lead to high external debt stocks. It is undeniable that infrastructure is very important for economic

⁵ GIZ is the German abbreviation for the Gesellschaft für International Zusammenarbeit.

⁶ Due to space limitation, the summary table of the survey results cannot be presented in this paper. However, it is available upon request.

development. However, if the infrastructure does not generate sufficient income and employment for Lao people, economic development is deemed not inclusive.

For inclusive economic development and/or more equal distribution of income and employment, SME promotion is one of the most effective measures. In spite of the great efforts of GOL in SME development, business environment in Laos, in terms of ‘starting a business’ and ‘getting credit’, is still more restrictive than Vietnam, and indeed conditions for ‘starting a business’ deteriorated in 2015.

Notwithstanding the limitation of the analysis, the paper tries to examine the challenges facing Laos by comparing them with those of Vietnam. It can be concluded that Laos is still behind her neighbor in many aspects of development. Since 2004 the government of Laos has implemented SME promotion policies and most entrepreneurs evaluate them helpful. However, the policies are deemed ineffective in this analysis. The findings imply that effective implementation of SME policies is a pressing issue for Laos. [12]. In reality, however, Vietnam also has many problems and challenges to overcome so that there are issues that cannot be shown by comparing the two countries.

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Bioaccumulation of Metals in Gill and Liver of Some Fishes of Different Feeding Habits from Water and Sediment of Ayeyarwady River Segment, Salay Environs

Cho Cho Thin¹, et al

Abstract

The present study aimed to evaluate the relationship of metals in water and sediment on important organs (gills and livers) of nine commercial fish species. In this study, bioaccumulation of six metals (Ca, Mg, Na, Cd, Pb, As) in gills and livers of nine fish species and metal concentrations in water and sediments of Ayeyarwady River segment, Salay environs were analyzed by Flame Atomic Absorption Spectrometer at Universities' Research Centre of University of Yangon. The study period lasted from January to December, 2016. Cd and Pb concentrations in all studied fishes of different feeding habits and their environs were lower than the maximum permissible limit while those of As were over the limit. Those of essential metals (Ca, Mg, Na) were within the FAO standard ranges. The maximum concentration of arsenic (2.79mg/L) was recorded in the gills of herbivorous fishes. According to the results of Transfer Factors, Cd and As accumulated in gill and liver tissues of most of studied fishes came from water and sediment. Arsenic levels in the gill and liver tissue samples taken from studied species except *N. notopterus* were over the dangerous limits designated by WHO/FAO and there is health hazard risk to the local consumers.

Keywords: fish gill, liver, sediment, metal concentration

1. Introduction

Nowadays, the pollution of the aquatic environment due to heavy metals has become a worldwide problem, because they are indestructible and most of them have toxic effects on aquatic organisms [1]. Even though some metals are essential for living organisms, they can also be toxic over the limits (e.g. Ca, Mg, and Na) [2]. If their concentration is too high, they may equal the toxicity of nonessential metals (e.g. Cd, Pb, As) [2].

Among environmental pollutants, metals are of particular concern, due to their potential toxic effect and ability to bio accumulate in aquatic ecosystems [3]. According to the literature, metal bioaccumulation in fish and subsequent distribution in their organs is greatly interspecific. In addition, many factors can influence metal uptake like sex, age, size, reproductive cycle, swimming pattern, feeding behavior, and geographical location [4].

However, fish normally accumulate heavy metals from food, water and sediments [5] and this is a good indicator of heavy metals pollution in water [6]. Impact of contaminants on aquatic ecosystems can be evaluated by measuring biochemical parameters in the liver of fish that respond specifically to the degree and type of contamination [7]. Gills serve as a good indicator of water quality. They are sensitive to any change of water components since gill filaments and lamellae provide a very large surface area for direct and continuous contact with contaminants in water [8].

In this study, concentrations of six metals (calcium, magnesium, sodium, cadmium, lead and arsenic) in the gill and liver of nine fish species were assessed because these fish species

¹ Dr. Lecturer, Department of Zoology, University of Yangon, Myanmar. chochothin.uy2016@gmail.com,
2. Dr Myin Zu Min, 3. Dr Min Thaung, 4. Dr. Yee Yee Win

were consumed as food by local people. Metal levels of water and sediments from the Ayeyarwady River segment of Salay environs, which the fishes inhabited, were also detected. The Transfer Factor (accumulation factor) is the ratio between the accumulated concentration of a given pollutant in any organ and its dissolved concentration in water. It gives an indication of the accumulation efficiency for any particular pollutant in any fish organ [9]. Thus, Transfer Factor (TF) of heavy metals in soft tissue (liver) of the studied fish species was also determined.

2. Materials and Methods

Study Area

Ayeyarwady River segment of Salay Township, Magway Region situated at 20° 42' N to 20° 51.30' N and 94° 14' E to 97° 47.51' E was chosen as the study area to analyze metal concentrations in some fish species and their environs (Fig. 1).

Study Period

Study period lasted from January, 2016 to December, 2016.

Collection and preparation of Samples

From the study site, 68 specimens of 9 study fish species were collected from local fishermen. Feeding habits of recorded fish species were designated in accordance with Talwar and Jhingran [10]. From among the collected species, three species each of herbivores, carnivores, and omnivores were selected for determination of selected metals. The liver and gill were carefully excised, rinsed in double distilled water and oven dried at 1100°C. The heavy metal concentrations in the dried samples were estimated after acid digestion, following the standard method [11], using Atomic Absorption Spectrophotometer. Each water sample was filtered through a 0.45 micron Whatman filter paper. The water samples were analyzed directly. The sediment sample was sun dried, grounded and sieved with a 200 mm sieve to obtain a fine powder, of which 1.0 g was used. Then sediment analysis was carried out according to the procedure described earlier [12].

Data Analysis

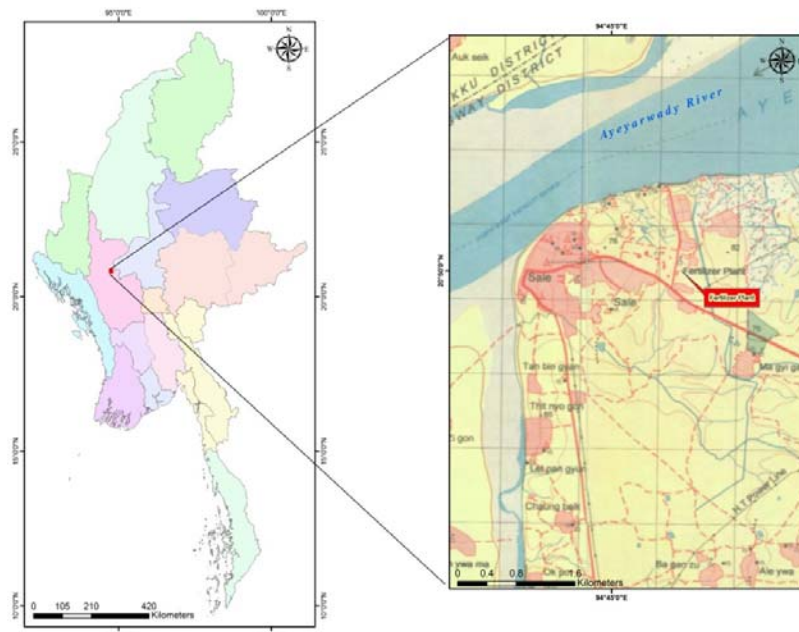
The concentration of metals (calcium, magnesium, sodium, cadmium, lead and arsenic) in gill and liver of fish specimens and aquatic environs of study area were analyzed in triplicates by Flame Atomic Absorption Spectrometer in Universities' Research Centre (URC) at University of Yangon. The results were compared with WHO/FAO maximum permissible limits (MPL) [13, 14].

Transfer Factor (TF) calculation

The TF was given as

$$TF = \frac{\text{concentration of metal in fish soft tissue}}{\text{concentration of metal in environ (water or sediment)}}$$

TF greater than 1 indicates bioaccumulation of metals in fish soft tissue [15].



Source: Universal Transverse Mercator (UTM) Map Sheets, 2004

Figure 1. Map of the study area and study site

3. Results and Discussion

A total of 9 fish species which included three each of herbivores (*Cirrhinus mrigala*, *Labeo calbasu*, *Oreochromis mossambicus*), carnivores (*Notopterus notopterus*, *Separata aor*, *Channa punctatus*), and omnivores (*Tenualosa ilisha*, *Rhinomugil corsula*, *Mastacembelus dayi*) were collected from the Ayeyarwady River segment of Salay Township.

Calcium, magnesium and sodium (essential metals) concentrations of gill and liver of all studied fish species of different feeding habits were found within the FAO standard ranges (Table 1). Mean concentrations of essential metal in gills and livers of fishes of different feeding habits were presented in Fig. 2. A large number of studies have shown that the level of bioaccumulation of heavy metal in fish muscle is significantly correlated with fish species [16]. The results observed in this study were in good agreement with the above consensus.

Cadmium and lead concentrations of gill and liver of all studied fish species of different feeding habits were found to be lower than those of maximum permissible limits recognized by WHO/ FAO (Table 2). Arsenic concentrations in gills and livers of all studied fish species of different feeding habits were found to be higher than those of maximum permissible limits except in *Notopterus notopterus* (-0.37 mg/L), a carnivorous fish. Especially, the mean concentrations of toxic metals for all studied fishes were presented in Fig. 3.

Calcium, magnesium and sodium concentrations in water and sediment for all seasons were found to be lower than those of maximum permissible limits recognized by WHO/ FAO. Cadmium (0.03 mg/L), lead (0.51 mg/L), and arsenic (1.39 mg/L) concentrations of water were higher than the MPL. Cadmium, lead, and arsenic concentrations of sediment in all seasons were observed to be lower than the "threshold effect concentration"(TEC)," midpoint effect concentration"(MEC), and "probable effect concentration" (PEC) [17] (Fig. 4). Maximum permissible limit of metal concentration designated by WHO and FAO guidelines were shown in Table 3.

In addition, transfer factor of heavy metals in liver of studied fish species was also determined. (Table.4). It is found that Cd are hazardous for the aquatic ecosystems especially for the *C. mrigala*, *L. calbasu*, *O. mossambicus*, *S.aor*, *C. punctatus*, *R. corsula* and *M. dayi*. Transfer factors from water for cadmium were greater than 1, which indicated that the above mentioned fish species accumulated metal from water. Similarly, Transfer Factors from water and sediment for arsenic in *T. ilisha* and *M. dayi* were greater than 1. Thus, level of arsenic in the area is hazardous for these fish species. Heavy metals pollution affects not only aquatic organisms, but also public health as a result of bioaccumulation through their food chains.

Transfer Factors of Cd and As in gill from water and sediment for most of the studied fish species were greater than 1 (Table.5). Thus, levels of Cd and As were hazardous to the studied fish species. Similar results were found for Pb in *L. rohita*, *R.corsula* and *M.dayi*. The results show that As levels in the soft tissue samples taken from studied fish species except *N. notopterus* were over the dangerous limits given by WHO/FAO and there is high risk for local public who consume eating these species.

Table 1. Essential metal concentration (mg/L) in gill and liver of studied fish species

Feeding Habits	Species	Ca		Mg		Na	
		Gill	Liver	Gill	Liver	Gill	Liver
Herbivore	<i>Cirrhinus mrigala</i>	84.44	18.56	8.09	8.09	51.21	52.59
	<i>Labeo calbasu</i>	86.97	35.80	8.84	6.14	36.54	3.60
	<i>Oreochromis mossambicus</i>	86.19	21.94	8.56	7.91	57.73	11.75
	<i>Notopterus notopterus</i>	78.24	13.61	8.66	8.02	54.13	12.95
Carnivore	<i>Separata aor</i>	87.36	19.25	8.51	4.29	68.05	4.87
	<i>Channa punctatus</i>	83.94	72.41	8.33	7.07	20.60	1.18
	<i>Tenualosa ilisha</i>	80.45	22.48	8.53	2.30	25.93	1.13
Omnivore	<i>Rhinomugil corsula</i>	86.69	38.60	8.58	6.97	51.24	4.07
	<i>Mastacembelus dayi</i>	82.99	21.73	8.35	6.45	17.49	6.59

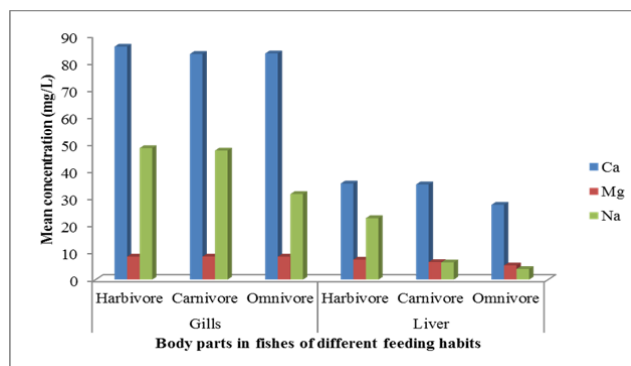


Figure 2. Mean concentration of essential metal in gills and liver of fishes of different feeding habits

Table 2. Toxic metal concentrations (mg/L) in gill and liver of studied fish species

Feeding Habits	Species	Cd		Pb		As	
		Gill	Liver	Gill	Liver	Gill	Liver
Herbivore	<i>Cirrhinus mrigala</i>	0.06	0.07	0.49	0.08	3.08	0.25
	<i>Labeo calbasu</i>	0.05	0.04	0.77	0.36	2.89	1.37
	<i>Oreochromis mossambicus</i>	0.05	0.03	0.47	0.18	2.39	0.62
Carnivore	<i>Notopterus notopterus</i>	0.05	0.03	0.31	-0.03	2.85	-0.37
	<i>Separata aor</i>	0.04	0.03	0.40	0.11	2.45	0.49
	<i>Channa punctatus</i>	0.04	0.04	0.40	0.29	2.28	1.14
Omnivore	<i>Tenualosa ilisha</i>	0.04	0.02	0.25	0.02	2.40	1.79
	<i>Rhinomugil corsula</i>	0.05	0.03	0.52	0.22	2.54	0.48
	<i>Mastacembelus dayi</i>	0.04	0.04	0.58	0.42	1.92	1.43

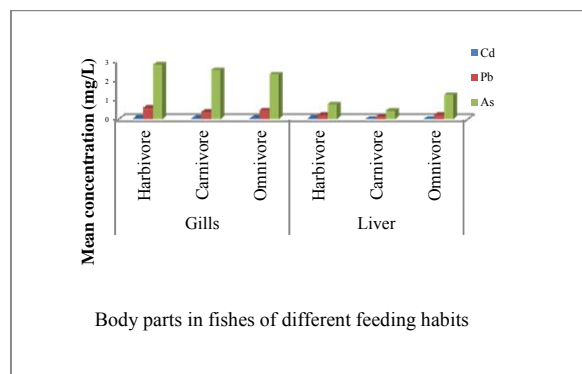


Figure3. Mean concentration of toxic metal in gills and livers of fishes of different feeding habits

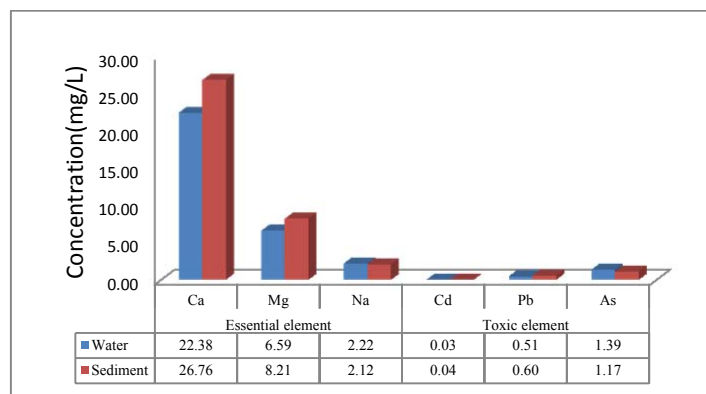


Figure4. Essential and toxic metals concentrations (mg/L) of water and sediment in study area

Table 3. Maximum permissible limit of metal concentrations (mg/L) stated in WHO and FAO guidelines

Metal	WHO/FAO limit	WHO guideline limit	Sediment		
	(Muscle)	(Water)	TEC	MEC	PEC
Ca	19-881	100			
Mg	4.5-452	150	Not stated		
Na	30-134	200			
Cd	0.2		0.99	3	5
Pb	1		36	83	130
As	0.01		9.8	21.4	33

Table 4. The Transfer factor (TF) of heavy metals from water and sediment to liver of studied fish species

Feeding Habits	Species	Cd		Pb		As	
		TF from	TF from	TF from	TF from	TF from	TF from
		water	sediment	water	sediment	water	sediment
Herbivore	<i>Cirrhinus mrigala</i>	2.44	1.65	0.16	0.13	0.18	0.22
	<i>Labeo calbasu</i>	1.48	1.00	0.70	0.60	0.99	1.17
	<i>Oreochromis mossambicus</i>	1.26	0.85	0.36	0.31	0.45	0.53
Carnivore	<i>Notopterus notopterus</i>	0.96	0.65	-0.07	-0.06	-0.27	-0.32
	<i>Separata aor</i>	1.19	0.80	0.22	0.19	0.35	0.42
	<i>Channa punctatus</i>	1.30	0.88	0.56	0.48	0.82	0.98
Omnivore	<i>Tenualosa ilisha</i>	0.78	0.53	0.04	0.03	1.29	1.53
	<i>Rhinomugil corsula</i>	1.11	0.75	0.44	0.37	0.34	0.41
	<i>Mastacembelus dayi</i>	1.37	0.93	0.82	0.70	1.03	1.23

Table 5. The Transfer factor (TF) of heavy metals from water and sediment in gills of studied fish species

Feeding Habits	Species	Cd		Pb		As	
		TF from	TF from	TF from	TF from	TF from	TF from
		water	sediment	water	sediment	water	sediment
Herbivore	<i>Cirrhinus mrigala</i>	2.07	1.40	0.96	0.82	2.22	2.63
	<i>Labeo calbasu</i>	1.93	1.30	1.51	1.28	2.10	2.47
	<i>Oreochromis mossambicus</i>	1.67	1.13	0.92	0.78	1.72	2.04
Carnivore	<i>Notopterus notopterus</i>	1.78	1.20	0.61	0.52	2.10	2.44
	<i>Separata aor</i>	1.59	0.08	0.78	0.67	1.76	2.10
	<i>Channa punctatus</i>	1.41	0.95	0.78	0.67	1.64	1.95
Omnivore	<i>Tenualosa ilisha</i>	1.37	0.93	0.50	0.42	1.73	2.10
	<i>Rhinomugil corsula</i>	1.81	1.23	1.20	0.87	1.83	2.17
	<i>Mastacembelus dayi</i>	1.48	1.00	1.14	0.97	1.38	1.64

In this study, the effects of metal accumulation in gills and livers of fishes and their environs (water and sediments) were determined. The values observed for toxic metals concentrations of all studied fish species of different feeding habits and their environs were lower than the maximum permissible limit in all seasons except for the arsenic in cold season. That of essential metals were within WHO and FAO concentrations ranges.

The observed variability of heavy metal levels in different species depends on feeding habits, ecological needs, metabolic rate, physiological condition of fish, age, size and length of the fish and their habitats [18]. It is found that Cd levels are hazardous for the aquatic ecosystems especially for the *C. mrigala*, *L. calbasu*, *O. mossambicus*, *S.aor*, *C. punctatus*, *R. corsula* and *M. dayi*. Transfer factors for Cd in liver from water were greater than 1, which indicated that the above mentioned fish species accumulated metal from water. Similarly, Transfer Factors for As from water and sediment in *T. ilisha* and *M. dayi* were greater than 1. Thus, As are hazardous for these fish species in the area. Transfer Factors of Cd and As in gill from water and sediment for most of the studied fish species were also greater than 1. Thus, Cd and As are hazardous for the present studied fish species. The accumulation of metals in the liver is likely linked to its metabolism. Gills are the main route of metal exchange from water as they have very large surface areas that facilitate rapid diffusion of toxic metals. Similar results were found for Pb in *L. rohita*, *R.corsula* and *M.dayi*. Heavy metal pollution affects not only aquatic organisms but also public health as a result of bioaccumulation through food chains. The results show that As levels in the soft tissue samples taken from the studied fish species except from *N. notopterus* were over the dangerous limits given by WHO/FAO and there is a health risk for the local public who consume these fish species.

4. Conclusion

In the present study, essential and toxic metal concentrations in gill and liver of all studied fish species were found to be lower than the maximum permissible limit except for the arsenic. Based on the results, it was concluded that it seems to be not appropriate for eating studied fish species except for *N. notopterus*. According to the results of Transfer Factors, Cd and As which accumulated in gill and liver of most of the studied fish species came from water and sediment of the river segment.

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Aquaculture Development in Myanmar: Evolving Policies and Implications

Thida Kyu¹, Thapye Nyo²

Abstract

Aquaculture is the main animal protein source at an affordable price for rural people and an important provider of employment opportunities in Myanmar. Small-scale fisheries play not only a source of livelihood, income for millions of people but also the fifth-largest earner of foreign currency for the country during the period from 2009/10 to 2017/18. This study focused on fish farming, which contribute to 95% of Myanmar aquaculture. The purposes are to identify the issues and barriers of aquaculture value chain, to set out possible policy options to stimulate aquaculture growth. This study mapped the value-chain (business start point to final markets) uses exploratory research method using field interviews, key informant interviews, and stakeholder focus group discussion. Before interviews, literature reviews of Fishery sectors and concerned law and regulation from various sources were conducted. Then, Government officers from related ministries, Myanmar Fishery Federation (MFF), RUMFCCI, exporters, lawyers and business actors are interviewed as key informants in value chain segments. This study finds out issues and barriers on fish farming value chains and the key barriers are land acquisition, financing, and cost of fish feeds. Then, from this finding, relevant policy recommendations are formulated for aquaculture sector development and fishery export.

Keywords: Value-chain analysis, aquaculture, fishery export, food security

1. Introduction

Most of the protein in the diet of the population of 53 million comes from fish. Apart from its original role in fish food supply, fisheries are one of the main contributors to the development of Myanmar economy. Small-scale fisheries play a crucial role as source of livelihood and income for millions of people in Myanmar. It is also the fifth or sixth-largest earner of foreign currency for the country during the period from 2009/10 to 2014/15. The Livestock and Fishery sector contributed round about 8% of Gross Domestic Product (GDP). Fisheries product accounts for about 14% of monthly food expenditure of average household. According to previous studies, the annual Maximum Sustainable Yield (MSY) of the marine fisheries is estimated at about 1.05 million metric tons. This study focused on inland water fish farming, which contribute to 95% of Myanmar aquaculture. Fish farming accounts for nearly 20% of domestic consumption in Myanmar. Fish farming also generates a lot of rural nonfarm employment. In Myanmar, of all the various food producing systems, aquaculture is considered to be the main animal protein source at an affordable price for rural people and is an important provider of employment opportunities.

2. Purpose of Study and methodology

The purposes of the study are to identify the issues and barriers of aquaculture value chain, and to set out possible policy options to stimulate aquaculture growth.

This study uses value chain approach to explore laws and regulations into various stages of fishery value chains. The fishery value chains are divided into three segments: upstream,

¹ Dr. Pro-Rector, Meiktila University of Economics, Myanmar, thidakyu@gmail.com. CBI (2012). *Myanmar Seafood Exports: Quick Scan of the EU Market Potential*, p. 9

² Srivinas, S. and Hlaing, U.S. 2015. *Myanmar: Land Tenure Issues and the Impact on Rural Development*. Report prepared for Food and Agriculture Organization of the United Nation

midstream, downstream. Before interviews, literature reviews of Fishery sectors and concerned law and regulation from various sources were conducted. Then, field surveys were conducted in Fish firm in Ayeyarwady Region and Yangon Region. After that government officers from Ministry of Livestock, Fishery and Rural Development, Ministry of National Planning and Economic Development and Ministry of Commerce, Chairman of the Myanmar Fishery Federation (MFF) and its members, Members of RUMFCCI, Exporters, Researchers, Lawyers, and Business actors as key informants interviewed in up-, mid- and downstream of value chain segments.

3. Results and Discussion

3.1 Aquaculture Production in Myanmar

Main fishery resource in Myanmar is fresh water through: fish culture, leasable resource and open fisheries and marine fishery through: coastal or In-shore fisheries and off-shore fisheries or deep-sea fisheries. Inland water system is comprised of the Ayeyarwady, Sittaung, and Thanlwin rivers, which run for roughly 2,000 km, as well as 2600 km of tributaries and minor water system. Marine resources include both vast coastal waters and large areas of coastal mangrove swamps. Myanmar people normally prefer freshwater fish to marine fish and freshwater fisheries were aimed mainly at domestic food whereas marine and aquaculture were intended for both domestic consumption and exports. Farmed fish is exported as well as sold on the local market although the domestic fish price is lower than that for export. Table 3 presents the area of aquaculture ponds and its total production from 2005/06 to 2014/15. Not only total area and total production steadily increased but also average yields per acre increase by 62.4% from 2005/06 to 2017/18. In 2017/18, aquaculture fishery production is only 19% of total production but 6% from leasable fisheries, 21% from Open fisheries and 54% from marine fisheries respectively.

. Table 3. Total Aquaculture Ponds and Production

Year	Area of Aquaculture Ponds (Acre)	Production of Aquaculture Ponds (Thousand Metric Ton)	Average Yield per Acre (Tons)
2005/06	405855	574.99	1.42
2006/07	436825	616.35	1.41
2007/08	441098	687.67	1.56
2008/09	440585	775.25	1.76
2009/10	442702	858.76	1.94
2010/11	443695	830.48	1.87
2011/12	448469	899.05	2.00
2012/13	449692	929.38	2.07
2013/14	450323	964.12	2.14
2014/15	469153	999.63	2.13
2015/16	478002	1014.42	2.12
2016/17	487525	1048.69	2.15
2017/18	491345	1130.35	2.30

Source: DoF, Fishery Statistics, (2018)

Myanmar export about 30% of the rohu produced and about 10% of striped catfish with a small amount of tilapia annually. The main markets are the Middle East (Kuwait, Iraq, Saudi Arabia and United Arab Emirates) for gutted and chopped fish, mainly for Asian guest workers, and Bangladesh for frozen whole fish. The domestic market demands smaller sized fish, 0.25-0.50 kg, compared to 0.9-1.0 kg for the export market. Myanmar could export considerably more freshwater fish if the main constraint of market glut or shortage is overcome to provide a regular supply of fish for export.

The domestic consumption and exports of Myanmar Fishery products is mentioned in Table -4. The total volume of fishery exports was apparently decreasing after 2008/2009 due to Nagis cyclone (May 2008) and increase of domestic consumption. In 2009/10, the domestic consumption stood at 3,546,277.6 metric tons (90.44% of the total production) and the share of the exports was 9.56. The total volume of fishery exports was apparently increasing, however the proportion ranged from 10 % to 14 % of total production. In 2014/15, the domestic consumption stood at 4978659 metric tons (93.64% of the total production) and the share of the exports was 6.36. In recent year, the percentage of domestic consumption is slightly decline because of increase in export.

Major importing countries of Myanmar fish and fisheries products were Singapore, Thailand, Hong Kong, China, Japan, Malaysia, Austria, Britain, U.S.A, Bangladesh and Indonesia. Since 2002/03, China has been the major importer of Myanmar fish and fisheries. However, in 2017/18, Thailand imported the largest amount (US\$ 258.808 million). Most of the products were sold out to China, Thailand and Bangladesh through border trade. China especially bought Myanmar product to sell out to the northern parts of its country. Bangladesh also bought not only iced and chilled fish but also dried fish.

Table 4. Domestic Consumption and Export of Fishery Products (Metric Ton)

Sr. No	Year	Production	Domestic Consumption		Exports	
			Quantity	%	Quantity	%
1	2005/06	2581780	2310710	89.50	271070	10.50
2	2006/07	2861710	2518283	87.99	343427	12.01
3	2007/08	3180920	2829268	88.90	351652	11.10
4	2008/09	3542190	3217480	90.83	324711	9.17
5	2009/10	3921970	3546278	90.44	375092	9.56
6	2010/11	4163460	3789567	91.02	373893	8.98
7	2011/12	4478210	4091229	91.36	386981	8.64
8	2012/13	4716220	4339374	92.01	376846	7.99
9	2013/14	5047530	4702263	93.16	345267	6.84
10	2014/15	5316950	4978659	93.64	338291	6.36
11	2015/16	5591830	5222859	93.40	368971	6.60
12	2016/17	5675470	5236764	92.27	438706	7.73
13	2017/18	5587460	5019233	89.83	568227	10.17

Source: Department of Fishery, Fishery Statistics, (2018)

3.2 Value Chain in Aquaculture Sector

A total of 491345 Acres are used for breeding, rearing and harvesting fish and crustaceans in Myanmar. Of total aquaculture ponds, 51% are used for shrimp culture and 41% for fish culture. The culture of freshwater fish is concentrated in the Ayeyarwady (50%), Yangon (28%) and Bago (11%) regions of Myanmar. Producers are comprised of small scale farmers who supply the local market and larger, vertically-integrated farmers who cater to the export market. A variety of species are cultured, including rohu, catla, common carp, grass carp, mrigal carp, silver carp, tilapia, striped catfish, and Philippine catfish. The value chain in fishery sector is divided into three segments; upstream, midstream and downstream. Upstream is defined as comprising all enterprises involved in the production and distribution of inputs. The midstream segment is comprised of farms, where these inputs are combined using labor to produce fish of marketable size. The downstream segment involves all activities relating to the marketing, processing and distribution of fish produced.

3.3 Regulatory and Institution

Every fishing activity in Myanmar's fishery industry is controlled by the licensing and registration system to manage both the fishing vessels and their gear, under the current Fisheries Law and Union of Myanmar Investment Law 2016. "The Fisheries Law" 1905 was the only legislation regulating fishery management and the fishing industry of Myanmar until amended in 1954, and was finally repealed by "Law relating to the fishing rights of foreign fishing vessels" in 1989. After that, the government publicized three other fisheries laws, namely "Aquaculture fisheries law" in 1989, "Myanmar marine fisheries law" in 1990, and "Freshwater fisheries law" in 1991. The law relating to the fishing rights of foreign fishing vessels is amended in 1993. Most prospective fish farmers and prospective small-scale fish farmers have to convert agricultural land to aquaculture ponds, previously. The Farmland Law (2012) formalized transferrable private land use rights (Oberndorf, 2012), in effect regularizing the existing informal market in agricultural land. In order to convert agricultural land to aquaculture in a legally compliant manner, it is necessary to apply to the State/Regional Administrative Authority for permission to change the title of the land. A successful application to change land titling will result in the issue of an official document 'La Na 39' or form 7 (UN-Habitat/UNHRC, 2010). The process of applying for La Na 39 is complex. Thus, land rights transfer or land-use change is a lengthy process, requiring considerable time and frequent visits to various government offices located in entirely different line ministries (Srivinas and Hlaing, 2015, p8).

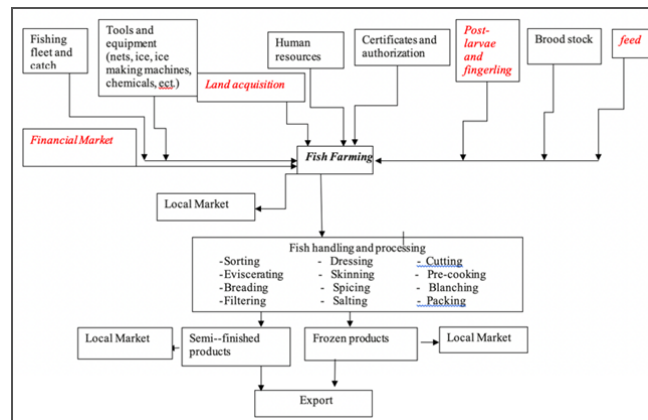


Figure 1. Aquaculture (fish firm) value chain in Myanmar

Department of Fisheries (DoF) is the major government institution which is accountable for the management of fishery sector development. DoF's responsibilities involve, among others, facilitating the technical needs and equipment of the marine sector; distributing freshwater and deep-sea prawns to private breeders and assisting them with breeding techniques; undertaking research and development activities; collecting taxes; issuing fishing licenses; and establishing model breeding centers. Myanmar Fisheries Federation (MFF) was reformed in 1998 as a replacement of Myanmar Fishery Association which was established in 1989. Myanmar Fisheries Federation is one of the highest NGOs commercial organizations to encourage and promote fishery industries of Myanmar. Ministry of Commerce (MoC) undertakes market information for fishery export, business to business meeting and trade fairs under department of trade promotion (DoTP).

3.4 Issues in Myanmar Fishery Sector Value Chain

Actually, the legislative framework relies on outdated laws that must be enhanced in order to account for modern aquaculture and fishery management practices and policy. Current laws refrain from addressing a number of issues including fish disease control, environmental impact assessments, and aquaculture guidelines and codes of conduct. All the fishery laws and regulations are not complied with current technology, materials using in fishery sector and environmental situation, new fishery law are needed for sustainable development of fishery sector. Thus, Myanmar government submitted draft of Aquaculture law and Myanmar marine fishery law” to parliament recently to enact. The following section will present important issues and regulatory burdens in fish farming (aquaculture).

Land acquisition and business start: Land categorization and ownership is a major problem in starting an aquaculture farm. According to The Farmland Law (2012) and The Vacant, Fallow and Virgin Lands Management Law (2012), a formal application is required and to get a permit from the relevant state and regional governments. There is no consistency in approving this permit and different governments assessing differently and the level of restrictions depend on the region. This difficulties and complex procedures (cost, time, inconvenience and need for connections with officials in the state bureaucracy) might undermine capacity of many smaller prospective fish farmers to obtain permission to take up aquaculture. As a result, the official

permission, La Na 39 or Form 7 had been issued for around only half of total pond acreage, with some putting the figure as low as 10%. Time taken for the assessment is too long and causing financial and opportunity losses and to the new investors. The investment gap between purchasing a farm with permit and starting a new farm is too wide and discouraging for new investments creating major bottleneck in the sector. To avoid this situation, some investors considered purchasing approved farms separately. This also creates another major problem for new investors to get the farm in one connecting establishment and lead to added overheads and increased operating costs. If the pond was constructed without a permit, the owner has to fill it back to the original stage in addition to the fine (10lks until 2018 and 30000 kyats currently) and up to 2 years in jail (2018 amendment). To purchase an established pond, the cost is between 5lks to 100lks. To construct a pond the cost starts from 15lks. There are still many issues and disputes surrounding land ownership and types of land. Farmlands intended for rice are not allowed to have fish pond and this creates integrated farming impossible and subsequently leaving farmers with no option to diversify and rely on one particular type of crop. Moreover, According to Farmland Law (2012) and The Vacant, Fallow and Virgin Lands Management Law (2012), Land rights for agriculture and aquaculture land are different such as agriculture land can be mortgaged, giving, sold, leasing or otherwise transferred or divided but aquaculture land cannot be without the permission of the Cabinet of the Union Government.

Hatchery: Technology is lacking in this area and it is still difficult to get good and healthy hatchlings at reasonable price. The hatchery production lasts approximately four months from May to August. There are two main hatchery technologies used in Myanmar and the traditional method is called ‘hapa-based’ and it is land and labor intensive. The more advanced method widely used across Asia which involved stripping of eggs and removing brood fish is less common in Myanmar due to higher cost. The traditional method produces lesser number of hatchlings. Department of Fishery (DoF) provides hatchlings (over 789 million fingerlings in 2012/13 but only 631 million in 2017/18) to the farmers but the allocation is not sufficient. Most species become hybrid and degenerated. Import from neighboring countries may be an option but it is not sustainable long term solution and technology transfer, resource allocation and investment is much needed in this area. The number of private hatcheries has grown steadily in recent years but still not enough for the whole sector. Some larger farms also operate as hatcheries and sold its excess hatchlings to smaller farms. In general, the supply is not sufficient for all of fourteen different species and the hatchlings are not good quality.

Feeding: More than 80% of total aquaculture production in Myanmar comes from agricultural byproducts and wastes as feed with only around 20% of reliant on commercially manufactured palette feeds. The supply and distribution of commercial palette feeds are dominated by single company in the market with relatively low competition with no more than five companies in the entire country. Due to lack of enough feed mills and the local companies and high price of feed, in many situations, the small holders have to sell their fishes to the feed mills companies in advance. The law enforcement is weak and the terms and conditions are not favorable to the small holders and often have to pay very high interest rates. Some feeding mills in the country are facing difficulties sourcing raw materials and unable to run regularly. A key informant reported that foreign fish feed companies were wary of investing in Myanmar due to fears over their ability to recover credit extended to farmers. This may suggest that development of a more competitive feed sector is constrained by foreign investors’ access to capital and concerns over the strength of the legal frameworks in place. The private sector, and in particular the MFF, has

not effectively communicated the sector's needs to Customs authorities. Importation limits on enriched flours and other key inputs compels hatcheries to use oilseed cakes as an alternative. However, there is also a short supply of cake for the fisheries sector since a large majority of the cake is absorbed by the livestock sector. Also, it has only been possible to import oilseed cake since 2012 and current volumes remain insufficient to satisfy a growth in hatcheries production. Another issue is the uncertain quality of the cake that is imported, as border controls of oilseed cake imports remain inadequate due to limited testing facilities and the absence of standards against which to evaluate the product.

Finance: The costs of investing in aquaculture can be substantial. Fixed or quasi-fixed inputs may include land purchase or rental, pond construction, housing for workers, poultry sheds, boats, trucks or other means of transport, water pumps, generators and transformers. Variable inputs comprise labor, feed, seed, chemicals, fuel, and ice. Expenditure on feed alone (which accounts for an estimated 75-80% of operating costs), may run to \$2000-2500 per acre/year, with labor and seed accounting for the bulk of the remainder. The ease and terms with which startup and operating capital for aquaculture can be accessed thus have important implications for the sector's inclusiveness. The vast majority of investment and operating capital for aquaculture is raised from informal sources. Although Myanmar Livestock and Fishery Development Bank (MLFDB) provides credit at low rates of interest (13% per annum), it was said by informants only to issue loans to farmers with more than 50 acres of ponds. Although loans from fish traders are often secured with land use certificates (e.g., La Na 39/Form 7 or Form 105), meaning that land can be foreclosed in the face of a serious default, the conditions are flexible (allowing for regular borrowing to cover monthly feed costs, repayment upon harvest, and rescheduling of payments in case. Small farms and nurseries are usually financed from a combination of own savings, informal loans from relatives (both with and without interest) and informal moneylenders (at between 3-6% per month, depending on terms), and (once running), reinvestment of profits. A key constraint for enterprises seeking bank financing is stringent collateral requirements. Moreover, leasehold title, which can be used as collateral for access to credit, is rarely accepted because of complicated procedures and a complex legal system to recognize leasehold titles. High collateral requirements are further stimulated by difficult banking regulations and the absence of loan guarantee mechanisms. Additionally, the absence of an implemented moveable asset law that ensures movables such as cultured fish/shrimp in the ponds, machinery, fishing boats and gear can be used as collateral makes it even more difficult for the fisheries sector to access credit. Deficiencies in the banking sector are complicated by an absence of alternative funding sources such as specialized finance lines, leasing microcredit or sector development funds. There is also limited availability of microfinance services. Furthermore, Myanmar SMEs Development Law (2015) exclude the fish farm or aquaculture farm to be SMEs under definition of SMEs. So fish farm cannot access SME development loan at low interest rate and tax exemption for SMEs. With depriving enterprises of funding that is needed to invest in upgraded capacities, limited financial instruments increase the risk of doing business. In particular, there is a low level of insurance use due to the previously government managed insurance system.

Processing Plant: Processing plants are only able to focus on the processing alone and unable to participate as an operator in the entire fishery farming process. There are only 23 plants that meets EU standard in 2019. DoF also has its own processing standards and criteria for the processing plants.

3.5 Market access and Investment

Companies are not willing to invest in marketing which is much needed especially for export and Myanmar fishery products are relatively unknown. Most Myanmar companies are willing to operate jointly with foreign companies, but the current rules and regulations are still inflexible with many requirements. The massive growth in trade of fish in Myanmar is a clear example of the type of positive transformational change that can occur when regulations that distort the functioning of the market are removed. In Market access, the export tax on fishery products and import tax on inputs for fishery are exempt since 2013 allowing the industry to grow faster. However, because of growing domestic demand and low growth rate of fishery production, export cannot be promoted much. There are many good social and economic benefits come from fishery with no evidence of any major environment impacts.

4. Conclusions and Recommendations

Fishery production from aquaculture will be a major source of increased fish production, following expansion of aquaculture industries, increased average production and modern technology. For promotion of fish exports, the fishery sector should develop and apply fish quality and safety management systems that support the current competitive position of Myanmar fishery products in the regional and world markets through the implementation, validation and promotion of HACCP, GAP, and GHP and improved laboratory practices, the promotion and conduct of training programs to upgrade the technical skills and competencies of personnel in the private sector and the strengthening the compliance of fisheries industry to regional and international requirements. There is an important need to upgrade the fish product to be semi-processed or value-added in order to increase its value. The approaches to upgrade traditional fishery processing and preservation methods as well as market promotion are also crucial for the effective utilization of fisheries resources.

4.1 Policy Option for Legal frameworks governing land use

Restrictions on land use represent the single largest constraint to development of the farm segment of the inland aquaculture value chain, particularly in areas outside of existing pond clusters. The prohibition on conversion of paddy land to other uses is misplaced given that rice now represents a minor cost component in food budgets, even among the poorest, and aquaculture occupies a tiny fraction of cultivable land nationally. The need to apply for land use titling change of in order to convert agricultural land to ponds in a legally compliant manner is similarly restrictive. Accordingly, the removal of these controls is a priority. Holders of use rights to agricultural land should be allowed complete freedom of choice in crop cultivation. Redesigning aquaculture as a form of agriculture (in relation to land management issues only), might offer one means of overcoming land use titling restrictions. Insecure tenure and legal ambiguities have inhibited the development of private land rental markets that could support smallholder access to land for aquaculture, and place those who have constructed ponds without following due process at risk from a more interventionist future role for the state in land management. Retroactively regularizing the status of ponds already constructed would remove this source of uncertainty. An interim measure would be to waive the requirement for farms sized 10 acres or less to obtain apply for La Na 39, formalizing what is already a de facto norm in

some locations and guaranteeing future security of tenure in a pro-smallholder manner. A stepped system of land taxation and pond licensing fees represents an additional option for rebalancing the sector in favor of smallholders, by minimizing charges levied on smaller pond farms and taxing larger operations at higher rates, proportional to farm area.

The following options should be considered as short-term and long-term policy recommendations for land acquisition for fish-farming business start.

1. Streamline procedures and transparent decision making process with appropriate time frame for application of non-agricultural land use permit should be established by collaboration among department of fishery and other concerned organization. (It is the most cost-effective and easiest way to reduce regulatory burden for land acquisition for fish farm.)
2. Amend The Vacant, Fallow and Virgin Lands Management Law (2012) through parliament. (This option also will be possible but it will take a certain to pass the law)
3. Waive the requirement for farms sized 10 acres or less to obtain apply for La Na 39, and rearrange appropriate penalty fee

Policy Option for Finance and enabling environment

Limited access to finance is the greatest constraint to aquaculture development after land use restrictions. Large farms are not generally severely credit constrained, but smaller commercial producers must borrow from informal lenders at high rates of interest, and are sometimes unable to access credit from any source. This results in underinvestment, suboptimal use of inputs, and diminished capacity to seize new opportunities. These observations indicate that there is the need to continue and accelerate ongoing macro- scale reforms to finance and banking.

With respect to sector specific finance mechanisms, the capacity of MLFDB to provide larger volumes of credit to a wider customer base should be expanded, and its approach to loan dispersal should be reformed to make it more responsive to the practical needs of aquaculture producers. This should include an explicit remit to serve the needs of commercial small and medium scale producers. Measures to achieve this goal could include: removing restrictions on the size of farms to which loans can be extended; allowing for multiple loan withdrawals over the course of a production cycle; scheduling repayments in line with the duration of the production cycle; reducing the degree of collateralization required; providing loan facilities with a window of more than one year; supplying credit to non-farm SMEs in aquaculture value chains, and; training bank staff on aquaculture to support more effective decision making.

The following options should be considered as short-term and long-term policy recommendations for reducing regulatory burden for financing of fish farming.

1. Establish a credit guarantee scheme with adequate resources, to be implemented in commercial or trade banks with the objective of reducing the collateral requirements needed to access loans for the fisheries sector
2. Elaborate and endorse a movable assets law that ensures movables such as cultured fish / shrimp in ponds, machinery, fishing boats and gear can be used as collateral in requesting credit
3. Amend SMEs Development Law(2015) through parliamentary process

4. Establish specialized insurance for the fisheries sector in collaboration with emerging new private insurance companies.

Policy Option for Feeding

The feed manufacturing sector is currently uncompetitive. Foreign and domestic investment in aqua-feed production should be encouraged to improve the sector's performance, leading to lower prices, higher product quality, and more widespread adoption of formulated feeds with resultant productivity gains. For instance, very large farms (sized more than 100 acres, and operated primarily by absentee owners or companies) account for 60% of total pond area, and a single company retains a virtual monopoly on fish feed production. Realizing the full potential of aquaculture will be an important piece of the puzzle if Myanmar's agriculture is to transition toward the production of more diverse, higher value agricultural produce. To do so will require fostering and facilitating more inclusive and more evenly distributed patterns of aquaculture development and growth than exist at present. Moreover, collaboration between the Myanmar Aqua-Feed Association (under MFF) and the Myanmar Pulses, Beans & Sesame Seeds Merchants Association should increase to ensure that feeds, ingredients and inputs respect the quality requirements for fish feed production.

The following options should be considered as short-term and long-term policy recommendations for reducing regulatory burden for feed supply of fish farming.

1. As a part of the fisheries policy and legislative framework, implement a delegation of power to competent authorities, (including Regional and State governments), for effective implementation and enforcement of fisheries laws
2. Strengthen law enforcement mechanisms such as inspection, execution and suing within administrative and jurisdiction power, to reduce the occurrence of 'informal arrangements' between parties being used to circumvent laws through delegating some law enforcement power to appropriate government organizations (e.g. armed forces, coast guards, the police force, etc.) by administrative mechanisms
3. Enforcement of competition law and creating competitive business environment for fish feed firms
4. Eliminate import taxes on inputs to produce fish and shrimp feed (wheat flour, soya cake, fish meal, feed additives, etc.) as a means to facilitate the production of higher quality feed in quantity

For fishery export sector to strengthen, there is a need for the private sector to contribute capacity building and technical know-how for manufacturing high-value products, stronger access to financial support, more paying taxes and better access to data. Similarly, the government needs to provide more port facilities, upgrade roads for better transportation and also relieve trade barriers. Since 2018, the export of fish and fishery products is sharply increase, and to sustain this trend, in keeping that of fine operational cold storages; that of the better packaging; and that of fine quality fish.

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Impacts of Infrastructures on River

Kyi Kyi Lwin¹

Abstract

Nowadays the sedimentation caused by gold mining, deforestation, climate change and some infrastructure structures is the vital problem in Ayeyarwady River. The high sediment load and resulting River bed raises compromise navigation on the River. The location of the study area is - Innwa waterway at Mandalay in middle of Ayeyarwady River. Bank erosion occurs at the downstream and upstream of mouth of MyitNge River. Mainstream barriers and dams, construction of bridges, River training structure around the navigation channel may result shoaling problem at the Innwa waterway and it can affect not only human and River system. Field survey and data collection was carried out and GIS software is used to know the changes of morphology of River. The interview program was achieved by asking the questions to related departments and local people who lived near study area. Some local people houses were moved to new places and also they cannot work by cargo carrying since vessel could not pass to the River. They also cannot get the good quality of water. Therefore, it is necessary to protect the human life and River for sustainable use as well as human dignity.

Keywords: sediment transport, environmental and social impact, infrastructure

1. Introduction

The Ayeyarwady is Myanmar's largest river basin and has been described as the heart of the nation. River transport system save cost and energy has little environmental impact compared to other modes of transport. Navigation enhancement is crucial for the development of national economic. Nowadays the sedimentation caused by gold mining, deforestation, climate change and some infrastructure structures such as hydropower station, bridge is the vital problem in Ayeyarwady River. The high sediment load and resulting river bed raises compromise navigation on the river. The objective of the research is to know the impacts of infrastructures along the river and to get a better understanding and investigate the activities of the water on the sedimentation and its impact on navigation.

2. Methods

The location of the study area is Innwa waterway which length is 8.536 km (5.3 miles) at Mandalay in middle of Ayeyarwady River. Innwa waterway is one of the 14 constraints in Mandalay, and is one of the most important inland waterways for the transportation. The location of the study area is shown in figure 1.

¹ Department of River and Coastal Engineering, Myanmar Maritime University Myanmar, jiwenwen@gmail.com



Figure 1. Location of study area (Source; Google)

To get a better understanding the activities in rivers and their surrounding catchments that affect sedimentation and to investigate the impacts of infrastructures on public and navigation, field surveys were carried out and interview program was achieved by asking the questions to Directorate of Water Resources and Improvement of River Systems (DWIR) and local people lived near study area. The morphological changes of river can be provided by ArcGIS software. The causes and effects of problem source at study area are shown in figure 2.

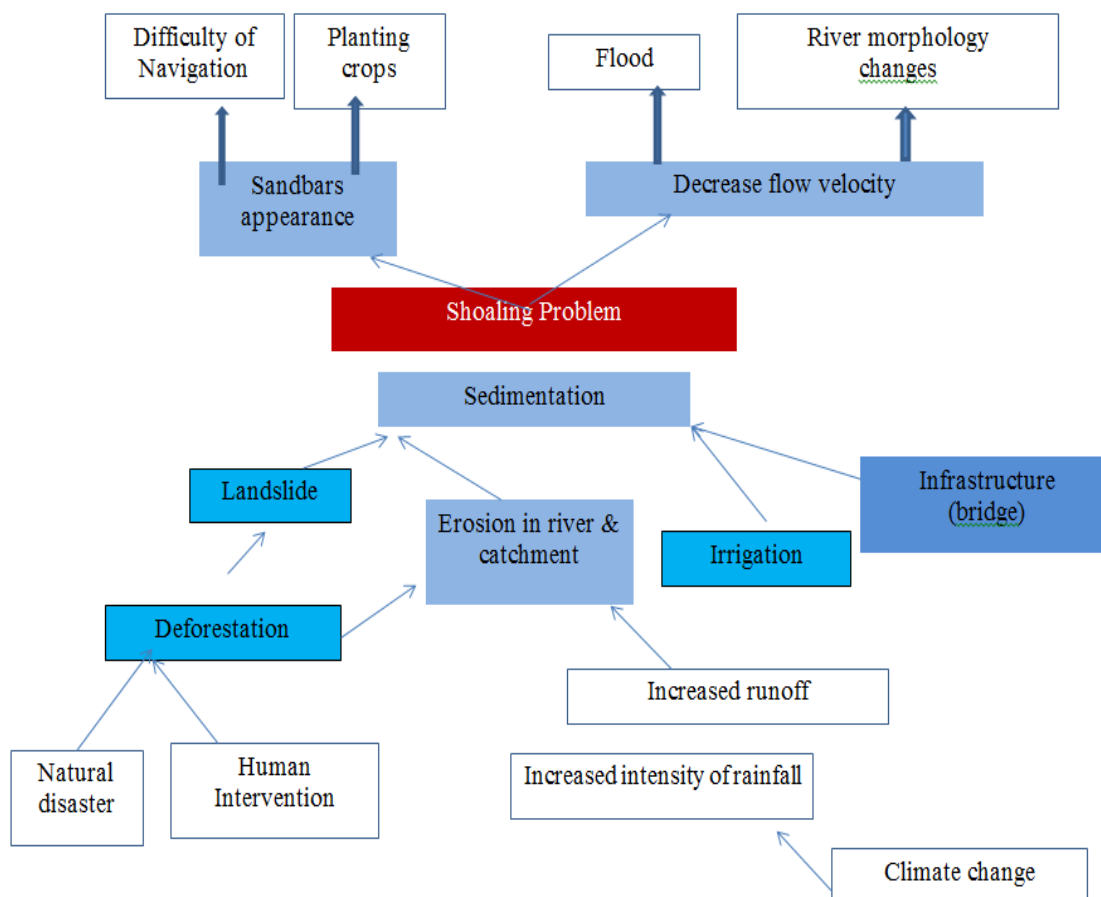


Figure 2. Causes and effects of problem source

3. Results and Discussion

In 2008, the new bridge (Yadanabon Bridge) was constructed across Ayeyarwady River. Due to the new bridge construction the amount of sedimentation is rapidly increasing. As a result the vessels that are passing along river have faced the shoaling problem, a series of sand bars appeared in river. Moreover there are social impacts due to construction of bridge. For example the people who stayed near river had to move other places.

After 1983, the sand bars appeared in front of the Sagaing port every year. At the upstream of Yadanarbon Bridge, the main current flows along the Sagging bank and towards Amarapura between two bridges (old & new). At downstream, it flows along Tada Oo. Bank erosion occurs at the downstream and upstream of mouth of MyitNge River. Sand bar near pagoda will move toward the new bridge yearly. Upstream of Taung Taw, the erosion problem occurs because the water is flowing along bank.

DWIR operated the dredging work and removed snag rocks to improve the waterway during dry season of 2013-2014. However, excavated sand bars reappear again and lead the shoaling problems. The construction of new bridge (Yadanabon Bridge) is also a threat to the flow regime of the river. Along Innwa waterway, five places are needed to improve navigational channel. The pictures indicate dredging of sand deposits by backhoe dredger near the bridge and removing snag rock at MeThway Tite waterway.[1]



Figure 3. Operations of dredging work and removing snag rock [1]

From interviewing, the local people told that the sandbars are appeared due to the construction of bridge and the difficulty of navigation can be occurred especially for vessels. Also their houses were moved to new places and also they cannot work by cargo carrying because any vessel could not pass to the river for not enough water depth. They cannot get the good quality of water. Although it can be negative impact to some people, some people can get more income by selling food and other things at that place because new workers and investors came to that place to get and buy dredged sand for construction work. The figures are with the local people who lived near study area.



Figure 3. Interview with local people

From the Landsat image of river it can be seen the sand bar appeared at the junction of Ayeyarwady River and MyitNge River by comparing between the year of 2000 and 2016. It is one of the reasons for the effect of construction of bridge and also the reduction of flow velocity can occur at the mouth of MyitNge River.

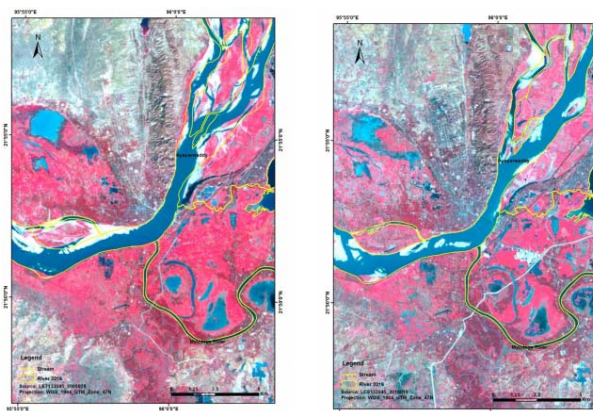


Figure 4. Morphological changes between 2005 and 2016

To get better transport along waterway, it is necessary to improve the navigational channel. It can provide river training works to counter the migrating sand bar which are an integrated part of the improvement of navigation on the Ayeyarwady River alongside dredging maintenance.

4. Conclusion

The morphology changes of Ayeyarwady River can be seen from change detection methods and navigation problems are the main issues for the improvement of river system. From the interviewing of local people, we can know that the construction of infrastructures may affect both the positive and negative impact on human beings and environment of river system. Dredging is the temporary solution and it is costly for yearly. To overcome the costly conventional maintenance techniques innovated modern methods should be introduced. Also financial support is also needed. More researches for improvement for good navigation should be studied to get better coordination and better understood about the process of system. In addition, it should be aware of impact of socio-economic system. Monitoring must be made for sustainable flow of the river according to criterion.

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The Implication of Project Based Learning to Enhance Attitude Toward Biology Learning

Nu Nu Nyunt¹, Eaint Thandar Khine²

Abstract

The purpose of this research is to study the impact of project based learning to enhance attitude toward Biology learning. Attitude is also considered to be an important product for upper secondary school students' in Myanmar. The total of 124 Grade 9 students who enrolled in combination seven were selected from No.4, Basic Education High School, South Dagon Township, Yangon Division. The design of this study is experimental in nature which is also a classroom based on action research. In order to uplift the attitude toward Biology of experimental group, classroom based action research was carried out. During intervention, project based learning is applied. Collected data were analyzed before and after intervention. The results showed that students from experimental group had more positive attitude toward Biology than controlled group. According to the pre-test and post-test results, post-test result is significantly higher than that of pre-test. It can reasonably be said that project based learning could enhance students' attitude towards Biology as well as Biology achievement.

Keywords: project based learning, biology chievement, action research,

1. Introduction

In Project based learning method, students gain knowledge and skills by working a considerable amount of time to explore and respond to an authentic, engaging and complex question, problem, or challenge. Students bring diverse backgrounds and experiences to the classroom. Students' ability, prior learning, rate of learning, social and cultural background, native language, maturity and individual's interest are factors in the learning process. Project based learning provides students different options for taking in information. Horpyniuk,(2015) stated that project based learning is a strategy in which student led education that can enhance engagement and educational motivation. Project based learning may lead to improve academic grades and promotes better school behavior. Effective teaching strategies can create positive attitude on the students toward school subjects (cited in Jebson 1998). Biology teachers should apply teaching methodologies that will promote positive attitude towards Biology among students. The present study intended to study the implication of project based learning to enhance attitude toward Biology learning. Implementing Project-based Instruction in the Classroom

Project-based learning is complex, from both a teacher's and student's perspectives. For teachers, it requires a number of different roles, starting with planning and ending with assessment. It also requires students to assume different roles, and teachers need to assist students as they learn how to perform these new roles. In this section we describe how teachers can make project-based instruction work in their classroom, starting with the process of planning.

A second planning task is to identify a topic for study and then frame the topic in

¹ Lecturer, Yangon University of Education, nyuntnn@gmail.com 317, Pyay Rd, Kamaryut Township, Yangon University of Education, 09421057970, Fax 01504773

² No.4, Basic Education High School, South Dagon, deainthandarkhine@gmail.com

terms of a problem for students to investigate. Topics for project-based learning can come from several sources. The most obvious is the assigned curriculum. Although teachers are expected to teach a number of “assigned” topics driven by standards, all it takes is a little creativity to transform these into the focal point of project. Another teacher planning task during project based learning is to organize resources, both in print and media formats. This task has been made much simpler with the advent of the Internet, but teachers still need to plan for access to computers, the availability of relevant websites, as well as more mundane things such as printing. The first step in implementing project based learning in the classroom is to orient students to the problem. An effective problem has several essential characteristics. First, it must be real or meaningful to students. In addition, it must be understandable and afford a starting point for students’ investigative efforts. Finally, it must be complex and open ended to provide students with multiple options for their investigations. After orienting students to the problem, teachers need to organize students into study teams. One of the easiest, but not necessarily the best, way to do this is by student choice. Group may not be balanced in terms of ability, ethnicity, or gender. Working with friends or in homogeneous groups often prevents students from learning about others and how to work with students who are different from them (Eggen & Kauchak, 2012). After students are organized into study teams, teachers need to structure the teams’ efforts by establishing timelines, both for intermediate goals and final projects. Time lines provide concrete due dates for different groups to meet and help with student accountability. Major tasks each group will need to struggle with are data collection and analysis. The final products that result from project based learning can and should take multiple forms. Students should take the audience into consideration when planning their reports and should be encouraged to employ a variety of media formats.

For the aim of capturing the uniqueness of project based learning, Thomas (2000) offers five criteria to answer this question: centrality, driving question, constructive investigation, autonomy and realism.

Centrality: Project based learning is central, not peripheral to the curriculum. According to this feature, the project is the central teaching strategy; learners encounter and learn the main concept of a discipline through the project.

Driving Question: Project based learning focuses on questions or problems centered on a theme. That drives learners to learn the central concepts and principles of a discipline. When attempting to pursue the questions, activities, products and performances occupy learners’ time.

Constructive Investigations: projects involve learners in a constructive investigation: an investigation is “a goal directed process that involves inquiry, knowledge building and resolution.” The central activities of the project should involve the transformation and construction of knowledge by students.

Autonomy: Projects are student driven to a significant degree. Project based learning includes more learners’ autonomy, choice and responsibility than traditional instruction.

Realism: Projects are authentic, not school-like. Projects embody some characteristics that give the feature of authenticity to the learners. These characteristics may include the topic, the task, the roles played by the learners, or the final product (Thomas, 2000).

2. Methods

2.1 Research Design

This study is mainly aimed to investigate the effect of project based learning to enhance attitude towards Biology of Grade 9 students. It is the true experimental design which can compare the pre-test and post-test score. This is a classroom-based action research. Design of this study is pre-test, post- test, controlled group design. Attitude towards Biology Questionnaire was used to measure students' attitudes towards Biology between the two groups: experimental group and control group. The experimental group was given the treatment by using project based learning and the control group was taught by using formal instruction.

2.2 Sample of the Study

The total of 124 Grade 9 students (males and females) were randomly selected from No.4 Basic Education High School, South Dagon Township, Yangon Region during 2017-2018 Academic Year as participants of this study. Participants ranged in age between 14 to 16 years.

2.3 Instrumentation

Attitude towards Biology questionnaire was used in this study. The questionnaire was developed by Dr. Pavol Prokop (2007). It includes three subscales such as interest, difficult and importance. Expert review was conducted for face validity and content validity by 10 experts who have special knowledge and close relationships with the subject. There are 17 items in this questionnaire. Each item had a five-point Likert scale, 1= Strongly disagree, 2= Disagree, 3= Undecided, 4= Agree, 5=Strongly agree. This inventory contained positive items to check whether students' responses were confirmed or not. Negative items are scored in a reverse order.

2.4 Research Procedure

Pre-attitude test and post-attitude test question papers will be used. In this study, pre-attitude test will be administered to test whether there will be a significance difference between experimental group who will be taught with project based learning and control group who will be taught with traditional instruction.

Pre-attitude test was administered to the students in December 2nd week before intervention. After administering the pre- attitude test, the objectives of the lessons were identified and prepared the lesson plans. The intervention period was conducted within 4 weeks. After intervention, post-attitude test was administered to experimental group and controlled group to compare the post attitude differences between these two groups on February, 2018. Data were analyzed by using Statistical Package for the Social Science (SPSS) to generate descriptive statistics such as mean, standard deviation, mean difference and independent samples t- test.

3. Results and Discussion

Table 1. Independent sample t-test result of Biology Achievement between Experimental group and controlled group (Pre-test)

Group	N	Mean	S.D	<i>t</i>	<i>p</i>
Experimental Group	58	34.91	9.55	1.51	0.13
Controlled Group	66	32.22	10.25		

According to Table 1, there was no significant difference between experimental group and control group. It can reasonably be said that two groups of students have the same ability on biology achievement pre-test.

Table2. Independent sample t-test result of Attitude towards Biology between Experimental group and controlled group (Pre-Test)

	Group	N	Mean	S.D	<i>t</i>	<i>p</i>
Attitude Towards Biology (post-test)	Experimental Group	57	67.4386	6.07	1.816	0.072
	Controlled Group	69	65.1884	7.56		

Based on the result, the mean score of the pre attitude test for experimental group was 67.43 and that of controlled group was 65.18. Table 2 Indicates that there is no statistically significant difference between experimental group and controlled group in the pre-test score of attitude towards Biology.

Table 3.The Comparison of Students' Attitude towards Biology (post-test) Between Experimental Group and Controlled Group

	Group	N	Mean	S.D	<i>t</i>	<i>p</i>
Attitude Towards Biology (post-test)	Experimental Group	58	78.16	5.41	19.934	0.000
	Controlled Group	66	44.17	12.59		

The data obtained from the post-test scores were recorded and analyzed by using independent sample t-test to compare the difference between experimental group and controlled group as shown in table 3. According to post-test results, students' attitude towards Biology from experimental group and controlled group were 78.16 and 44.17 respectively. Result evidently shows that students' attitude towards Biology can be increased after intervention with project based learning. Students' attitude towards Biology from experimental group performed better on that from controlled group.

Table 4. Independent sample t-test result of Biology Achievement between Experimental group and controlled group (Post-Test)

Group	N	Mean	S.D	t	p
Experimental Group	58	43.81	6.86	7.15	0.000
Controlled Group	66	32.36	10.73		

Table 4 shows that there was significant difference between experimental group and control group. It can reasonably be said that students from experimental group performed better on biology achievement post-test. The result evidently show that project based learning can enhance students' learning biology.

Table 5. Paired Samples Statistics of Biology Achievement of Grade 9 Students

Group		Mean	N	S.D	t	p
Experimental Group	Biology Achievement (Pre)	34.91	58	9.55	-5.582	0.000
	Biology Achievement (Post)	43.81	58	6.86		
Controlled Group	Biology Achievement (Pre)	32.22	66	10.25	-.084	0.933
	Biology Achievement (Post)	32.36	66	10.73		

The mean scores of students' biology achievement from controlled group on pre-test and post-test result were 32.22 and 32.36, respectively. The mean score of students' Biology achievement from controlled group between pre-test and post-test were slightly differed but no significant different was not found. Concerning the experimental group, the mean scores of pre-test and post-test result were 34.91 and 43.81, respectively. The mean score of students' Biology post-test achievement from experimental group was significantly higher than that of pre-test result. It may be concluded that application of project based learning can enhance students' biology learning.

Table 6. Comparison of Means and Standard Deviations of Controlled Group between Pre-attitude test and Post-attitude test

Group		N	Mea	SD	t	p
Controlled Group	Attitude Towards Biology	66	65.7	7.273	12.028	0.000
	Attitude Towards Biology	66	44.1	12.59		

The mean score of students' attitude towards biology from controlled group on pre-test and post-test result were 65.70 and 44.17 respectively. The mean score of the students' attitude towards biology from controlled group between pre-test and post-test were slightly differed. The mean score of the students' attitude towards biology post-test from controlled group was significantly lower than that of pre-test result. It may be concluded that the application of project based learning is necessary to enhance attitude towards biology.

Table 7. Mean Comparison of Students' Attitude towards Biology of Experimental Group

Group		N	Mea	SD	t	p
Experimental Group	Attitude Towards Biology	58	68.9	5.27	-10.016	0.000
	Attitude Towards Biology	58	78.1	5.41		

According to table 7, the pre-test mean score and the post-test mean score of experimental group were 68.97 and 78.16 respectively. Accordingly to t-test result, the mean score of post-test was significantly higher than that of pre-test. The students' attitude towards Biology on post-test was greater than that of pre-test. It can be concluded that students from experimental group show higher attitude towards Biology than the students from controlled group. Therefore, results can be interpreted that project based learning is effective in order to improve students' academic achievement and attitudes towards Biology. Biology teachers should teach biology subject by using project based learning. It can confidently said that students' attitude towards Biology could be enhanced by using project based learning.

4. Conclusions

In order to enhance the attitude towards Biology of experimental group, classroom-based action research was carried out. During intervention, project based learning was carried out. Collected data were analyzed before and after intervention. The results revealed that students from experimental group had more positive attitude towards Biology than controlled group. According to the biology achievement score, posttest results are significantly higher than that of pretest. Teachers should use project based learning in all subject area for all grade level.

Project based learning was found to be effective on students' attitudes towards Biology. After the implementing of project based learning, students' biology academic achievement and attitudes were improved. In addition to the academic achievements, experimental group expressed positive attitudes towards learning Biology, the students seemed rather happy to learn Biology through project based learning because they were able to progress at their own pace and, at the same time, contribute to others' learning in such a supportive and encouraging learning context.

The findings of post-test at the end of the four-week implementation indicate that the experimental group performed better than the control group. By project-based learning, students have a chance to practice their understanding on the learning material by interacting and communicating with their peers in the groups. Students do not memorize the concepts and other things; they do study the learning materials and learn deeply. So, the learning environment should be organized so that students interact face to face with each other and share the responsibility of the learning process. All the teachers from primary level to high school level might use project based learning in order to enhance students' attitudes towards respective subject areas.

Based on the findings of the study and conclusion reached, the following recommendations were made:

1. Biology teachers should adopt project based learning as an effective teaching learning strategy in order to enhance students' attitude towards Biology.
2. Seminars, workshops and conferences should be organized in order to apply project based learning in classroom.

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Why Popular Factors for Success Do Not Lead Success?

The Three Types of Omissions That Exclude Useful Information Out of Successful Cases

Shin Ichiro IRIE¹

Abstract

To learn from successful cases of innovation, we should understand what is omitted from the description of success stories and factor analysis. Policies are made based on plausible factors for success, but actually, not only there is little useful information in workplace, but also it misleads the policy that does not lead success. In this presentation, based on the Actor Network Theory in anthropology of science, taking historical research of Edison light bulb as data, I clarify three types of omissions: (1) Few data due to less legitimacy of tricks. (2) Reification by language conventions. (3) Ignorance by Scientism. After explained these three omissions, I examine that the Western dualism make the three omissions, and that objectivity in dualism is impossible in social science because of excessive abstraction and recursiveness. This presentation is not just point out the limit of traditional social science, I explore the further potential. In order for that, I examine experience of Japan as the clue evading dualism, propose another possibility of Case Study that may be ensured legitimacy by local-generality. This presentation is a systematic summary of what has been said individually in; phenomenology, Bourdieu, situated approach in cognitive science, anthropology of science, and social constructionism, it is easier to use as a clue for practitioners to learn from successful cases.

Keywords: innovation, success, Actor Network Theory, reduction, factor, scientism

1. Introduction

The original meaning of innovation is the introduction of novelties to social. When capitalism grew, the introduction of newness to the economy was called innovation [1], and when social change due to diffusion of new technology became conspicuous, new technology was called innovation [2].

In this article, so called technological innovation is discussed, mainly focused on the reason why innovation is difficult although full of success stories on mass media and factor analysis on academic papers. On this issue, author consider that knowledge that is useful for success in innovation is not top secret, although many peoples know, because of less legitimacy of the knowledge of trick, the useful knowledge do not discuss in social science.

2. Method and Data

The method is qualitative analysis based on the logic of the Actor Network Theory [3], as one of Social Constructionism [4] [5]. The data is historical description of Edison Bulb [6] and examples of 'translation' of tricks in negotiation [7] [8], as follows.

¹ Assistant Professor. Kyoto Institute of Technology, iriesin@gmail.com, Shin Ichiro IRIE, 1 Hashigamicho, Mtsugasaki, Sakyo-ku, Kyoto-shi, 606-8585, Japan. +81-(0)90-7570-4235

3. Edison's electric light business

When Thomas A. Edison began developing light bulbs in the United States, 20 types of light bulb patents were already registered. In the UK, light bulbs were produced in factories. What Edison did was an improvement. Edison bulbs were 'invented' with filaments made by carbonizing bamboo thin stick from Kyoto. Edison struggled with the development of the light bulb because he intended to make the filament made of carbonized material with a resistance unusually high. Why was it had to so high resistance? It was to make the filament glow with only small current. If the resistance is large, the electrons will collide and heat up and emit light. However, the filament is easily cut at a high temperature. So, the previous filament was made of metal. Then why did Edison stick to making it glow with a small current? It was because the current that flows is small, less copper (more expensive than iron) was necessary for the long electrical wires, and the cost of coal for power generation was also cheaper. The reason Edison wanted to make it cheaper was to provide light service at a lower price than the gas lights that were widely used as existing room lighting.

The degree of resistance was calculated using Ohm's law, which was the most advanced scientific theory at the time. It seems that Edison, a graduate of elementary school, did not understand Ohm's Law well, but he hired a university graduate engineer as a research assistant at the Edison's R & D facility called Menlo Park, and understood that the resistance of carbonized filaments satisfied the condition. Edison wrote a memo that estimate the costs and profits. If successful, enormous profits were expected.

Edison's electric lamps that are less expensive than gas lamps have become very popular because they had a very low risk of house fire and did not pollute indoor air. The gas lamp industry had taken action. Because there was no utility pole, the electrical wires had to be buried, the legal legislation that limits the construction period to a few month was made, as the effort of lobbying of the gas lamp industry.

During the burial work, Edison himself performed the insulation work. He entered the dug trench and connected the wires. If there was insufficient insulation even at one location, electricity would be leak and all the bulbs would not light. Edison took a nap for about three hours a day on a bundle of wires. It is said that Edison have slept for three hours while working, but he seems to taken a nap frequently with a bed in the corner of the lab. However, it seems that the sleep was fairly three hours a day during the wire burial work. He is described as respectable hard worker. But, if the insulation failed and the lamps did not glow, not only the sales was lost, huge development costs would not be got and Edison may had gone bankrupt. However, if it was successful, huge profits were expected with concrete numbers on the memo. Even if we are not Edison, there may be not a few people who can do their best by sleeping for three hours a day.

Edison improved more than just the light bulb filament. He had developed all sorts of related technologies, including generators that efficiently generate small currents, parallel distribution systems, and methods for efficiently removing coal ash generated by power generation, and so on.

Edison also frequented the Patent Office. The lawsuits were filed for patents that might compete not only with light bulbs but also with related technologies. He established EEIC, a company specializing in patent management. Edison took all measure against the competitors. In

order to compete with laws and regulations that the gas lamp industry had made, Edison performed clever entertainment for lobbying. He pulled out expert glass craftsmen from competing light bulb companies and made it impossible to produce. When an alternating current (AC) that threatened Edison's direct-current (DC) electric light business appeared, Edison made the newspaper reporter to post an illustration of dogs and cats that was dead by AC electric shock on the electric fence in the ranch. He also worked on the New York State Parliament to change from a hanging to an execution by AC electric chair.

To develop new technology, Edison established Menlo Park, an organization dedicated to research and development that was not seen at that time. Menlo Park's public relations magazine was sent to investors to raise funds, and articles on 'innovative development' often referred to as hype were posted.

Edison is not the inventor of the light bulb. Edison invented the electric power business. Connect to the electric wire network which laid by the electric light business, any electric machine will work. The company's name founded by Edison is General Electric.

3.1 Examples of 'translation'

The actor which want to develop and to diffuse new technology have to be connected with; human actors such as competent research assistant, physical actors such as elemental technologies, and 'social' actors such as funds and patents. Natural scientists tend to neglect 'social' actors, and social scientists tend to neglect physical actors. On the other hand, Edison performed the connection without distinguishing whether the actor is human, physical or 'social'. Edison's view of the world is not that of natural scientist nor social scientist. For Edison, these three types of actors are equally important. This kind of view of world is called 'hybrid' where human actors, material actors, and 'social' actors are mixed without being distinguished [3][7].

In order to achieve our goal based on the hybrid view of the world, to connect with a strong actor with limited resources, we have to work against the actors that are usually stronger than us. The work is called "translation" [7]. In ordinary terms, the work against human actor is called 'persuasion', 'install' physical actor, and 'get' social actor, for example. In the Actor Network Theory, human actor, physical actor and 'social' actor are regarded as equivalent and are not distinguished, so the same terminology 'translation' is used. The 'translation' is the work against the actor (usually stronger than translating actor) to be connected. Here are some examples as below.

When the actor in charge of traffic safety install traffic sign that say at 20 km/h in order to make the car drive slowly but in vain, hump on the road is made. The drivers see the small protrusion on the road, the driver brakes for selfish reasons that the driver does not want to hurt car with an impact. As a result, the slow driving desired by the road safety officer is realized. The hump is called a 'sleeping policeman'.

The hotel front manager at the resort wanted to prevent guests from losing their keys when they went out. However, even if front manager put a plate with the message "Please leave the key at the front desk when you go out" on the desk or tell it verbally, the effect was small. It was the same when the manager wrote a message on the key holder. But, when a weight was tied to the key holder, the customer willing to leave the key at the front desk, because the weight is

disturber in the pocket of customer.

In these two cases, the translator's purpose, such as slowing down for traffic safety and preventing key loss, are 'translated' into the selfish motives of drivers and guests. In these two cases, 'translation' created physical negatives for actors that want to be connected. There is another example of 'translation' that produce the desired result just by creating possibilities with words.

During World War II, the physicist proposed developing nuclear weapons to Pentagon general. The general rejected saying because new weapons take decades to operate well, physicists should refine existing weapons. So, the physicist said. "What if Nazi Germany got the nuclear bomb first?" At this moment, the general's purpose (war victory) was transformed from a victory with existing weapons to a victory in nuclear warfare. The physicist did 'translate' the purpose of the general.

Translation is different from persuasion. Persuasion controls the opponent until the end. In the 'translation', the translator actor only prepares halfway. After the preparation, the opponent actor will voluntary be connected. This is the strategy of 'the Sun' in the fable of "The North Wind and the Sun". This is the strategy not grabbing the fruit with hand, but waits for the fruit to ripen and fall into the translator's palm.

3.2 Three reductions that omit useful knowledge

For entrepreneurs who want to start new businesses and engineers who want to develop new technologies, Edison's practice and the cases of 'translation' are useful. However, it is impossible to learn from Edison's biography more than the importance of inspiration and effort. Many success stories of new technologies are on the newspapers and the magazines, but there is little description that make you confirm that you can do it. In addition to biography and mass media, academic papers in social sciences such as economics and management have elucidated factors for success, it avoids 'translation'.

The aspects of the useful knowledge at workplace in innovation could be summarized as MELD; Mobilizable, Ex ante, Local, generate desirable Dynamics. Why do articles that are not useful in the workplace have been accumulated as success stories of mass media and factors of social science? This is because useful knowledge is omitted by three reductions as below.

Reduction 1: Few Data due to Less Legitimacy

Because 'translation' is a kind of trick, it is regarded as less orthodox as a scientific knowledge. The reasons are as below.

- 1) **No merit to talk for successful person:** The successful person do not talk 'translation' because not only it makes a bad impression, but also it announces competitive secret.
- 2) **Mass media censorship:** Publishers of biographies and business articles must balance the demands of both; readers who want to read easy-to-understand success stories and successful person who want to improve their impressions.
- 3) **Silence on the academic stage:** Because it is difficult to handle by a natural science method,

scholars do not consider that it is not matter of science and talk 'translation' as anecdote at a drinking party.

4) Less orthodoxy of Humanities: Humanities have been written 'translation' as; proverbs, art of war in history, and strategy of negotiation in novels, etc. However, it is considered unscientific, the knowledge of humanities is underestimated in legitimacy.

Reduction 2: Reification by Language Conventions

1) Disassemble and conceptualize: In order to talk about Edison Bulb easier, we extract partial actor network and put the abstract word (concept) as a label, making the distinction between human, things and 'social'. For example, the abstract words 'entrepreneurship' (human), 'core technology' (material) and 'potential demand' (social) are made. For example, in order to explain why the Edison's light business were welcomed, we extract the partial actor network contains actors such as city residents, gas lights, house fires, room air pollution, bills more expensive than electric lights. Then we label abstract word 'potential demand' on the small actor network as a concept. So do we 'core technology' and 'entrepreneurship'.

2) Substantiate (reify): While abstract concepts such as 'potential demand' are frequently used in conversations and sentence, concept can be understood even if the specific partial actor network that the concept means is not recalled. At this time, the abstract concept exists in the same way for everyone like a substance (entity). Thus, the abstract word is no longer a label of the partial actor network, but an entity that exists like material. A success story is made by make these substantialized words arranged and filled with sentences.

3) Retrospect and paraphrase: Paraphrasing the aspects of successful state as key factors for success by transporting aspects from the present to the past. For example, we can recognize 'potential demand' only when interpret the big sales amount of the new product. Most of new product would not sell, and until new products had released and sold, there was no demand. What exists was only a vague desire and it is not demand. We can't recognize 'potential demand' ex ante. So can't 'entrepreneurship' and 'core technology'. We are allowed to explain the success of new product saying "Because the potential demand was discovered.", "Because the engineer have entrepreneurship such as strong spirit and rich imagination." or "Because the core technology was developed." This explanation is not wrong in casual conversation, but in case persons in the manager give instructions based on this understanding, their subordinates get lost.

Consequence of reduction 2; is director boss syndrome. They direct to subordinates; "Find out potential demand!", "Work hard and never give up!" and "Develop core technology!" Director boss requires results without showing means. In this sense, director boss is obscene and incompetent, but they have power. And one source of their power is 'scientific' factors for success on business magazines.

Reduction 3: Ignorance by Scientism

1) Numerical scientism: It is difficult to explain phenomena with subjective intentions and social relationships such as 'translation' by the method of natural science, because natural science require to measure numerically. However, some social scientists believe that natural science methods are the best way to elucidate the human world [9]. Natural scientific methods require

strict conditions such as objectivity, universality, reproducibility, using numerical data. Because phenomena that do not fit the natural science method are difficult to study, if social scientists know ‘translations’ through daily experience, they do not treat ‘translation’ as scientific issue. As a result, only the phenomena that natural science method is easy to implement is studied as a topic of social science.

2) Procedure scientism for achievements: Even when there is no meaningful implication for theory nor workplace at the end of academic paper, social scientists must publish academic papers in order to obtain better jobs. When they were a graduate student, they think this kind of research practice do not fulfill their social responsibilities, but when students got a job, they are busy with miscellaneous work, they can’t get enough time for research, and give up make research both scientific and practical. Then, they tell themselves that “I wrote papers based on the scientific procedure, I fulfilled my social responsibilities as a scientist.”

Consequence of reduction 3; is Relevance Lost between scientific knowledge and workplace practice. In spite of the accumulation of scientifically ‘correct’ knowledge about the human world, it is difficult for social science cause changes as scientists intended like natural science can do. Even if many of director boss exist in business, social science has weak power to improve.

3.3 Western dualism derives three reductions

The three reductions can be derived from Western European dualism. The background of Western European language conventions is the Christian worldview. It is assumed that the omnipotent god is placed at the top of the hierarchical world, and that man is entrusted to rule the world. Therefore, humans are located at the center of the world, and they are called subjects. Anything other than subject are positioned as environment around subject are called object. Object to be observed consists of; human being other than the observer, material, and residual neither human nor material called social (Figure 1).

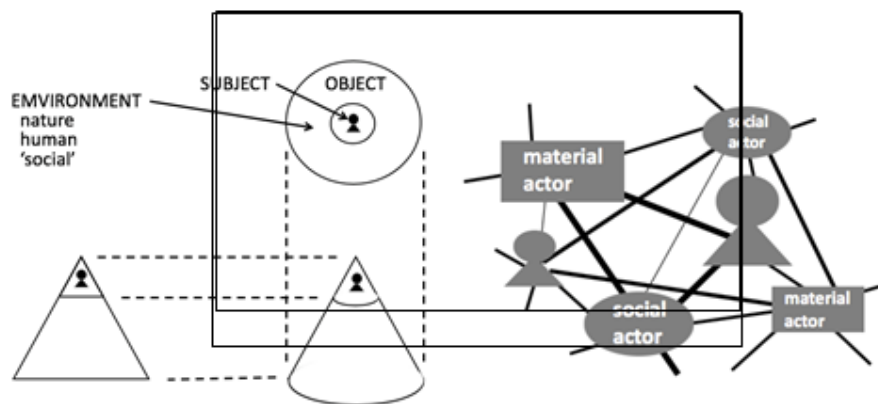


Figure 1. Position of scientist is top/center of the world in the dualistic view.

Figure 2. Human, material and ‘social’ are equal actor in the hybrid network view.

As the industrial revolution began and capitalists increased, the following were constructed to counter the churches and kingships that would take profits. The rational individual

who has God-given freedom against the church and kingship, the nature around subject given to rational subject (citizen, individual) by the God, science as a means to make effective use of nature that is the second Bible written by the God. As a result, the position of priests, who were agents of the God in the Middle Ages, was replaced by scientists in modern ages. Scientists are orthodox and have the legitimacy of being able to control nature under the commission of the God implicitly. Therefore, the biography of an innocent scientist do not describe political bargaining.

Even it is pseudo-correlation, desirable results can be easily reproduced in the world of things. This made natural science and factory production successful and it fostered capitalism. When natural science got success in the world of things, it was applied to the human world, because there were much social problems caused by industrialization. Scientists applied natural science to the human world, assigned macro to sociology and micro to psychology. What traditional sociology and psychology can do were limited to the phenomena that natural science methods can be applied, produced a lot of useful knowledge, the success of sociology and psychology has raised the status of social science. As a result, the status of 'non-scientific' humanities has been lowered.

3.4 Objectivity in dualism is impossible in social science

Scientists try to explain the world around them objectively and universally. In order to explain objectively, the object and scientist must exist independently. As a result, the environment around the scientist is positioned as object to be observed. In order to observe object objectively and comprehensively, it is necessary to look at object from the viewpoint of a bird, the viewpoint of scientists exists at the apex of a conical world. This bird's view derives excessive abstraction that make scientists ignore actual knowledge that relate to MELD: Mobilizable, Ex ante, Local and generate desirable Dynamics, at first. For second, the bird's view also ignores recursiveness as below.

If the object is material, a lot of useful knowledge can be produced even from a bird's eye view. However, in the social sciences, scientists who are observers are part of the society that should be observed. There is kind of difficulty to observe my eyes with my own eyes. If scientists elucidate the laws of chemical reaction and astronomical motion, the chemical reaction and astronomical motion would not change. So, objective research is possible. However, when social scientists produce knowledge about the human world, the knowledge is used to intervene in humans and society, and the human world will be changed from its previous state. In some cases, the observation itself change what scientists observe. In other word, social (object) was changed by social (scientist's practice) itself. It is called recursiveness.

In order to try to avoid this problem of recursiveness, if scientists try to study the human world so that it never affect the human activities and social phenomena at all, i.e. objectively, elucidate MELD knowledge is difficult. It is because scientists can get knowledge about specific actors and relations which is related to MELD by the result of intervening object like an experiment. In order to describe MELD knowledge legitimately, social science have to construct the social science method that ensure the scientific correctness.

3.5 Experience of Japan as the clue to evade dualism

The necessary aspects of practical knowledge to realize innovation are MELD: Mobilizable, Ex ante, Local, generate desirable Dynamics. It contains both time (ex ante) and space (local). But it is simple. Ex ante is matter of local, because when it is mobilizable ex ante, it is always local. (Of course, all local is not necessary mobilizable.)

MELD is possible by evading dualism. By evading dualism, no distinction between the center and the periphery, the world became kind of hybrid network that do not distinguish human/material/social (Figure 2). This world is pluralistic, local actor that can mobilize and that generate desirable dynamics could be found, because if the social is monolith, it is impossible for the actor embedded in the social to intervene by utilizing differences in different positions. On that occasion, the concepts we design is relational that not substantialized factors. In the non-dualism world, human is not the God's surrogate, human is equal at most to nature and this understanding of world may lead environmental sustainability.

This hybrid world view is not uncommon in Asia, such as Lao-tse in 3rd century B.C. China, Buddhist Nāgārjuna in century India, for example. Martin Heidegger and Albert Einstein suggested that Buddhism might be compatible with science and technology, and it is not a metaphysical imagination, but has been realized in economics to a certain extent already in 20th century Japan.

Japan has an experience at the end of the 19th century, with the national policy of 'Japanese spirits and Western technology'; Japan was industrialized by avoiding colonization. In some successful Japanese management, the world view seems non-dualism.

In production improvement, although improvement plan is usually made by elite engineer in private room in the West, but in Toyota's Kaizen, blue workers on the production line discuss together and improve the process of production. This Kaizen is considered as most important factor for success of Toyota.

In develop new product, although it is usually designed by elite engineer in the West, 1980s Japanese facsimile maker that defeated Western manufacturers, the new product design was drawn at production factory. The low-level engineers drew blueprint, in order to manufacture easier, they combine multiple parts into one part and simplified the lines. As a result, the facsimile is cheap but high speed and hard to break.

Salespersons in the West only sell products developed by the elite, while Japanese sales department called Eigyo propose new products, coordinate with factory production plan and negotiate budget at the top management committee. Persons of Eigyo are as powerful as engineers in the company, and it is often the case top managements came from Eigyo.

In engineer education, after the industrial revolution, since engineering is not a matter of scholar in traditional universities in the West, department of engineering was not made in the traditional universities at first, and was set up in a poly-tech or institute outside of the university, when Japan made department of engineering in first national university.

In management research, this kind of fact have been described as Case Study especially by Peter Drucker and some Japanese qualitative researchers, for example. These qualitative studies have room to further development in methodologies for ensure the scientific legitimacy.

It is difficult to ensure the scientific legitimacy on knowledge that derived from a small

number of cases usually one case however rich the case is. It is because induction from a small number of facts does not provide grounds for correctness as knowledge. However, there is the legitimacy of knowledge in the historical facts that are not reproducible. The fictional anecdotes in novels are often change reader's life. What bring this in humanities? There is a rhetoric: By examine the fact which author surprised, visualizes existing common sense which makes the author surprise at the fact, then, make alternative understanding reversing common sense.

Here, the amazing fact is against the existing common sense and is example of alternative understanding that includes the amazing fact. The alternative understanding made by logic based on the existing common sense. In this sense, alternative understanding shares a space of existing common sense. Because it is impossible to do induction from one fact, we can't make another understanding directly from the fact, by reflect against common sense, there is a possibility that local-generalality within the range where common sense exists can be given to alternative understanding.

4. Conclusion

To learn from successful cases of innovation, we should understand that MELD information may be omitted by three reductions. The three reductions omit useful knowledge in workplace. The Western dualism derives these three reductions, and objectivity in dualism is impossible in social science, because of excessive abstraction and recursiveness, when experience of Japan is the clue to evade dualism. The Case Study of non-dualism cases may be ensured legitimacy by local-generalality of alternative understanding by reflecting amazing fact against existing common sense.

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Educational Service Quality of Meiktila University of Economics in Myanmar

(Case Study: Master of Public Administration Programme – Mandalay University Campus)

Thida Htoo¹

Abstract

The better the educational service, the greater the opportunities to the students who generate lifelong learning for their career development. People are asking that whether the quality of educational services provided by higher education institutions is good or not. This study intends to examine the quality of educational services in MPA Programme (Mandalay Campus) provided by Meiktila University of Economics. Parasuraman's SERVQUAL dimensions is used to find out the factors that contribute to quality of educational services and learning outcomes of the students. The study found that according to the five dimensions, all dimensions are negative mean gap value. However, reliability dimension, assurance dimension and empathy dimension, and responsiveness dimension are low negative mean gap value. This means that students' expectation and their perception are very close in these dimension. However, tangible dimension are shown high negative mean gap value. This means that students have less satisfaction on tangible dimension especially hygienic canteen, sport and health facilities. Regarding with the expected learning outcomes, students have strongly recommended on their acquiring knowledge gained from the MPA programme. They have highest mean value on ability to apply knowledge gained from learning courses in their working environment, and their community, ability to have critical thinking, improvement in social network, good professional ethic and attitudes, and ability to do with team work. The students have strongly recommend good image of teaching and learning strategy of MPA programme, and they want further study in advanced level courses especially PhD in MPA programme.

Keywords: Quality, Educational service, Learning outcomes

1. Introduction

Education plays a vital role for assessing the human personality and promoting social, economic and cultural as well as the development of the country. The more the person has life long learning, the higher the rate of return for their career and thereby contributing to faster the national development. The investment in higher education can provide the appropriate and useful skilled human power for industry, for science and technology, for creation of basic social (education, food, shelter, health, and nutrition) and economic (agriculture, energy, water, transport and communication) infrastructure and for better social and administrative governance. Therefore, higher education presents a critical factor in innovation and human resource development (HRD) and plays a vital role in the success and sustainability of the knowledge economy.

The more the students gain in advanced degrees, the greater the probability of earning more income and improving their career and their social status are. According to the United States Census Bureau Report (2007b), adults with advanced degrees earn four times more than those with less than a high school diploma. Therefore higher education become effective tools for

¹ Dr. Professor & Head, Department of Economics, Meiktila University of Economics. thidahtoo4@gmail.com

human resource development. For human resource development, university plays a vital role for providing educational services. The more the quality of educational services in higher education, the greater the well qualified –educated human resources can produce in the university. To obtain quality in higher education, “To create an education system that can generate a learning society capable of facing the challenges of the Knowledge Age” become more obvious. Therefore this study intends to examine the whether the students satisfied the educational services provided by MPA programme (Mandalay Campus) or not, and to find out the factors that contribute to learning outcome and future intentions of post-graduated students who are attending MPA programme (Mandalay University Campus).

Problem statement

Although Myanmar’s Universities produce a large number of graduates, there are many complaint on quality of education and educational services provided by higher institutions. This is why university need to evaluate the progrmmes provided to their students and thereby leading to better educational services that will provide for the students for future. The study intends to examine the gaps between post-graduated students’ perceptions on service quality and their expectations on service quality.

2. Research Methodology

In order to achieve study objectives, service gap analysis was used. The questionnaire is based especially on AUN-QA programme level criteria by using Parasuraman SERVQUAL dimensions. In assessing the gaps between post-graduated students’ expectation and their perception, Likert Scale are mainly used with structured questions.

Profile of Meiktila University of Economics (MEUE)

MEUE offered five Bachelor Degree Programmes: Bachelor of Business Administration, Bachelor of Commerce, Bachelor of Economics, Bachelor of Public Administration and Bachelor of Statistics; five Master Degree Programmes: Master of Business Administration, Master of Commerce, Master of Economics, Master of Public Administration, and Master of Statistics; three Ph.D. Programmes: Ph.D. Commerce, Ph.D. Economics, Ph.D. Statistics; but Executive Master has not been offered yet. Master of Business Administration and Master of Public Administration programmes are expanded at Mandalay University and Nay Pyi Taw as well as MDevS Programme in Nay Pyi Taw. Defense Services Administration School is an affiliated institution of MEUE and it offers Master of Public Administration.

3. Result and Discussion

3.1 Tangibility

According to the tangibility, there is a gap between students’ expectation and their perception. The service quality gap arise the difference between students’ expectation and their perception in terms of tangibles dimension. According to the mean gap score, among the items

for tangible dimension, good feature of university, adequate parking area, providing teaching aid materials in classrooms, safety classroom, having good personality of academic and support staffs shows lowest negative gap. Nonetheless, the statement of overall cleanliness within the University Campus, University Provides Up-to-date library with adequate up-to-date text books, up-to-date research paper, providing sufficient internet, hygienic canteens, providing adequate sport and health facilities have largest negative gap. The study found that University need to provide up-to-date text books, research paper, sufficient internet and wifi, hygienic canteens and sport and health facilities. Students' expectation are very close to their perception, means that students have satisfaction on most of the items of tangibility dimension. It can be reflected that overall mean score value is (-0.68) (See Appendix Table-1)

3.2 Reliability

According to the reliability dimension, taking class right time by the academic staffs (-0.21), providing up-to-date courses that align with the needs of the region/labor market, teaching and learning strategy with freely and actively collaborate in discussions, error free records of students' result, alignment with the subjects that academic staffs deliver due to specializations shows lowest negative gap. This means that students' perception are closely with their expectation. Overall mean value for reliability is (-0.17), this means that the more the students have their expectation from the programme, the greater the satisfaction on the programme. If the programme provides more seminar related with courses/ research /thesis, students have more knowledge and idea that can apply in their working environment (See AppendixTable-2).

3.3 Responsiveness

According to the responsiveness, students' expectation are close with their perception thereby leading to lower negative gap. Because the overall mean value is (-0.391). The study found that students have satisfaction on academic staffs' willingness to give directions and suggestions on their query, prompt services with full knowledge and understanding of the subject, ability to supervise the students' thesis, prompt services of programme director with the notion of flexibility and ability to adapt the needs of the students, and prompt services of rector with a notion of flexibility and ability to adapt the needs of the students. The students have however less satisfaction on supporting staffs from student affair department, admin and finance department, and engineer department to adapt to the needs of the students (See Appendix Table -3).

3.4 Assurance

According to the assurance, students have satisfaction on well-manner of academic staffs, and supporting staffs, having adequate competency to share the students' query, adequate experience in helping /suggesting the student's research work effectively, student-centered approach, active learning, presentation with empirical work, logically sequenced, integrated and up-to-date courses, providing courses with full knowledge and understanding, providing courses with critical thinking and apply in working environment. This is due to lower negative mean value gap. This means that students' expectation are close with their perception on assurance

dimension. Thus overall mean value is (-0.22). University need to provide safe environment for the students within the campus due to negative mean value of 0.44 (See Appendix Table-4).

3.5 Empathy

Regarding with empathy dimension, student satisfaction on academic staffs' attention to the students' needs concerning with lecturing, supporting staffs' attention to the students concerning with exam and students' affairs, academic staffs' sincerely responses for students' difficulties, sincere interest of rector on solving other social problems, convenient working hour of student affair department. This statements show lowest negative mean value for empathy dimension. Student have more satisfaction on programme director's sincere interest in solving problem and difficulties. In sum, the students have satisfaction on items of empathy dimension because the overall mean value has only (-0.18) (See AppendixTable-5).

3.6 Means Gap Score by Five Dimensions

According to means of SERVQUAL scores in terms of all dimensions, the overall level of perception mean score of each dimension is higher than the overall level of expectation mean score

Mean Gap Scores by Five Dimensions

No.	Dimension	Expectation	Perception	GAP
1.	Tangible dimension	3.88	3.2	-0.68
2.	Reliability dimension	4.14	3.97	-0.17
3.	Responsiveness dimension	4.02	3.63	-0.39
4.	Assurance dimension	4.01	3.79	-0.22
5.	Empathy dimension	3.93	3.75	-0.18
	Overall Mean Gap Score	3.99	3.67	-0.32

Source: Survey Data, August, 2017

According to the five dimension, all dimensions are negative mean gap value. However, reliability dimension, assurance dimension and empathy dimension, and responsiveness dimension are low negative mean gap value. This means that students' expectation and their perception are very close in these dimension. However, tangible dimension are shown high negative mean gap value. This means that students have less satisfaction on tangible dimension especially hygienic canteen, sport and health facilities.

3.7 Expected Learning Outcomes

Regarding with the expected learning outcomes, students have strongly recommended on their acquiring knowledge gained from the MPA programme. They have highest mean value on ability to apply knowledge gained from learning courses in their working environment, and their community, ability to have critical thinking, improvement in social network, good professional

ethic and attitudes, ability to do with team work. Moreover, they have ability to manage their time and people in their working environment, ability to solve problems with confidence, ability to be thoughtful in everything, ability to work with right decision in their career, ability to gain high position in their work due to the MPA programme.

Expected Learning Outcomes

		Mean Value
1	I have ability to be thoughtful in everything	3.96
2	I have acquired knowledge gained from the MPA programme	4.16
3	I can apply knowledge gained from learning courses in my work	4.19
4	I can apply knowledge gained from learning courses in the community	4.61
5	I have critical thinking and explore the good result.	4.20
6	I have ability to lead and manage people and time.	4.15
7	I have ability to report writing technically	3.97
8	I have good communication skills	4.15
9	I have good professional ethic and attitudes	4.25
10	I have ability to do team working	4.21
11	I have ability to solve problems with confidence	4.13
12	I have ability to work right decisions in my career	4.13
13	I have ability to gain high position in my work	4.12
14	Improvement in social network	4.28
Overall mean value		4.18

Source: Survey Data, 2019

Future Intention

According to the future intention, students have strongly recommend good image of teaching and learning strategy of MPA programme, and they want further study in advanced level courses especially PhD in MPA programme.

Table (8) Future Intention

		Mean value
1	I want further study in advanced level courses (PhD) from this programme	3.83
2	I will recommend good image of teaching and learning strategy of this programme	4.26
Overall mean value		4.18

Source: Survey Data, 2019

4. Conclusion

In sum, students have satisfaction on MPA programme due to their expectation and perception which are very close. University need to provide more internet and wifi, up-to-date library, hygienic canteens, sports and health facilities as infrastructure. Regarding with responsiveness dimension, supporting staffs from student affair department, admin and finance department, and engineer department need to take care of students on their needs. As assurance dimension, University need to provide safe environment for the students within the campus. University need to provide more infrastructure like hygiene canteen, Sports field and health facilities.

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The Traditional Monk's Bowl as Sustainable Development in Myanmar

Lei Shwe Sin Myint¹, Thet Mar Aye², Thandar Aye³

Abstract

A bowl is one of the eight necessary requisites of a monk. Before the Buddha laid down the rule on the kind of bowl a monk should use, monks used bowls made of various materials. The bowls made of earth and iron is allowed. Innwa village when Myanmar people mostly live is well-known as the center of domestic business of traditional handicrafts. It mainly focuses on to a greater understanding of what makes to collect and review existing research on the economic and social impact of valuable as the unique handicraft. Field researches will carry out in order to get necessary information. Field researches include non-participant observations, key-informant interviews, and in-depth interviews. The results on the monk's bowl casting show that the art was made without the help any machine, the tools used in the work are hand-made, and man power alone. A monk's bowls is not only essential material object for Buddhist monks but also an important cultural symbol for Myanmar people, especially for Buddhists. It is assumed that another form of style replaced as traditional cultural handicraft in Innwa especially for producing monk's bowls sacred for Buddhist monks.

Keywords: monk' bowl, material, handicrafts, culture, economic

1. Introduction

Innwa village is one of the villages in Ta-Da-Oo village group, Hanthawady District, Mandalay Region. Most inhabitants are Myanmar and it is well known as a place for various traditional handicrafts. One of the handicrafts is bowl-production. This art has long been existed in Innwa for about a hundred years. A bowl is one of the four necessary requisites for Buddhist monks, and for this reason, it is one of the religious objects in Myanmar. Innwa used to produces two kinds of bowls – iron and earthen, but earthen bowls are not produced any more in Innwa. Earthen bowls have been used at the time of the Buddha (see figure-1). Iron-bowls have taken the place of earthen bowls. It is appropriate for monks to use iron bowls. Although the tradition of earthen bowls has disappeared, the craftsmen continue to produce iron bowls in Innwa. There are about seven families that make iron bowls. A bowl is one of the eight necessary requisites of a monk. Before the Buddha laid down the rule on the kind of bowl a monk should used, monks used bowls made of various materials. The Buddha later laid down the rule that monks should not use bowls made of wood, gold, silver, ruby, stone, beryl, glass, white copper, glaze, white lead, black lead, and copper. The bowls made of earth and iron is allowed. (Myanmar Encyclopedia, Vol. X) Bowls, earth or iron, are used for monks to go alms-round and eat meals. A bowl suitable for monks to use needs a specific color. Then only monks can mark it as the bowl. As bowls are necessary requisites for Myanmar Buddhist monks, it becomes a religious symbol for Myanmar people. There used to be many bowl productions in Mandalay, but at present the business has moved to Innwa. The kinds of bowls made in Innwa are earthen or iron (white bowl and black bowl). However Innwa only has a few earthen bowl productions. Monks used to use earthen bowls that are permitted by Vinaya rules, but now this tradition is already extinct. Earthen bowls are good for health and allowed by the Buddha. However, it is so fragile

¹ Associate Professor, Department of Anthropology, University of Mandalay. kalyah007@gmail.com

² Associate Professor, Department of Anthropology, University of Yangon

³ Lecturer, Department of Anthropology, University of Mandalay

that people do not really like them. For this reason, no-one uses earthen bowls nowadays. Consequently, there are only few people who know the art of making earthen bowls. Monks use iron or lacquer bowls, instead. Therefore, this traditional art started at the time of Myanmar monarchical period is soon to be extinct, and this paper aims at leaving a record on it so that later generations will have some information about the tradition.



Figure 1. Earthen Bowls

(Source from the Mirror Newspaper, 8.10.2016)

2. Methods

The main purpose of this research is to come to a greater understanding of what makes to collect and review existing research on the economic and social impact of valuable as the unique handicraft and also as a learning form. The specific objectives are to examine environmental awareness, conservation and sustainable use of natural resources, to analyze on the realistic functions of the learning form of handicraft, to study the current problems and development practice for monk's bowl products for a creative economy. In this research, the data were collected by using available information, library research and field research. Qualitative method was used to get data. Therefore non-participant observation (NPO), key informant interview (KII), in-depth interview (IDI) were applied to collect data. Non-participant observation method was done in work place of alms bowls making in Innwa Village. To carry out key-informant interviews 7 home industries of alms bowls making were collected.

3. Results and Discussion

3.1 Historical Background of Research Area and Earthen Bowls

The history of bowls goes back to the time of the Buddha. *Tha-bake-tan* Village in *let-thit* quarter in Mandalay used to be the only place where earthen bowls were made. There was a local demand for bowls in Mandalay since it was the place where there were many monks dwelling and learning Pariyatti. Besides, the weather in this dry area was also supportive for making *thayoe* (mixture of wood-oil, sawdust, and powdered charcoal and fine ash used in the making of lacquer-ware and gilded glass mosaic). *Let-thit-yat* village used to be included in Amarapura Township in Mandalay Region. There used to be royal bowl productions in those areas. Amarapura Royal City was established in 1144, and *tha-bake-tan* village was included in this area. The bowls made there were carried by bullock-carts or cars, and sold in Eindawya. *Let-thit-yat* village was the only place famous for bowl productions. *Let-thit-yat tha-bake-tan* is located in the east of Innwa, and in the north-east of Pinya. Innwa and Pinya are the cities on the west and south-west bank of Dutthawady River and *let-thit-yat tha-bake-tan* is on the east bank. The

tradition of earthen bowls in *let-thit-yat* came down from Bagan Period through Konbaung Period. There is no written record on the history of bowls in *let-thit-yat tha-bake-tan*, but the local people believe that they had this tradition long and they are proud of it. Earthen and iron bowls are allowed for monks. Studies show that earthen bowls are more used at the time of the Buddha. Pitaka literature provides the rules for earthen bowls. Monks are supposed to use the bowls until it is broken. If there is a crack on a bowl, monks should mend it. They should mend it until the crack is so long that it needs five knots on it. After that the bowl is not usable and monks can find a new one. Monks should not keep their bowls at open spaces for that can damage the bowls. Besides monks should not ask for many bowls more than they really need even if a bowl-maker has made an offer to donate. This rule meant to protect the bowl-makers' business and to teach monks to lead a life of contentment. (Aunt Nyein Chan, 1997) These records prove that monks, during the time of the Buddha, used earthen bowls.

It proves that the people of that time value it a lot. During the time of the Buddha, earthen bowls were widely used, and became a religious symbol for Buddhists. Monks in Myanmar use iron bowls for going alms-round. The donors also use the bowls made of aluminum vessels or steel pots. Earthen bowls are rarely used nowadays. People use iron bowls, instead. It is assumed that for the people of Myanmar although there is a material cultural change, the use and value on earthen bowls remain the same. Therefore, Myanmar is a place unique for making earthen bowls for monks, and it is necessary to preserve this culture.

3.2 Learning system of Earthen Bowl Productions

The necessary tools and materials used to make earthen bowls include earth (*in Myanmar language called Kabar-mya*), pet-kyin, set-pyin, ta-mhaw-lone, oak-htoe, let-khat, chit or khwe, kyauk, si, htin, phoe, thit-say, and tha-bake-tike. The earth suitable for making bowls is available at a place near Let-ywe Village, a mile away from Let-thit-yat tha-bake-tan. There used to be a lake at that place. The owners of earthen bowl foundries also own pieces of land in that area. In March and April, they carry the earth from their land and keep it at home. It is the most suitable time to bring the soil from that place since the area is dry and the transportation is good enough. Besides, farmers are free from their farm-works and their bulls and bullock-carts are available to rent. This is good for both bowl-makers and farmers. It is important for bowl-makers use particular type of earth. They cannot make bowls using wrong types of earth. It is difficult for them to mould bowls and also these bowls can be broken when they bake them. If they use wrong types of soil and were lucky to have some bowls baked, the bowls are so fragile, and do not last long. Wet food cannot be kept in those bowls. The soil must be clean. Sandy soil and newly settled silt are also not usable to make earthen bowls. The best type of soil is yellow thick silt settled a long time ago. The bowl-makers called this kind of earth (soil) as *kabar-mye-say* or *tha-bake-mye*. *Pet-kyin* or a hole dug on the ground is dug up by bowl-makers. The soil that is chosen to make bowls is mixed with water in this *pet-kyin*. *Set-pyin* is a circular wooden plate which is used to shape bowls. *Ta-mhaw-lone* is a tool shaped like a stick. It is used to hit the mud (the soil already mixed with water) until the mud gets sticky and shaped like a mortar. The shape is similar to a stick that people in Myanmar use to wash clothes.

Oak-htoe is a tool used when bowl-makers mould the mud into a bowl. They use it while they are hitting the mud to shape a bowl. They place it inside the bowl-shaped mud and hit the mud with a *ta-mhaw-lone* outside. It is also called *let-khu-tone*. *Let-khat* is a flat stick used with

hands. The shape is similar to a table tennis bat. It is usually made of teak-wood or gum-kino wood. This tool has two parts, the flat area (*let-khat-pya*) and the handle (*let-khat-yoe*). *Chit* or *khwe* is a flat iron ring used to scrape the inside part of bowls. *Kyauk* is a tool used to make earthen bowls. It is a hard and smooth rock that can be found in streams or rivers. It is about one inch and a half big. *Si* is some oil such as ground-nut oil, sesame oil, kerosene, or oil dregs that are applied on the bowls before baking them. With the oil on the bowls, when they are baked, the bowls became black and shiny. *Htin* is the wood used to bake bowls. Usually they are about six feet long. Most bowl-makers like the wood from *Than* tree (*Terminalia oliveri*) or *Dahat* tree (*Tectona hamiltoniana*) since they produce high temperature flame. Teak wood and oil are used at the end of baking process to get the required color. However, teak wood is expensive, and they only use pieces of wood. *Phoe* is a place where the bowls are baked. First the bowls already mould are dried under the sun. When they get dry enough, they are baked in a *phoe*. The shape of *phoe* used throughout the year in *let-thit-yat* is unique. Some people build their *phoe* on the flat ground, but some prefer a high ground. However, the structure is the same. A high ground is actually man-made. They add the soil on the flat ground until they get a 9 feet high pile of soil, 25 feet in diameter at the bottom and 15 feet in diameter at the top. They make high ground *phoe* so that they can use it in rainy seasons when the river floods the area. Oleo-resin obtained from the tree is called *thit-say*. It is used to color the bowls black and it helps the bowls last long. *Thit-say* is also pronounced as *thit-see*, or *Sit-see*. The black oleo-resin liquid among all other kinds is the best for making bowls.

Tha-bake-tike is a room in the ground. The bowls that are already baked and colored with *thit-say* are kept safely and dried in the *tha-bake-tike*. The bowl foundries at *Let-thit-yat tha-bake-tan* do not usually use brick walls or concrete roofs. They put the wooden sticks on the hole on the ground and covered with soil. Earthen bowls without painting with *thit-say* have more demand in the market than those painted with *thit-say*. The observation found that there are eight *maye-tikes*, but only two are in use.

3.3 Learning system of Iron Bowls Production

An iron plate is hammered until it is shaped into a bowl. There are two distinct steps in the process. First, the bowl makers hammer an iron plate to shape it into a bowl, and it is called a plain bowl or a white bowl. Secondly, they apply *tha-yoe* (mixture of wood-oil, sawdust, powdered charcoal and fine ash used in the making of lacquer-ware and gilded glass mosaic) on it. This step is called making a black bowl. Iron bowls last longer and also are lighter to carry around; they are preferred by monks than earthen bowls (see figure-2).

The size of iron bowls vary. However, there are four usual sizes: *Shin* (the size suitable for young novices), *Inn-khan* (the size suitable for monks, but a little small), *A-kyi* (the size suitable for monks, and bigger than *Inn-khan*), *Shan* (the size used in Shan State).

Shin size is the smallest one. People usually donate eight requisites at the novice-initiation ceremonies. The bowls usually donated in such ceremonies must be allowed by the Vinaya rules and also big enough to use for the novices to eat the meals from the bowls. The iron plate needs to be ten inches in diameter, and when it is finished hammering, the mouth is seven inches in diameter and the bowl is about four inches deep. The widest part which is in the middle part of

the bowl is 26 inches in circumference. 32 bowls can be made out of a standard barrel used as the containers for cooking oil.

The second smallest size bowl is called Inn-khan. The sizes between an Inn-khan and an *A-kyi* do not have much difference, but an Inn-khan is much bigger than a Shin. An iron plate with 11 inches in diameter is used to make an Inn-khan bowl. The mouth is eight inches in diameter and the bowl is about four inch and a half deep. The widest part of the bowl is 28 inches in circumference. 23 bowls can be made out of a standard barrel mentioned above.

A-kyi is the second biggest bowl made for monks. An iron plate with 11 inches and a half in diameter is used to make an *A-kyi* bowl. The mouth is eight inches in diameter and the bowl is about four inch and a half deep. The widest part of the bowl is over 30 inches in circumference. 23 bowls can be made out of a standard barrel mentioned above. Previously, Shan bowls are as twice bigger as *a-kyi* bowls. It is the biggest size of the bowls usually made. This kind of bowl is used in Shan State and for this reason it is called Shan bowls. However, the size is too big according to Vinaya rules, and monks do not use them when they go alms-round or eat meals. It is used when the monastery boys go alms-round for monks. In some Shan villages, the bowl is placed at the village centre where people come to put their offerings in it. When the bowl is filled with food, it is taken to the monastery. Nowadays, not many Shan bowls are sold out and therefore bowl makers make them when they receive special orders. Usual Shan bowls need an iron plate with 14 inches and a half in diameter. The mouth is over eleven inches in diameter and the bowl is about seven inches deep. The widest part of the bowl is over 42 inches in circumference.

During the time of the Buddha, earthen bowls were mainly used by monks. However, there are some records of iron bowls at that time. Later, as the development in iron-smith business, iron bowls are more used. In early Mandalay Period, according to some senior monks, almost all monks used iron bowls. There used to be many monks who went alms-round with earthen bowls before independence. But nowadays, iron bowls are preferred. In some regions, at food offering ceremonies and novice-initiation ceremonies, earthen bowls are used since they are allowed by Vinaya rules and cheaper. Therefore, the value of earthen bowls is still high among Buddhists. Besides, earthen bowls are more suitable for monks since they are good for health and allowed by the Vinaya rules. It seems therefore that people prefer to donate earthen bowls. As a bowl is one of the eight requisites of monks, Buddhists consider that bowl-donation is a noble act. Therefore it can be noted here that bowls represent as a symbol of Buddhism for both monks and laypeople. Studies show that there are two stages in the process of making an iron bowl: the stage of white bowl and that of black bowl.

3.4 Learning Step of White Bowls

A circular iron plate is placed on an anvil and hammered until it shapes into a bowl. It is the stage of a bowl before the bowl is painted with *tha-yoe* (see figure-3), and become a black bowl. This stage is called *aphyu-hte* (plain), *ayaing-hte* (natural), or *kongyan-hte* (raw). Studies show that the bowl business was very good about 50 years ago. An area called Oh-bow in North-Mandalay was famous for white bowls. The area was reportedly filled with the sound of hammering. Later, the bowl foundries are replaced with car-body foundries which become a better business with more money. The bowl foundries moved to nearby villages where they can

get cheaper labors. Ye-won Village and the area around this village becomes a centre for white bowl foundries. The raw material required for white bowls is iron plates. Previously, bowl makers made iron plates out of iron, but they started using brown iron plates and thick barrels 50 years ago. But nowadays, they use thinner barrels that are used as the cooking-oil containers. The tools used include chisels, hammers, anvils, scrapers, and bellows. Bowl makers usually use the chisels that are sharp enough to cut iron plates. It is usually harder than the iron plates. The flat edge at the end is about half of an inch or an inch, and the body is about one inch in diameter and six inches in length.

A hammer (*Tu*) is a tool consisting of a piece of metal with a flat end which is fixed onto the end of a long thin usually wooden handle, used for hitting things. It is used to smoothen or cut iron plates, or making a mould. There are various kinds of hammers used to make bowls: *khwet-tu*, *tu-shae*, *tu-lat*, *kauk-tu*, *pu-tu*, etc. *Tu-shae*, *tu-lat*, and *tu-pu* are also called *yike-tu*. Depending on the area, the location of the foundry and the preference of bowl makers, the size of hammers vary, but the shapes are the same.

An anvil (*Pay*), which is used by blacksmiths and goldsmiths, is a heavy block of iron on which heated pieces of metal are shaped by hammering. An iron plate is placed on an anvil and hammered until it shapes into a bowl. There are various kinds of anvils: *khwet-pay*, *rite-pay*, *kauk-pay*, and *sint-pay*. A scraper (*kyauk*) is used to brush the iron. The type of scraper used is usually made of natural stones or iron scrapers especially designed for the purpose. The scraper is used on a motor or with hands when the edge of the bowl-mouth is smoothened. A bellow (*phoe*) is a stove in which iron plates are heated. It is a tool used to blow air, especially into a fire to make it burn better. In this bellow, iron plates are heated. The material cultures are used in making white or plane bowls, and they are made by the bowl makers themselves.

3.5 Learning Step of Black bowls

In this stage, the white bowl is coated with *thit-say* (lacquer) (see figure-4). The bowl makers coat the white bowls with *thit-say* and put them in the *tha-bake-tike*, and repeat this process again and again until the bowls are strong enough to use. This stage is called *thit-say-tha-yoe-kain-loke-ngan*. This stage includes various steps: *thit-say-thoat* (coating with lacquer), *pya-pet* (spraying with ash), *tha-yoe-chaw*, *khae-tike*, *a-young-khan-thoat*, *shwe-khan-thoat*, *khae-tike*, *a-young-tin*, and *a-hte-si*, etc. Required materials and tools include *tha-bake-tike*, *thit-say*, *put-khon*, *phwe-kyan*, and *kyauk*, etc. One of the peculiar features of iron bowl making is that a bowl must be coated with *thit-say* and put it in the *tha-bake-tike*, and this should be done again and again. This is necessary because then only *thit-say* gets dry easily and will not become dusty. Therefore, every foundry has *tha-bake-tike*. The walls of *tha-bake-tikes* need to be brick-walls and the roof must be concrete. Then only, the work will be done safely and quickly. A *tha-bake-tike* is an under-ground room; it has only one hole with a door that can be tightly closed. Inside the *tha-bake-tike*, on the walls, there are shelves, eight to nine inches distance from one another. The bowls are kept on those shelves. The construction is almost the same for all *tha-bake-tikes*. The bowls, after being coated with *thit-say*, are dried in *tha-bake-tikes* in a room temperature. This is a necessary step in making bowls, but it might cost money and time for the bowl foundry owners.

An iron bowl with an inscription, "U Paw Kywe's donation, 1300 Sakkaraj", on it is found in a bowl shop at Eindawya in Mandalay. That bowl has the mouth which is 3.8 inches in diameter. This bowl is called food offering bowl (Swan-taw-tin Tha-bake). It was made over 50 years ago, but it is still in its original condition. It used a thick iron plate. This bowl stands as a prove that Myanmar Buddhists place great value on monk-bowls which are the symbol of Buddhism in Myanmar.



Figure 2. Iron Bowl



Figure 3. White Bowl



Figure 4. Black Bowl

3.6 Responsibilities and Skills of Bowl Makers

The bowl makers in Innwa value their job. They are proud of their job believing it is something religious and wholesome since they make iron bowls and earthen bowls that are necessary for Buddhist monks. They also believe that they have wholesome livelihood. They believe, "Good mind produces good bowls", and that their success depends on the attitude they have. Besides, this is a kind of art that needs skills, and therefore the workers value their art. One needs to learn this art from basic. This art is handed down through family tradition. The only change in the tradition is that they used to make earthen bowls, but now they make iron bowls. School education is not a necessity to become a bowl maker, but there are specific skills they need to learn, and most importantly they need to have the right attitude. Innwa is now a centre for monk-bowls. Each foundry has at least ten workers. They work every day, but they do not seem tired of their job for this is where their interest is. They get the daily wage of round about 3500 kyats. The workers consider that their job produce things that are supportive for the attainment of Nibbana. This is one of their motivations to continue this tradition. A skilled in the past worker need at least three year experience at work. They need to learn from skilled workers (see figure-5). At first, a worker who newly joins the team is not paid, for he is at the learning stage. When he has learnt some skills, he starts getting some money which is a pocket money. The money they get depends on the skill they have, and how helpful they are at work. They need to learn *thit-say* coating, and other details. When their work shows neat and satisfactory, the teacher asks them to make a bowl without getting any help from others. This is a kind of test and with the teacher's approval; they are allowed to work on their own.

There is a story that the workers tell. One day, a young boy from Ye-won Village who used to be a novice came to learn how to make bowls. He had a monk-bowl-full of tamarind seeds that he used to count how many times he needed to hammer the iron plate to make a bowl. For each strike of hammer, he took one tamarind seed out of the bowl. When all the seeds were taken out, he found that he had not yet finished even a white bowl. He thought the life as a layman was too tiring, and he joined the order of monks again. This story seems to highlight the fact that a bowl-maker must have perseverance, love the job, and have some skills. Nowadays, the workers get their wages as soon as they join the team. However the money depends on how

they are helpful at work and on the skills they have. Sometimes, the money depends on the part of work they do. A new worker gets 3000 kyats every day. There are some people who wanted to become bowl-makers, but they are not successful. People whose hands are always wet with body-oil cannot get the job. And there are people who are allergic to *thit-say*. Oily hands cause delay in the time require for *thit-say* to get dry. Besides, *thit-say* color becomes dull and consequently there is a delay at work. Those who are allergic to *thit-say* cannot make monk-bowls. Even those who do not have such problems may get some skin diseases. Their skin gets dull or they get ringworms on their body, or the skin gets dry. Therefore, this is not a kind of work for everyone. It needs handcraftsmanship, and there is a problem of getting new workers. There is a danger that this art might extinct. Besides, there are other jobs available in Innwa and this also causes the problem. Therefore, one need to be interested in this art and also must have health condition suitable for this work.



Figure 5. Skilled workers

4. Conclusion

Monk-bowl foundries have existed in Innwa for many years. The art of making earthen bowls that used to be the requisite of monks and laypeople devotionally donated is now almost disappeared. Monks use iron bowls and lacquer bowls nowadays, and they do not use earthen bowls anymore. Bowl foundries in Innwa are owned by families. This is a kind of family business which everyone in the family needs to give their hand. Bowl workers value their job for they consider that they are making religious items and therefore they need to keep their mind wholesome. It is difficult to make an earthen bowl and also an earthen bowl is fragile. There is also a shortage of raw materials and this is not environmentally friendly. For those reasons, probably, people do not use earthen bowls anymore. On the other hand, there is a danger of losing the culture of donating bowls that are made in accordance with the Vinaya rules. There are advantages in using earthen bowls: although they are fragile, they are cheaper; they can keep the food warm longer; they can be hold with hot food in them for the heat-resistance is better; they are good for health; and people believe that eating the food from earthen bowls is healthy. On the other hand, raw materials for iron bowls are easily available. Asphalt barrels, that are not useful for any other purposes, can be used to make monk-bowls. Although iron-bowls do not have good heat-resistance, they are cheaper, and lighter to carry. These advantages of iron bowls may attract people. Besides, iron pieces that are cut off from the plates can be sold. This is one of the most attractive facts for the foundry-owners for they can make money out of everything. However, the art of making earthen bowls that have existed since the time of monarchical period is facing the danger of extinction. With the extinction of this art, Myanmar people will lose one of their beautiful cultures. For the medical point of view, this work is harmful for health; *thit-say*, which is allergic to some people, is necessary material in iron-bowls, and this might frighten new workers away. Besides, new job availability is also a danger for bowl-making art. Therefore, a

medical help is necessary to protect *thit-say* allergy. Workers play important role in this kind of business, and therefore, it is necessary to find out how workers can protect their skin. Then only the problem of getting new workers can be solved, and this will help to maintain the tradition of making monk-bowls. To get skilled workers is essential for bowl-foundries. The workers need to be motivated so that they realize that they are doing something wholesome. Therefore, it is assumed that workers must value their job while there are other job opportunities in Innwa.

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Early School Life: Importance of Caregivers' Role in Educational culture

Khin Moe Moe Kyu¹

Abstract

There are round about 5 million children are studying in primary level education in Myanmar. However, the paper would like to do emic research on early school life. It would like to conduct as field research in three primary schools: village school, urban community school and private school. The three schools are based on curriculum of Ministry of Education. They are different in student-teachers' ratio, and pedagogy parents' knowledge and accessibilities. As an anthropological study, children personalities are shaped by their gene and environments. The paper would like to state that "How do scaffolding nurturing environment system support to children's school life and what important factors are basic cause of out of school for children in Myanmar? It wants to focus on socialization in function of schooling, transmission of culture from home life to school life and to find out importance of caregivers in the production of equity and the possibilities of educational culture. The limitation of the study is students' environments such as peer, parents and teachers. Such research methodology conducted as participant observation, interviewing and case study of the schools. Different knowledge shapes different children life and educational culture.

Keywords: capabilities, environments, caregivers' knowledge, educational culture

1. Introduction

The main objective of the study is to provide an pinpoint to reduce out of school children quantity. It dealt with the environmental setting, a brief historical background and a description of pedagogy evolved. Educational culture is a priority for a child development and it is viewed as a key for national development. In recent years, many reforms in education have been undertaken in Myanmar. However there still remain areas of concern that will have to be addressed. In here, the study would like to define parents and teachers are care givers of a student. Although teachers' roles are as one of the "five gems" in the societies, rural area is more typical than urban school. They pay respect as teacher is regarded to be on the same reverence as the Buddha, the scriptures, the monks and parents. The teachers are usually role models in the communities. They are traditionally regarded as community leaders in rural as well as urban communities; but more in rural ones. Because of this role in the community they are often regarded as key players in any social mobilization effort. Parents and teachers, therefore, have great potential to act as agents of change children characters.

In the view of Sassi Abdelhafid on George Spindler, education is the studies of cultural acquisition and transmission of a culture. In the study, the children of educated parents are assured of a child's school life. In Myanmar there are 0.26 million are primary teachers. Now a day, Myanmar civil government tries to effort to get better education reform. In 2018, lower primary teachers' have given special refresher training course not only government's teachers but also private school teachers and community school teachers such as monastic school for new curriculum design. According to mission of Ministry of Education, every child who attend grade 4 can read, write and calculate basically. Furthermore, other qualifications need to develop.

¹ Associate Professor, Department of Anthropology, Dagon University, Email: khinmomokyu@gmail.com

Therefore, the curriculum design and teaching-learning system have to base on these. After that, life skills education will be start on grade 5. (Annually reports, 2018,)

The largest group is the students in educational culture setting. There are approximately 7.5 million students (out of a total population of over 50 million) from all levels of education. 1.2 to 1.4 million attending primary education. Now a day, the young people of Myanmar have become more aware of the world around them. They are becoming increasingly aware of what life has to offer; but many of them are very naive and unaware of the dangers and pitfalls of modern societies. Following the 1998 and 1999 education reforms towards “creative learning” and “critical thinking.” They are being encouraged to read more widely and go beyond the rigid confines of a national school curriculum that is being gradually reformed. (Professor, U Han Tin, 2004)

There is an important one that is parents, teachers, and students have to have mutual understanding and trust each other. The three groups are the same as stove-top. It means that all have to be harmony with each other and a sociological phenomenon is also referred to characteristics of a culture, social class, political views and individuals based on a part of self-identification. The changes of children’s home life to school life regarded in anthropology as a reality itself, revealing at every of its stages cultural particularity in a new sense. The children and its upbringing within family, child subcultures and peer groups, or social environment are affected on school lifestyle. (Jarema Drozdowicz, 2014, p 66-82)

2. Methodology of the study

The study would like to know emic situation in educational culture which light to education setting of a society. It also conducted on qualitative approach especially in participant observation, in-depth-interviewing and case study of some parents, teachers, and students in three basic primary schools. Data analysis is based on visual, recording, check, cross-check and double check information flow system.

3. Result and Discussion

By studying case study on the 3 schools: (1) Basic Education Middle School No-1, Dagon Township (BEMS-1 DT), (2) Basic Education Primary School, Zaw Ti Gone village (BEPS, ZTG), (3) Flower Private Education Center (FPEC), notice that there are different background environments can shape how happy and interesting in school life of a child. All the three are situated in Yangon Region.

Table 1. Characteristics of the three schools

Schools' Name	Basic Characteristics of Educational Culture
Basic Education Middle School No-1 Dagon Township	<ul style="list-style-type: none"> * Situated in crowded downtown of Yangon * Families have one or two children in each. * Parents have got one or more degree. * 1:30 to 1:40 teachers –students' ratio. * Well prepared to go school in pre-school or at home. * Proud of attending the school.
Basic Education Primary School ,Zaw Ti Gone Village, Hmawbi Township	<ul style="list-style-type: none"> * Situated in village * Parents are simple life and low knowledge in important of education. * There is not partition in school building for each class * Many parents' think that there is more important to get money for covering daily expenditure for food.
Flower Private Education Center	<ul style="list-style-type: none"> * Situated in Dagon Myothit * Not only formal education center but also physiotherapy center for disables children. * Students-teachers ration is 1:3, 1:5 to 1:15. * Recommended by neuro physiotherapy specialists. * Scaffolding system with special classes; art, music, language and etc.

Source: Field data

In the year 2014, pedagogy is as usual. Students of BEMS-1 DT are busy with much time to recite text and doing exercises. Barking and beating on palm rules for controlling class is ok. In Myanmar proverb, if you want to get best quality pot, beat again and again. From our Myanmar society, the slogan was very popular in rural and old parents in last millennium. In the year 2018, some parents' concept is changed on controlling class system by some issue of social media. As for typical Myanmar, this is problem for teachers how to control the class as big as the class size as well as typical traditional class control culture.

3.1 Different concept of care givers in the three schools

There are 3 categories in the schools.

1) Parents and students of BEMS-1 DT have higher and higher for the students. The students attend two kind of school in the same study year. They attend English language training or some of them are sitting in Cambridge Exam Course by the help of British Council Culture

Center such as Starter, Mover, and Flyer or IGCSE exams and take regular sport training; gym, aerobic, different kinds of martial art, etc. In summer time, take language class, music, painting, etc. Some of parents want to be high marks even full marks in every subject. If their children cannot effort it, they push to get more and more study hours. The parents always learn their children's lessons. A mother said that *"when her child attends KG class, she attend KG. When her child attends grade 3, she is grade 3"*.

2) Some students do not want to follow the first categories. They are weak to adaptable to the school culture. As special case in the intake of 2014 students, there is two school boys do not want to attend class because of inadaptability of the school culture. When he was grade two, he wants to quite from the school. And then, one go to private school and another is attends special need and disables class in physiotherapy center. But, a teacher who got well experience in the school said that *"a new student has to be happy, healthy and adaptability in the school culture, if it is not, the student does not want to attend the school"*. In the intake of 2017, a student is a little delay in communication skill. He attends the KG class that is new teaching learning system by the arrangement of Ministry of Education. Although new teaching learning system is coming up and utilize in the school, old cultures are there in the environment even teachers and parents. Many parents and teachers like old model of child care system. Later months of KG are very difficult for him and his mother. He feels mental depression. And then he transfer to private school. In a year later, the new child care culture and pedagogy are practice in the school. The boy reenrolled in the School. It is because, his mother and physiotherapist of the private school try to pay therapy and reconstruct on his mind. One year later, he accepts to attend his class. His mother and the school teachers try to persuade to attend his class in the school.

3) The third category is very weak to get end education for their children. Parents' concept of BEPS- ZTG is that they are poor, they have very important to get money for covering daily expenditure for food. Only few parents want to hope on their children to get a degree. Most of the villagers are cultivators, blue labour and daily workers. Some are *Kyaban Loutha* it means the people have not regular or permanent job. They said that they are *Ta Nay Lout Mha Ta Nay Sar Yar Dar*. It means when they have work on this day, they can eat their meal. Therefore, they are not interested in child education. If their children got grade 1 or 2 it is ok form them. The parents' concept is when their children go to school; they can't help their house work. If they fail in exam, it is a big failure for them. If they pass exam, it is very low profit for their family. In the student's mindset, they want to go school, but their parents can't effort it. When they go back home, they have no time to study because of helping house work. In such case, lesson home work is not appropriate for the students. In the school of FPEC, most students are special needs care. Some are Autism, CB, Down. Some have a little symptom of that syndrome. The school is not only formal education center but also physiotherapy center for disable children. Curriculum and syllabus of the school is scaffolding nurturing system and edutainment to encourage children interesting and how to find their hobby. Her slogan is the earlier, the better for children. FPEC is Basic Education Middle School. But school fee is problem for some parents.

4. Conclusion

By studying above finding, the paper would like to conclude that early school is very important for a child's education. The three schools have different educational culture; competitive, prioritize to get daily expenditure and too need to support their children. Teachers

and parents are play a major role in learner's personal, social, emotional or interpersonal problems. Therefore, to get a good interpersonal relationship between teachers and students, parents and child, feeling and emotion that everyone experiences are considered vital factors. In the case of a student who is as normal as others typical children although family culture is different from other, if the teachers bound with the students well understand on them and educate students as daily life factors will affect the quality of this interaction and communication. When parents well know value of education for their children, all children will take their classes. If not, children will end school lives. As for too care to child's education in wrong way, it is also dangerous for early school life. He can't stand himself, he stand his parents' will. It is not good education for him.

In the case of school boy who is delay in communication and intake in 2017 that is communities' school are fond of practicing in new pedagogy such as edutainment. The notion of culture tends to privilege the continuity of socialization and harmony. These current changes rises of dynamic practice and performance oriented concept of culture which begins addressing the problem of fusing home culture and class culture by the concept. Anthropological study of culture mismatch between home and school were quite influential and how class factors produced inequality.

In the case of Zaw Ti Gone Village Primary School, it is very important to get income for daily expenditure of a family is the basic factor to go out of school for a student. Education is the development of a child's personality, talents and abilities. In recognition of the fact that every child has unique characteristics, interests, abilities, and learning needs. (Aye Aye Aung, 2018).

It is important to know that child's education is not only literacy and numeracy, but also closer to apply for life. Education should also pinpoint to ensure that essential life skills are learnt by every child and that no child leaves school. In that point, care givers; parents and teachers are very careful to their children not to away from school. Whatever teaching-learning systems, whatever curriculum design, whatever teacher-students ratio, the paper would like to state that caregivers are play a vital role in children's education to overcome home life to school life. If we notice the point, our educational culture will promote and bar from children who are out of school.

Therefore, the study would like to recommend that-

- Be aware of background culture to transmit class culture.
- Every school should be second home in early education.
- Should encourage to promote knowledge among care givers that education is how important in child's future.
- A school in a township should have a special care class room in lower primary education level.

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Social Support as a Mediator between Emotional Intelligence and Job Satisfaction of Employees in Yangon

May Lwin Nyein¹, Myint Myint Khine², Tin Nwe Oo³

Abstract

The purpose of this study is to examine the role of social support as mediator in the relationship between emotional intelligence and job satisfaction of Myanmar employees in private sector organizations and companies. Participants were 200 employees from Dagon group of companies, Information Matrix Co. Ltd., Myanmar Solar Rays Co. Ltd., Myanmar Electrical Business Group Public Co. Ltd., Thukha Myanmar Co. Ltd., Citta Consultancy and VOA Burmese Service who completed a battery of self-report questionnaires, including Emotional Intelligence Scale, Multidimensional Scale of Perceived Social Support, Minnesota Satisfaction Questionnaire and the demographic variables. Regression analysis was adopted to test the mediating effect of social support between emotional intelligence and job satisfaction. The results suggested that emotional intelligence was a positive significant predictor to social support and job satisfaction. Additionally, social support was positively associated with job satisfaction. The meditational analysis revealed that social support functioned as a mediator between emotional intelligence and job satisfaction. The outcomes of this study have significant implications for the field of I/O psychology. The results also suggested that explicit interventions could be used to improve employees job satisfaction by focusing on enhancing multiple social support system such as coworker/friends, family and significant others.

Keywords: Job Satisfaction, Emotional Intelligence, Social Support

1. Introduction

Myanmar is transforming to Democracy in political approach since 2010. At the same time, Myanmar's economy open out and there is widespread agreement that the country has a huge potential for continued rapid development in the future. Simultaneously, a key challenge is to ensure that economic growth is inclusive in Myanmar. Despite there is a number of market research to gain sustainability market share, there has been only a few research work conducted understanding work-related phenomena such as job satisfaction, turnover, and employee well-being to develop human resource in Myanmar.

Employee job satisfaction is an essential ingredient to reach organizational success. Job satisfaction among employees is an indicator of organizational effectiveness, and it has got direct relationship with organizational and personal factors (Lumley *et al.*, 2011)^[1]. Majority of the employees are aware that the performance of an organization depends in part on their level of job satisfaction (Ibid). This is the cradle of the mostly widely believed maxim of management that "a happy worker is a productive worker".

Nowadays, researchers have become increasingly interested in understanding how this job satisfaction is associated with emotional and social abilities of employees beyond the job itself or the relevant environment. Emotional and social competencies seem to play a vital role in the process of networking in order to maximize job performance as "the one who has developed more relationships with others and has richer social ties is the one with greater success to

¹ Assistant Lecturer, Department of Psychology, University of Mandalay, maylwin18917@gmail.com

² Student, Post Graduate Diploma in Applied Psychology, University of Yangon, myintmyint.khine92@gmail.com

³ Associate Professor, Department of Psychology, University of Yangon, tinnweoo531@gmail.com

information” (Balwajder, 1992, pp.13) ^[2].

The concept of emotional intelligence (EI) was first proposed by Mayer & Salovey (1997) ^[3] which was then popularized by Goleman: *Why it can matter more than IQ*. Emotional Intelligence (EI), which is defined as an individual’s ability to process and treat affect information and effect problems, is an important predictor of job satisfaction (Dong et al., 2014 ^[4]; Siegling et al., 2015 ^[5]). Zacher et al. (2012) ^[6] noticed that EI has an effect on key organizational outcomes such as job satisfaction. Palmer and colleagues suggest that people’s ability to treat effect information by recognizing their own emotion and ability to manage emotion can significantly affect their job satisfaction (Palmer et al., 2002) ^[7]. Freudenthaler et al. (2008) ^[8] also found that EI can independently predict job satisfaction. Hence, people with high EI are believed to have high job satisfaction and they are also aware of their emotions and can better utilize it to regulate stress and negative emotion, which can result in positive evaluations on work or work-related situations.

Theories indicate that social support is a key factor in job satisfaction and performance of an employee. Indeed, support from friends and family can promote workers performance (Sun, Zhang, Fu, 2007) ^[9], as it buffers the stress associated with the work related illness (Zimet, Powell, Farley, Werkman, & Berkoff, 1990) ^[10]. Social support is defined as the spiritual and material help provided by various social aspects (i.e., family, relatives, and friends), that reflects one’s closeness with social relations (Oh et al., 2014) ^[11]. Perceived social support is the subjective feeling one gets from social support. This is helpful in relieving life pressure and promoting life satisfaction, and is a good indicator for measuring social adaptation (Pavlova et al., 2015) ^[12]. Research shows that the negative effects of stress are buffered by good interpersonal communication and perceived social support (Karademas, 2006) ^[13]. Meanwhile, the lack of support from colleagues, supervisors, and family members can lead to job dissatisfaction. Thus, social support can increase employees’ feelings of job satisfaction, and its absence serves as a stressor that acts as a catalyst for job dissatisfaction (Prince et al., 1997) ^[14]. Additionally, moving beyond from examining the relationships between EI with job satisfaction and social support with job satisfaction, some studies also have analyzed the direct and indirect associations between them in recent years. For example, Dawei (2018) ^[15] studied the trilateral relations among EI, social support, and job satisfaction in China.

Recognizing the essential of the three highly related variables and the lack of studies in Myanmar, this study is an attempt to contribute to understand the nature of relations among EI, social support, and job satisfaction. Therefore, the purpose of this study is to understand the nature of relations between emotional intelligence and job satisfaction by exploring the mediating effect of social support in private sector organizations in Myanmar. More specifically, based on the previous literature reviewed, we generate the following hypotheses: (1) Emotional intelligence will be positively associated with job satisfaction. (2) Emotional intelligence will be positively associated with social support. (3) Social support will be positively associated with job satisfaction. (4) The relationship between emotional intelligence and job satisfaction will be mediated by social support.

2. Methods

Participants

Surveys were distributed to 250 employees of private sector organizations and companies in Yangon, Myanmar: Dagon group of companies, Information Matrix Co. Ltd., Myanmar Solar Rays Co. Ltd., Myanmar Electrical Business Group Public Co. Ltd., Thukha Myanmar Co. Ltd., Citta Consultancy and VOA Burmese Service. A total of 200 usable data were returned; including 82 males (41%) and 118 females (59%), who were between 18 and 70 years old ($M = 31.51$, $SD = 10.49$). Among them, 32% of the participants were single and 68% of the participants were married. There were 16 % of undergraduates, 80% of graduates and 4% of postgraduates.

Measure

Emotional Intelligence Scale (EIS): The 33-item scale (EIS), developed by Schutte et al. (1998)^[16] was used to measure the total Emotional Intelligence. It was translated into Myanmar by the researcher. Each item consists of a short statement, to which participants was asked to indicate how closely they identify using a 5-point scale from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*). Some items of the scale includes: "I like to share my emotions with others", "I arrange events others enjoy", and "I know why my emotions change". The Schutte et al., (1998)^[16] reported that the internal consistency reliability of the EIS is .87.

Multidimensional Scale of Perceived Social Support (MSPSS): The 12- item self-report measure (MSPSS) developed by Zimet et al. (1988)^[17] was used to measure how one perceives their social support system. It was translated into Myanmar by the researcher. Items are responded on a 7- point scale from 1 (Very strongly disagree) to 7 (Very strongly agree) (Zimet et al., 1988)^[17]. Examples of items from this survey form include "I get the emotional help and support I need from my family", "My friends really try to help me". Internal reliability for the MSPSS, measured using Cronbach's coefficient alpha for the total scale was .90 (Zimet et al. 1988)^[17].

Minnesota Satisfaction Questionnaire (MSQ): The Myanmar version of the Minnesota Satisfaction Questionnaire (MSQ) was used to measure job satisfaction in this study (May Lwin Nyein & Nilar Kyu, 2014)^[18]. The short form of the Minnesota Satisfaction Questionnaire (MSQ) was originally developed by Weiss et al. (1967)^[19]. The MSQ taps into people's cognitive orientation toward their jobs and comprise 20 items rated on a 5-point scale ranging from 1 (very dissatisfied) to 5 (very satisfied). The total score ranges from 20 (low level of job satisfaction) to 100 (high level of job satisfaction). Cook, Hepworth, Wall and Warr (1981)^[20] stated that the short form of the MSQ appears to yield a sound measure of overall job satisfaction. The Myanmar version of the MSQ with an internal consistency reliability of .89 was reported by May Lwin Nyein & Nilar Kyu (2014)^[18].

Demographic Questionnaire: This questionnaire included demographic variables of particular interest (i.e., age, sex, marital status, family size, education, position, organization size, organization type, monthly income).

Procedure

Before the questionnaires were distributed to all participants, permission for the participants to take part voluntarily in this study during their working hours was obtained from the person in charge of the companies and private sector organizations. Then, the researcher gave

clear instructions to the participants to answer the survey questionnaires. The survey booklet contained a cover letter explaining the purpose of the study and requesting participation (Informed consent) and a battery of self-report questionnaires. Participants were told that their surveys were kept anonymous and they could refuse if they wished. Confidentiality was ensured. Valid responses were obtained from 80% of the respondents – 200 participants.

3. Results and Discussion

3.1 Results

Descriptive analysis

The final sample included 41% male and 59% female, who were between 18 to 65 years old (Mean = 31.5, SD = 10.49). In terms of marital status, 32% of the respondents were single, 68% of the respondents were married. The range of family size was 1 to 10 members, with the mean of 4.67. Among them, 16 % of the participants were undergraduates, 80% of the participants were graduates and 4% of the participants were postgraduates. There were 5 categories of position that are 17% of office staff, 32% of admin officer, 30% of engineer and media professionals, 18% of manager and project coordinator, 3% of executive and director. According to organization size, 5% were from small business organization, 39% from medium business organization and 55% were from large organization. There were 5 kinds of organization type that are 24% from service sectors, 9.5% from Manufacturing sector, 35% from Sale and Marketing Sector, 20.5% from media sector, 0.5% from agencies, 10.5% from other sectors. Regarding to the monthly income, the individual's monthly income fewer than 100,000 Kyats was 0.5%, between 100,001 Kyats and 300,000 Kyats was 47%, between 300,001 Kyats and 500,000 Kyats was 25%, between 500,001 Kyats and 1,000,000 Kyats was 19%, between 1,000,001 Kyats and 2,000,000 Kyat was 7% and the individual's monthly income more than 2,000,001 Kyats was 1.5%.

Correlation Analysis

Inter-correlations among the variables, means and standard deviations for the measures used in this study, are presented in Table 1. There is a significant positive correlation between emotional intelligence (EI) and the demographic variables of age, organization size, organization type and monthly income ($r = .16, p < .05$, $r = .21, p < .01$, $r = .14, p < .05$, $r = .14, p < .05$). Furthermore, perceived social support showed a significant positive correlation with position and monthly income ($r = .16, p < .05$, $r = .21, p < .01$). Surprisingly, a significant negative correlation was found between perceived social support and family size ($r = -.15, p < .05$). Moreover, correlation of job satisfaction with the age and organization size were all positively significant ($r = .17, p < .05$, $r = .18, p < .05$). Essentially, an examination of the relationship between emotional intelligence (EI) and perceived social support, revealed a significant high positive correlation ($r = .31, p < .001$). In addition, significant positive correlation was found between perceived social support and job satisfaction ($r = .27, p < .001$). Further, emotional intelligence (EI) had a significant positive correlation with job satisfaction ($r = .31, p < .001$), as shown in Table 1.

Table 1. Means, SDs and intercorrelations among study variables

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. Age	31.51	10.49	—											
2. Sex	1.59	0.49	-.21**	—										
3. MS	1.68	0.47	-.50***	.28***	—									
4. F Size	4.67	1.62	-.14	.01	.16*	—								
5. Edu	1.88	0.43	.18*	.06	-.06	-.11	—							
6. Position	2.57	1.05	.31***	-.28***	-.22**	-.15*	.30***	—						
7. O Size	2.53	0.67	.22***	-.14	-.05	.04	-.03	.01	—					
8. O Type	2.96	1.49	.18*	-.13	-.16*	-.04	-.03	.11	.27***	—				
9. Income	2.89	1.04	.34***	-.16*	-.22**	-.15*	.35***	.72***	.07	.05	—			
10. EI	125.87	15.25	.16*	.05	-.03	.06	.06	.12	.22**	.14*	.14*	—		
11. SS	62.43	12.06	.06	-.03	-.08	-.15*	.11	.16*	-.03	.05	.21**	.36***	—	
12. JS	75.13	9.92	.17*	.05	-.04	-.05	.00	.03	.18*	-.00	.12	.31***	.27***	—

Note: MS = Marital Status, F Size = Family Size, Edu = Education, O Size = Organization Size, O Type = Organization Type, EI = Emotional Intelligence, SS = Social Support, JS = Job Satisfaction. * $p < .05$, ** $p < .01$, *** $p < .001$.

Regression analysis

In order to test our hypotheses, regression analyses were conducted. In the first three regression analyses, age, sex, marital status, family size, education, position, organization size, organization type, monthly income were used as control demographic variables. Firstly, job satisfaction was regressed on emotional intelligence (EI). For the predictive effect of emotional intelligence (EI) on job satisfaction, result was shown in regression of Table 2. The combination of all variables accounted for 14% of job satisfaction's variance. After controlling for demographic variables, emotional intelligence (EI) significantly explained 6% of the variances. Emotional Intelligence (EI) was a positive predictor to job satisfaction ($\beta = .26$, $p < .001$). As shown in Table 3, the results of regression analysis on emotional intelligence (EI) as a predictor of perceived social support. Regression showed the combination of all the variables explained 18% of the variances. After controlling the demographic variables, emotional intelligence (EI) significantly explained 10% of the variances. Emotional intelligence (EI) was a positive predictor to perceived social support ($\beta = .34$, $p < .001$). According to Table 4, the results of regression analysis on perceived social support as a predictor of job satisfaction. Regression revealed the combination of the all the variables explained 14% of the variances. After the demographic variable had controlled, perceived social support significantly explained 6% of the variances. Perceived social support was a positive predictor to job satisfaction ($\beta = .26$, $p < .001$).

Subsequently, meditational analysis was conducted to investigate whether perceived social support could mediate for the relationship between emotional intelligence (EI) and job satisfaction. Following the method outlined by Baron & Kenny (1986)^[21], mediation is established when the following conditions are met: (1) a significant relationship is found between

Table 2 Regression Analysis with EI as predictor of Job Satisfaction

	R ²	R ² Change	β	F
Age	.08		.11	1.7
Sex			.07	
Marital Status			-.02	
Family Size			-.05	
Education			-.04	
Position			-.08	
Organization Size			.14	
Organizational Type			-.08	
Income			.11	
Emotional Intelligence	.14	.06	.26***	2.84**

p<.01, *p<.001.

Table 4 Regression Analysis with Perceived Social Support as predictor of Job Satisfaction

	R ²	R ² Change	β	F
Age	.08		.15	1.66
Sex			.10	
Marital Status			.00	
Family Size			.00	
Education			-.05	
Position			-.06	
Organization Size			.18*	
Organizational Type			-.07	
Income			.08	
Perceived Social Support	.14	.06	.26***	2.86***

*p<.05, **p<.01, ***p<.001.

Table 3 Regression Analysis with EI as predictor of Perceived Social Support

	R ²	R ² Change	β	F
Age	.08		-.11	1.78
Sex			-.01	
Marital Status			-.07	
Family Size			-.16*	
Education			.05	
Position			-.03	
Organization Size			-.07	
Organizational Type			.02	
Income			.18*	
Emotional Intelligence	.18	.10	.34***	3.95***

*p<.05, ***p<.001.

Table 5 Meditation Analysis with Perceived Social Support as mediators between Emotional Intelligence and Job Satisfaction

	R ²	R ² Change	β	F
Step 1	.10			21.88***
Emotional Intelligence			.31***	
Step 2	.13			14.46***
Emotional Intelligence		.03	.25***	
Perceived Social Support			.18*	

*p<.05, ***p<.001.

the independent variable (emotional intelligence) and the presumed mediator (perceived social support); (2) a significant relationship is found between the presumed mediator (perceived social support) and the dependent variable (job satisfaction); and (3) a significant association between the independent variable (emotional intelligence) and the dependent variable (job satisfaction) is significantly mediated after statistically controlling for the presumed mediator (perceived social support). Conditions 1 & 2 were met in all cases. Therefore, mediational model was used to test condition 3.

On the first step, job satisfaction was regressed on emotional intelligence (EI). On the second step, perceived social support was added to the regression to investigate whether the amount of variance accounted for by emotional intelligence would be mediated. In the regression, the relationship between emotional intelligence and job satisfaction was mediated and remained significant by perceived social support. The results are shown in Table 5.

3.2 Discussion

The primary purpose of the present study was to examine the mediating effect of social support on the relationship between emotional intelligence and job satisfaction among Myanmar employees from companies and private sector organizations. In doing so, regression analyses were adopted to examine emotional intelligence as a predictor of job satisfaction, emotional intelligence as a predictor of social support, social support as a predictor of job satisfaction and social support as a mediator between emotional intelligence and job satisfaction.

According to the results, it was found that emotional intelligence is a predictor of job satisfaction, which supports Hypothesis 1. This means that individuals in the workplace with higher EI are more likely to be satisfied with their job than those with lower EI. This finding supports the previous studies. There is a study which exhibits significant association between ability based EI scale and Job contentment (Trivellas, Gerogiannis, & Svarna, 2013)^[22]. EI is the ability of processing affect information and dealing with emotional problems, whereas job satisfaction is the complex and subjective experience of work (He et al. 2014)^[23]. Individuals with high EI can positively and actively adjust their own affection when facing troubles, which allows them to evaluate this work positively (Petrides and Furnham 2001)^[24]. Employees with high EI can immediately identify and perceive the causes of work-related problems upon experiencing them and develop appropriate strategies to manage their emotional response toward causes of stress. Emotional intelligence is proposed as an important predictor of key organizational outcomes including job satisfaction (Daus & Ashkanasy, 2005)^[25].

Furthermore, in this study, emotional intelligence was positively associated with social support, providing support for Hypothesis 2. Previous researches suggest that individual's confidence in their emotional skills would impact their expectation of support from others. With regard to self-report EI, individuals' perception is that they can accurately appraise the emotions of self and others and express their emotions appropriately contributed to perceived social support (Fabio & Kenny, 2012)^[26]. This means that persons who perceive more available social support report that they are better to be able to recognize emotions in themselves and in others and to express their emotions. As social support involves an exchange of resources between persons and involves recognition of the need for and ability to appropriately ask for assistance under conditions of psychological distress, perceived skill in the appraisal and expression of emotions relates logically to social support (Shumaker & Brownell, 1984)^[27]. The use of emotions in problem solving also reasonably relates to one's capacity to use emotional support in problem solving and coping.

It was also found that perceived social support is positively associated with job satisfaction, which supports hypothesis 3. Self-determination theory also points out that job satisfaction is enhanced when employees' psychological autonomy, competence, and relatedness are supported and social support fulfills the need to belong (Teixeira et al. 2012)^[28]. Other studies also found that social support is an importance job resource. When good interpersonal communication between clients, colleagues, and family members is prioritized, an increase in job

satisfaction occurs (Tooksoon 2011) ^[29]. Individuals may benefit from social support in enhancing their job satisfaction because some studies have suggested that it is an important social resource in the work environment which is more effective than other individual strategies (Lu et al. 2012) ^[30].

Regarding organization size, we found that employees who are working for large organizations would be more satisfied with their job than those in small organizations. This finding is not totally consistent with existing researches. Some previous studies found that organization size often is inversely related to job satisfaction. That is, the employees in small and medium organizations tend to be more satisfied with their jobs and working in large organization reduces the level of job satisfaction. According to Myanmar culture, people who are working for large organizations tend to be more satisfied with their jobs than those in small organizations because of the factors of job security, prestige and status. They assume that their jobs are more prestigious and working in large organization assures work and stable income which gives sense of security. In accordance with Maslow's hierarchy of needs model, safety needs such as pay, benefits and job security satisfied, an employee will be ready to achieve higher level of needs of esteem and self-actualization.

In addition, it was found that family size and social support were negatively associated. The larger the family size, the less likely that the individual will get the social support. Other researches also supported this finding. The larger the families, the less likely that it be characterized by a predominance of positive affect (Bossard and Boll, 1956) ^[31]. A study revealed that parents with multiple adult children report higher levels of collective ambivalence in relation to quality of intra-familial relationships (Ward, Spitze & Deane, 2009) ^[32].

Finally, the meditational analysis revealed that social support functioned as a mediator between emotional intelligence and job satisfaction. Current findings are also supported to previous researches. Testing the mediating effect proved the evident relationship between emotional intelligence and job satisfaction through social support, and verified that social support is also an important factor in job satisfaction. Lopes and other scholars suggested that people with high emotional intelligence have the ability of effect recognition, application and management, and are capable of adjusting their emotions (Lopes et al. 2003 ^[33], Xiao et al. 2014 ^[34]). Thus, contradictions or conflicts in interpersonal relationships can be easily relieved and become harmonious. These individuals are also competent at sensing and evaluating the work environment, allowing them to seek and use social support when problems occur. Individuals with high EI have a high frequency of social activity, they have more chances to seek help from others, realize their value in the workplace, and openly talk about their struggles; thus, job satisfaction is increased (Extremiera & Fernandez-Berrocal, 2005) ^[35].

In spite of the promising results, the present study has several notable limitations. First, this study used self-report surveys that do not accurately represent the responses of the participants. While self-report EI reflects one's perception of their emotional intelligence abilities, objective forms of EI can reflect one's actual emotional intelligence potential. Thus, future research may wish to incorporate more objective measurements of emotional intelligence abilities. For the measurement of job satisfaction, we can also design and study the different dimensions under organization, job and personal factors in future research. A further limitation is that the generalizability of the findings to all types of employees is also limited. This study was limited to white collar employees. Additional research using other types of populations is

necessary to ensure the generalizability of these results. In the future, it might be better if other mediators, such as coping style and self-esteem could be explored between the relationship of emotional intelligence and job satisfaction. However, this study currently provides meaningful data for understanding the relationship between emotional intelligence, social support and job satisfaction in Myanmar.

4. Conclusions

To reiterate, the current study evidences that social support can mediate the relationship between emotional intelligence and job satisfaction among employees from private sector organizations and companies in Yangon, Myanmar. The significant relation between the three variables EI, social support and job satisfaction in this study shows that high EI is beneficial for the management of interpersonal relationship, obtaining further social support, and eventually increasing one's job satisfaction. This finding has very important applications in counseling to employees for their work related problems and interventions and focus on the importance of using multi-level social support, such as that of those from colleagues and supervisors, friends, family members and others. It is hoped that the current research can contribute in organizational behavior to appreciate Myanmar employee well-being. The significance of this study is that it provides substantial evidence for the external validity of the relationship between emotional intelligence and job satisfaction in a Myanmar cultural setting. The study also provides strong evidence that training for the emotional ability of Myanmar employees is of utmost importance in achieving happiness and favorable performance in the workplace.

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The Effect of Guided Discovery Method in Teaching Science at the Middle School Level

Khin Mar Khine¹, Khine Nyein Aye²

Abstract

The purpose of this study is to investigate the effect of guided discovery method in teaching science at the middle school level. It was an experimental study in which guided discovery method was compared with formal teaching in improving students' science achievement. It was conducted with the 120 Grade Six students from BEHS Pale and BEHS (Branch) Tanae in Pale Township, Sagaing Region. The sample schools were selected by simple random sampling method. Moreover, subjects in each school were selected by using simple random sampling method and were randomly assigned into two equivalent groups: Experimental Group and Control Group. Each group consisted of 30 students. The experimental groups were exposed to guided discovery method while the control groups were taught formally. At the end of the treatment, a posttest was administered whether there were significant differences between the two groups regarding their achievement. The obtained data were analyzed by using independent samples *t*-test. The results of this study showed superiority of guided discovery method over formal teaching. It is suggested that teachers should use guided discovery method to enhance students' science achievement and make them to be independent learners.

Keywords: effect, guided discovery method, science

1. Introduction

Education should play an important role in enabling people to live together in ways that contributes to sustainable development. In addition, science education is emphasized for scientifically literate citizens who can apply the science knowledge in their everyday decision making. According to Godek (2004) [1], there cannot be any meaningful development without science education. Science advancement has been seen as the single most important factor in sustained economic growth. It has also been described as the principal driving force behind long-term economic growth of developed countries and their rising standard of living. Thus, science education is very crucial for the development of country.

The aim of the Myanmar science curriculum is to provide students with practical experiences based on exploration of the environment and also to develop their scientific inquiry skills to gain scientific knowledge and positive attitudes towards science. To achieve effective science education, science and technology curricula should be emphasized on the process of science. This would also lead to changes in instructional techniques and methods. The formal methods used for teaching science in science classroom only transact knowledge from the head of teacher to the head of students. These methods are not sufficient to develop true knowledge and understanding of science and prove futile exercises to inculcate problem solving abilities, critical and reflective thinking among the children. Therefore, there is urgent need to reform the teaching practices and it is needed to study the Guided Discovery Method which may effect on middle school level science teaching.

¹ Associate Professor, Department of Methodology, Yangon University of Education, +959250074460, drkhinmarkhine@gmail.com

² Assistant Lecturer, Methodology Department, Sagaing University of Education, khinenyein.suoe1@gmail.com

Aim

The aim of this study is to investigate the effect of guided discovery method in teaching science at the middle school level.

Objectives

The specific objectives of this study are as follows:

- To investigate the effect of guided discovery method in teaching science at the middle school level science achievement of the students
- To compare the science achievement of the students who receive guided discovery method and those who do not receive it
- To give suggestions for the improvement of science teaching based on the data obtained from the study

Research Hypotheses

- There is a significant difference between posttest scores of experimental group and control group.
- There is a significant difference between posttest scores of experimental group and control group in answering remember level questions.
- There is a significant difference between posttest scores of experimental group and control group in answering understand level questions.
- There is a significant difference between posttest scores of experimental group and control group in answering apply level questions.
-

Definition of Key Terms

- **Effect:** Effect means having power to produce or producing a desired result (Cruickshank & Bainer, 1990) [2].
- **Guided Discovery Method:** It is one of the techniques happens when the students encounter unfamiliar situation and try to interpret the situation for understanding and comprehension (El-Kahlout, 2010, as cited in Zahara, 2017) [3].
- **Science:** Science is the system of knowing about the universe through data collected by observation and controlled experimentation (Carin & Sund, 1989) [4].

Scope of the Study

This study is intended to investigate the effectiveness of guided discovery method in teaching science at the middle school level. This study was restricted to BEHS, Pale and BEHS (Branch) Tanae, Pale Township, Sagaing Region. The participants were 120 Grade Six students from those schools. The content area was limited to Chapter 5 of Grade Six General Science Textbook for 2018-2019 Academic Year.

2. Methods

A quantitative research method is used in order to compare students' achievement between two groups: control group and experimental group.

The instrument used in this study was a posttest. The posttest items were based on Chapter 5 from Grade Six General Science Textbook. After getting validation from experts, suitable refinement was made and in order to evaluate the feasibility of the instruments for the study, pilot experiment was conducted at No.4 B.E.H.S Sanchaung, Yangon. After pilot testing, the test items of posttest were analyzed by SPSS. Cronbach's Alpha coefficient was (.718).

The main study was conducted in BEHS Pale and BEHS (Branch) Tanae in Pale Township, Sagaing Region. Sample size was 120 Grade Six students of selected schools within 2018-2019 Academic Year and each group consisted of 30 students. In each school, the control group was taught by formal teaching method and the experimental group was taught by guided discovery method. The treatment period was two weeks. At the end of treatment period, both groups had to sit for posttest.

3. Results and Discussion

Table 1 t-values for Overall Posttest Scores

School	Group	N	M	SD	MD	t	df	Sig. (2 tailed)
BEHS 1	Experimental	30	17.20	3.428	3.70	3.760	58	.001***
	Control	30	13.50	4.158				
BEHS 2	Experimental	30	17.33	2.820	2.63	3.666	58	.01**
	Control	30	14.70	2.744				
	Control	60	14.10	3.545				

Note: ** $p < .01$, *** $p \leq .001$ BEHS 1 = BEHS Pale, BEHS 2 = BEHS (Branch) Tanae

According to the results, the mean scores of the experimental groups were significantly higher than that of the control groups in each school. Thus, it showed that teaching by guided discovery method had significant effect on science achievement.

Table 2 t-values for Posttest Scores on Remember Level Questions

School	Group	N	M	SD	MD	t	df	Sig. (2 tailed)
BEHS 1	Experimental	30	6.97	1.974	1.44	2.861	58	.006**
	Control	30	5.53	1.907				
BEHS 2	Experimental	30	6.37	1.697	.10	.247	58	.806(n.s)
	Control	30	6.47	1.426				
	Control	60	5.95	1.721				

Note: * $p < .05$, ** $p < .01$, n.s = not significant

Results showed that the mean score of the experimental group of BEHS 1 was significantly higher than that of the control group in remember level scores but not in BEHS 2.

Table 3 t-values for Posttest Scores on Understand Level Questions

School	Group	N	M	SD	MD	t	df	Sig. (2 tailed)
BEHS 1	Experimental	30	5.50	1.208	0.73	2.381	58	.021*
	Control	30	4.77	1.775				
BEHS 2	Experimental	30	6.30	1.236	1.73	5.283	58	.000***
	Control	30	4.57	1.305				

Note: *** $p < .001$, * $p < .05$

As regards with understand level scores, the mean scores of the experimental groups were significantly higher than that of the control groups in each school. It showed that there was a significant difference between the experimental groups and the control groups for scores on understand level questions.

Table 4 t-values for Posttest Scores on Apply Level Questions

School	Group	N	M	SD	MD	t	df	Sig. (2 tailed)
BEHS 1	Experimental	30	4.53	1.548	1.33	3.297	58	.002**
	Control	30	3.20	1.584				
BEHS 2	Experimental	30	4.57	1.251	.80	2.659	58	.010*
	Control	30	3.77	1.073				
	Control	60	3.48	1.372				

Note: *** $p < .001$, ** $p < .01$, * $p < .05$

According to the result, the mean scores of the experimental groups were significantly higher than that of the control groups in each school. It showed that there was a significant difference

between the scores of experimental groups and control groups in answering apply level questions.

Therefore, it can be interpreted that guided discovery method has positively contributed to the 'remember, understand and apply' levels of the teaching science.

According to the result of this study, there was a significant difference between the posttest scores of the two groups in all schools. Thus, it showed that teaching by guided discovery method had significant effects on science achievement scores of the students. Hence, guided discovery method can contribute to the improvement of students' achievement in teaching science. This result is consistent with the finding of Akani (2017) [5] who investigated the use of guided discovery method to improve achievement of the secondary level students in teaching chemistry.

From the result of the posttest scores on remember level questions, there was no significant difference between the mean scores of experimental group and control group in BEHS 2. It pointed out that formal teaching method was not very much different from guided discovery method at remember level in certain conditions. However, mean score of the experimental group was significantly higher than that of the control group in BEHS (1). This result is consistent with the finding of Bamiro (2015) [6] who investigated the effects of three strategies (guided discovery, think-pair-share, and lecture) on secondary school students' achievement in chemistry.

Besides, the comparison of mean scores on understanding level questions indicated that there were significant differences between the means of the two groups in each school. This finding affirmed that there were significant differences between the performance of the experimental groups and the control groups on understand level questions. It pointed out that guided discovery method can enhance students' understanding in teaching science than the formal teaching method. This result is in line with Okwute (2015) [7] who indicated that students from guided discovery group were able to achieve greater understanding than those who weren't and built their understanding of new concepts rather than merely absorbing information.

Moreover, the results for apply level revealed that there were significant differences between the means of the two groups in each school. This proved that there were significant differences between the results of the experimental groups and the control groups on apply level questions. It can also be concluded that guided discovery method had more effect on applying what the students had learned. This is similar to the result of Herlily, Anhar, Ahda and Sumarmin (2013) [8] who studied guided discovery method to enhance student achievement in science.

3.1 Suggestions

With respect to the research findings, the following facts were suggested.

- The teachers should plan the activities to engage all the students in the activities.
- The teachers should have a firm knowledge base about the uses of this method.
- During the activity, the teacher should monitor the students and use the leading questions in asking the students because they are very important for the students to discover the concepts.
- The teachers should use guided discovery method in teaching learning process as an effective method in their classroom teaching.

4. Recommendations and Conclusion

4.1 Recommendations

- There were some limitations in this study such as time duration, and content area. The results were not representative for the whole content area of Grade Six General Science because only one content area was studied. Therefore, further studies should be extended with a large number of contents and enough time duration for reliable results.
- Although this research was concerned with science teaching, it can be applied into other subject matter contexts and the various school levels. To be more reliable, the similar research should be conducted on other States and Regions.
- Finally, the teachers and students' attitudes towards the use of guided discovery method in teaching science or other subjects at different school levels should be explored because the teachers and students are very crucial in teaching learning process.

4.2 Conclusions

This study revealed the effect of guided discovery method in teaching science at the middle school level. The sample size was 120 Grade Six students within (2018-2019) academic year from two Basic Education High Schools, Pale Township, Sagaing Region.

The instrument used in this study was a posttest. The mean scores of the two groups were compared by using the independent samples *t*-test. In each school, the control group was taught by formal teaching method and the experimental group was taught by guided discovery method. It took two weeks for the treatment. After the treatment, both groups received a posttest.

According to the quantitative results of the research, the conclusions were as follows.

1. There was a significant difference between posttest scores of experimental group and control group.
2. There was a significant difference between posttest scores of experimental group and control group in answering remember level questions.
3. There was a significant difference between posttest scores of experimental group and control group in answering understand level questions.
4. There was a significant difference between posttest scores of the experimental group and control group in answering apply level questions.

To sum up, the results of students' performance with guided discovery method did better than those with formal teaching method. Therefore, guided discovery method should be used in teaching science in order to facilitate the teaching learning process and to improve the quality of education system.

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A Study of Pre-service and In-service Teachers' Perceptions on Co-curriculum Activities

Soe Soe Thein¹

Abstract

The purpose of this study was to investigate the pre-service and in-service teachers' perceptions on Co-curriculum activities. In terms of geographical area, this study was restricted to Mandalay Region. Participants involved in this research were (322) primary and junior teachers in Aungmyaytharsan Township and (340) pre-service teachers in Mandalay and Meikhtila Education Colleges. A quantitative research method was used. A questionnaire was constructed based on Kebede (2015) and Kisango (2016). The questionnaire included (40) items on a five point Likert scale. The independent samples *t* test was used to examine whether there were differences in pre-service and in-service teachers' perceptions on co-curriculum activities in terms of funding of co-curriculum activities, organization and nature of co-curriculum activities, participation of co-curriculum activities, promoting quality education, factors affecting on co-curriculum activities, managing and encouraging of co-curriculum activities and teachers' role in co-curriculum activities. The results showed that there were significant differences in funding, organization and nature, participation, factors affecting, managing and encouraging and teachers' role in co-curriculum activities except promoting quality education between pre-service and in-service teachers' perceptions on co-curriculum activities. To sum up, it can be concluded that pre-service teachers have more positive perception than in-service teachers on co-curriculum activities.

Keywords: co-curriculum activity, perception, pre-service teacher, in-service teacher

1. Introduction

Education aims at the wholesome development of children. To become the wholesome development of children, they need to gain value education in several ways. To gain the value education, varieties of educative experiences are to be provided in the school programs which may contribute to a long, happy and normal life of the child. In this regard, educational experiences should not only be limited to formal knowledge to help him develop intellectually and mentally but also experiences for his social and physical development (Winston, 2008, cited in Mokohen, 2015). This value education can be inculcated through curriculum and co-curriculum activities.

Co-curriculum activities are aimed at providing students with the knowledge and skills required to become holistic students with superior personal characteristics, such as high self-esteem, innovativeness, creativity, productivity, competitiveness and resilience, to face the current phase of globalization, which is becoming more challenging. Co-curriculum activities are essential part of curriculum. These activities are important for the harmonious development of the personality. Co-curriculum activities facilitate all round development of children in various domains of mind and personality such as intellectual development, emotional development, social development, moral development and aesthetic development. Creativity, enthusiasm, and energetic, positive thinking are some of the facts of personality development and the outcomes of co-curriculum activities (Mohamad, 2006, cited in Mokohen, 2015).

¹ Dr. Lecturer, Department of Methodology, Sagaing University of Education, Myanmar, soesoe.sioe@gmail.com, 09256120622

Most schools did not give due attention to co-curriculum activities and co-curriculum activities management were not properly provided by most schools. As a result, students are not benefiting from the total educational aim due to lack of the part of education, co-curriculum activities (Abdulkadir, 2011, cited in Mokohen, 2015). Many teachers and even principals do not realize that they must carry out co-curriculum activities like implementing the academic curriculum in the classroom. In fact, the academic curriculum and co-curriculum activities are related and are supportive of each other. School curriculum emphasizes on the cognitive characteristics while the co-curriculum activities focuses more on acquiring affective and psychomotor skills. Thus, the importance of co-curriculum activities is equivalent to the importance of the academic curriculum. To implement the national education policy, emphasis is not only given to academic curriculum development but the areas of co-curricular development also should be given equal emphasis (Ahmad, 2008, cited in Dhanmeher, 2014).

Students also realize the importance of developing overall competences by joining co-curriculum activities and working collaboratively with their peers on academic work in order to gain hands-on experience (Fung, 2007, cited in Mokohen, 2015). Numerous researches were conducted to investigate this relationship and found that co-curriculum activities were positively correlated with academic performance. Co-curriculum activities are a very important element in teacher training which can be applied in schools where educators and students can identify and apply the theories learned (McInnis, Craing, Hartley & Robyn, 2002). All teachers (prospective teachers and trained teachers) should be equipped with knowledge and skill related to co-curriculum activities so that they are capable in the context of national education producing capable individuals. To attain the education goals and all-round development of students, co-curriculum activities are of paramount importance and these activities must be implemented effectively. Therefore, a research needed to study the perceptions of pre-service and in-service teachers' perceptions on co-curriculum activities.

2. Method

The main purpose of this study was to investigate the pre-service and in-service teachers' perceptions on co-curriculum activities. In this study, a quantitative research method was used and the participants were in total (340) pre-service teachers attending in Mandalay and Meikhtila Education Colleges and in total (322) in-service teachers (primary and junior) working in Aungmyaytharsan Township, Mandalay Region. As an instrument, a questionnaire for pre-service and in-service teachers' perceptions on co-curricular activities based on Mokohen (2015) and Kisango (2016) was constructed. It was composed of seven dimensions: funding of co-curriculum activities; organization and nature of co-curriculum activities; participation of co-curriculum activities; promoting quality education; the factors affecting on co-curriculum activities; managing and encouraging on co-curriculum activities and teacher's role in co-curriculum activities. The questionnaire consisted of (40) items on a five-point Likert scales. Simple positive items included. Then expert view and pilot study conducted. Internal consistencies of these scales for this study were (0.876) and (0.91) respectively. After pilot test, the major survey was conducted. Then obtained data were analyzed by using Descriptive statistics and independent samples *t* test.

3. Results and Discussion

3.1 Findings of Pre-service and In-service Teachers' Perceptions on Co-curricular Activities

In order to investigate the pre-service and in-service teachers' perceptions on co-curriculum activities, independent samples *t* test was used.

Table1. *t* Value of Pre-service Teachers and In-service Teachers' Perceptions on Co-curriculum Activities

Type of Teacher	N	M	SD	<i>t</i>	<i>df</i>	<i>p</i>
Pre-service Teacher	340	152.14	13.98	-3.787	660	.000***
In-service Teacher	322	148.33	11.72			

Note. ****p* < .001

According to the Table 1, the result of *t* value showed that there was a significant difference between pre-service and in-service teachers' perceptions on co-curriculum activities at .001 level (*p* < .001). This means that pre-service and in-service teachers' perceptions differ on co-curriculum activities. Based on the result of means, Figure 1 was illustrated.

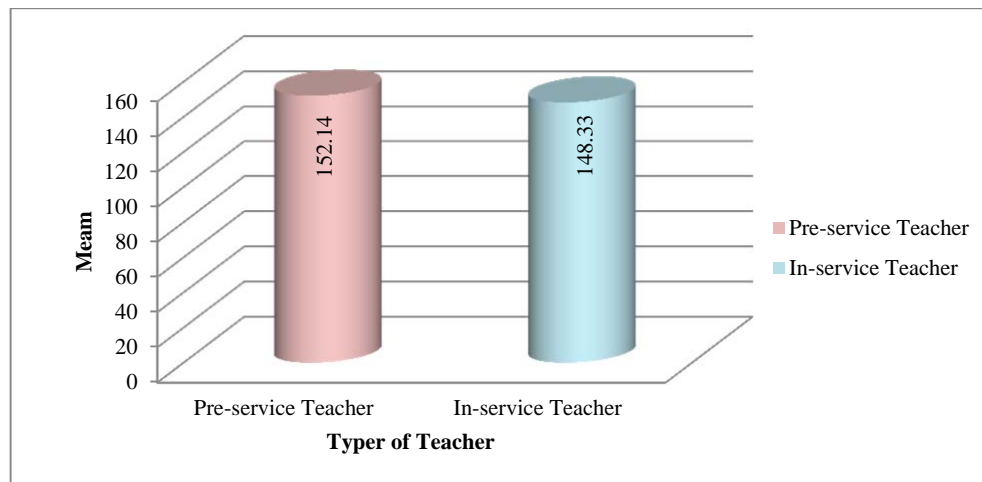


Figure 1. Means Comparison of pre-service and In-service Teachers' perceptions on Co-curriculum Activities

3.2 Findings of Pre-service and In-service Teachers' Perceptions on Co-curriculum Activities in Terms of Dimension

In the study, seven dimensions of co-curriculum activities were used to explore the differences in pre-service and in-service teachers' perceptions on co-curriculum activities. Data obtained were analyzed by independent samples *t* test.

Table 2. *t* Value of Pre-service and In-service Teachers' Perceptions on Co-curriculum Activities in terms of Dimension

Dimension	Type of Teacher	N	M	SD	<i>t</i>	<i>df</i>	<i>p</i>
Funding	Pre-service	340	19.31	2.87	-5.463	660	.000** *
	In-Service	322	18.22	2.21			
Organization and Nature	Pre-service	340	20.48	2.00	-3.331	660	.001**
	In-Service	322	19.87	1.77			
Participation	Pre-service	340	19.76	3.12	-3.361	660	.001**
	In-Service	322	19.05	2.15			
Promoting Quality Education	Pre-service	340	39.98	4.71	-1.642	660	.101
	In-Service	322	39.45	3.39			
Factors Affecting	Pre-service	340	15.74	2.87	-3.773	660	.000** *
	In-Service	322	14.81	2.84			
Managing and Encouraging	Pre-service	340	19.61	2.52	-3.958	660	.000** *
	In-Service	322	18.78	2.85			
Teachers' Role	Pre-service	340	18.20	2.38	-5.509	660	.000** *
	In-Service	322	17.21	2.21			

Note. *** $p < .001$ ** $p < .01$

In Table 2, the results of *t* value showed that there were significant differences in all dimensions except promoting quality education between pre-service and in-service teachers' perceptions on co-curriculum activities at .001 and .01 levels. In Education Colleges (ECs), co-curriculum activities are taught theoretically and practically according to the teachers' manual by educators of these subjects. In Basic Education High Schools (BEHSs), there are no co-curricular teachers particularly to teach and guide these activities. Teachers in BEHSs give more attention to academic subjects and also teachers cannot link those activities to the teaching learning process. Thus, students do not understand the benefits they can get from participating co-curriculum activities. Therefore, it was concluded that pre-service and in-service teachers' perceptions on co-curriculum activities differed except promoting quality education. In other words, pre-service teachers have better perceptions than in-service teachers on co-curriculum activities. Based on the result of means, Figure 2 was illustrated.

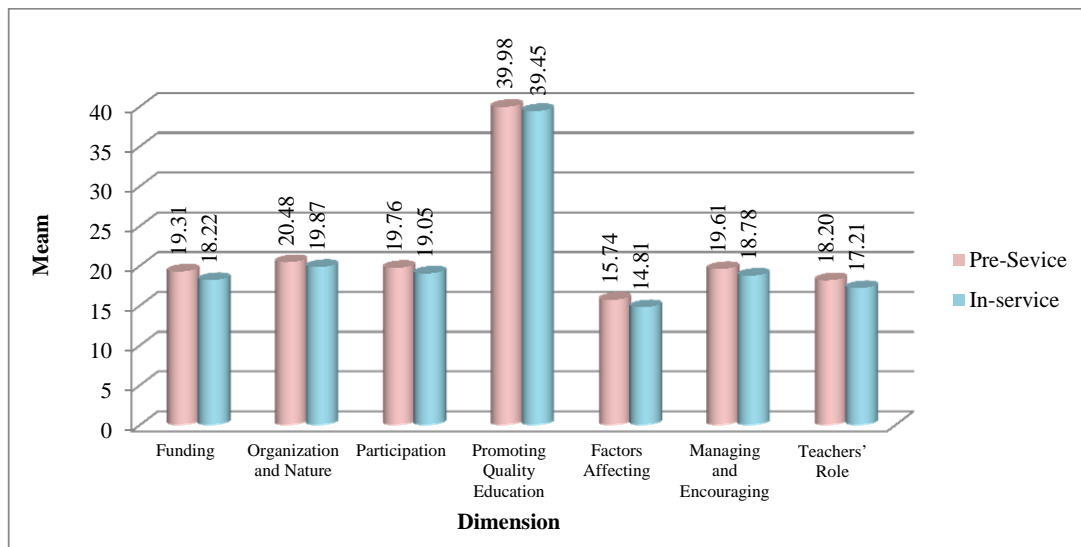


Figure2. Means Comparison of the of pre-service and In-service Teachers' perceptions on Co-curriculum Activities in terms of Dimension.

However, there was a significant difference in funding of co-curriculum activities between pre-service and in-service teachers' perceptions. This means that there was less financial support of co-curriculum activities allocated in BEHSs. School's funding influences the development of students' activities in co-curriculum activities.

Moreover, there was a significant difference in organization and nature of co-curriculum activities between pre-service and in-service teachers' perceptions. Although the activities in content of co-curriculum subjects and other co-curriculum activities are organized systematically in Education Colleges (ECs) and Basic Education High Schools (BEHSs), it was assumed that there is a weak in the implementation of co-curriculum activities at Basic Education High Schools (BEHSs).

Besides, there was a significant difference in the participation of co-curriculum activities between pre-service and in-service teachers' perceptions. Almost all students should participate actively in at least one club (Education Bureau, 1993). In ECs, all pre-service teachers have to participate in all the co-curriculum activities supervised by respective departments of the co-curriculum subjects actively. In BEHSs, most of the teachers have less competence in the activities of co-curriculum subjects. So, they cannot participate in performing co-curriculum activities. Besides, there is a lack of facilities like sport fields, working classes in the schools for co-curriculum activities.

But there was no significant difference in promoting quality education between pre-service and in-service teachers' perceptions. Co-curriculum activities promote equality education by:

- Supporting to increase academic achievement of students.
- Engaging with lessons like leadership, teamwork, organization, analytical, thinking, problem solving, time management, learning to juggle many tasks at once and it allows them to discover their talents.
- Making students' forecast their destiny in their later occupation (Mokohen, 2015).

According to the response rates, all teachers (pre service and teachers and in service teachers) know well the importance of co-curriculum activities in quality education.

Moreover, there was a significant difference in the factors affecting on co-curriculum activities between pre-service and in-service teachers' perceptions. It can be concluded that in-service teachers have low interest towards co-curriculum activities and due to high teaching load and other duties of the teachers.

Besides, there was significant difference in managing and encouraging of co-curriculum activities between pre-service and in-service teachers' perceptions. The effectiveness of co-curriculum activities depends on effective management system. In BEHSs, it was assumed that managing and encouraging of co-curriculum activities are weak.

According to the result of the findings, there was a significant difference in teachers' role on co-curriculum activities between pre-service and in-service teachers' perceptions. The role of the mentor teachers also influenced the participation and involvement of the students in the activities designed and implemented. In-service teachers have less awareness in building the students' self-confidence and interacting with students not only in the classroom but after the school and cultivating students' ability to meet school standards. Besides in BEHSs, It is necessary to have teachers particularly specialized in co-curriculum subjects. Teachers need to be skillful in the activities of co-curriculum subjects so that they can carry out different co-curriculum activities systematically throughout the year. Thus, pre-service and in-service teachers' perceptions differ and pre-service teachers have more positive perception than in-service teachers in BEHSs on co-curriculum activities.

4. Conclusion

Based on the results of data analysis, the study can be concluded that there were significant differences in funding of co-curriculum activities, organization and nature of co-curriculum activities, participation of co-curriculum activities, factors affecting on co-curriculum activities, managing and encouraging of co-curriculum activities, teachers' roles in co-curriculum activities between pre-service and in-service teachers' perceptions. The overall goal of education is not only academic achievement but also the development of students mentally, physically, psychologically, emotionally and socially. It is sure that there is no quality education without having co-curriculum activities. Thus, in ECs, co-curriculum activities are being prepared to implement them in BEHSs. Although co-curriculum activities are organized systematically, it will not be implementation of co-curriculum activities if teachers do not perform these activities in practice. In BEHSs, therefore, every students should be supplied the opportunities to participate in all the co-curriculum activities and teachers need to realized the benefits their students can get from the participation of these activities. And, teachers can be planner, leader, organizer, manager, advisor, motivator, communicator or coordinator in co-curriculum activities. Besides, teachers have to be experts in their roles. Therefore, this study will be fruitful to enhance the perception of pre-service and in-service teachers on co-curriculum activities. It is also recommended for further research in order to fill up the research gaps on this study.

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Relationship Between Achievement Goal Orientation and Approaches to Learning: A Study on Student Teachers in Sagaing District

Yar Zar Chit¹, Zaw Zaw Min²

Abstract

This study investigated the relationship between achievement goal orientation and approaches to learning. 592 student teachers from education institutions in Sagaing District were selected as participants by using simple random sampling technique. Descriptive research design and survey method were used. As the instruments, Achievement Goal Orientation Questionnaire by Midgley et al. (1998) and Approaches to Learning Inventory by Entwistle, Tait, & McCune (2000) were applied. According to the results, it was found that there were no significant differences in not only overall but also subscales of achievement goal orientation by gender. However, first year students were significantly higher than second year students in achievement goal orientation. The result also indicated that male students were significantly higher than female in surface approach. Moreover, first year students were significantly higher than second year students in approaches to learning. Besides, there was a moderate correlation between achievement goal orientation and approaches to learning. It was also found that mastery goal, performance approach goal and performance avoidance goal are the best predictors for approaches to learning. Finally, this study hopes to be able to give ideas how to promote student teachers' lifelong learning by proper approaches to learning and achievement goal orientations.

Keywords: achievement goal orientation, learning, approaches to learning

1. Introduction

The efforts to develop new generation will not be achieved without good education. The objective of education in general and at tertiary level in particular is to enable students become agents of national development. Therefore, the prediction and explanation of college students' academic success is an important area of research in education. This is because students who underperform, fail or drop out waste their own time, resources, and often become demoralized.

Although academic achievement is often associated with factors such as teachers, parents and school environments, aspects of intellectual and nonintellectual conditions of the students may also affect academic achievement [1]. Among these, achievement goal orientations and approaches to learning of students' may facilitate or hinder learner's academic achievement.

Researchers agree that goal orientation shapes how students approach and react to achievement situations [2]. As to achievement goal theory, one among social cognitive motivation theories, students in learning environments adopt different achievement goal orientations. Goals provide a framework within which individuals interpret and react to events [3]. This theory posits that students differ from each other in the purpose of their achievement behavior and that these differences are associated with distinctive emotional, motivational, cognitive, and behavioral outcomes (e.g., Covington, 2000 [4]; Elliot, 2005 [5]; Pint rich, 2000 [6]).

¹ Dr. Assistant Lecturer, Department of Educational Psychology, Sagaing University of Education, Myanmar, +95797117913, yarzar02@gmail.com

² Senior Teacher, BEHS-2 (Sagaing)

Another area of higher education which requires attention is the approaches to learning of students. How a learner approaches a learning task is dependent upon both the personality and the setting in which the learning takes place [7]. Approaches to learning refer to “the learners’ different ways of relating to the learning task- how and why a learner learns”. The ‘how’ are the strategies devised by the learner to solve the problems defined by their motives (the why of learning).

Teacher education institutions in Myanmar are expected to train teachers who are capable of achieving the intended educational goals of the region in particular and the country in general. To achieve this, it is necessary to investigate different variables which may affect the students’ success in their college education. Thus, this study mainly focuses on investigating the relationship between students’ achievement goal orientation and approaches to learning among student teachers from education institutions in Sagaing district.

Aim of the Study

The main aim of this study is to investigate the relationship between achievement goal orientation and approaches to learning among student teachers from education institutions in Sagaing District. The specific objectives are as follows.

1. To find out the achievement goal orientations and approaches to learning of student teachers
2. To explore the relationship between achievement goal orientation and approaches to learning of student teachers
3. To examine achievement goal orientation factors as the best predictors for each approach to learning

2. Methods

Sampling

Firstly, in order to complete this study, student teachers from Education Institutions in Sagaing District who were studying in the academic year of 2017-2018 were sorted out as the main population. Total numbers of the sample were 592 student teachers from Sagaing Education College (190), University for the Development of National Races (200) and Sagaing University of Education (202) by using simple random sampling technique.

Research Method

The quantitative approach of survey method and descriptive research design were used in this study.

Instruments

The researcher used two questionnaires in order to obtain information from the sample of the study concerning students’ achievement goal orientations and approaches to learning. Achievement goals were measured using Achievement Goal Questionnaire that assesses a three dimensional conceptualization of achievement goals, which includes mastery, performance approach, and performance-avoidance. This scale was developed over a period of eight years by a group of researchers at the University of Michigan (Midgley et al., 1998) [8]. Totally, it has 18

items with five scale points that ranges from 5 (agree) to 1 (disagree). The reliability of the whole scale was $\alpha = 0.802$ and that of each subscale was found as follows: mastery ($\alpha = .716$); performance approach ($\alpha = .746$); and performance avoidance ($\alpha = .715$).

The Approaches to Learning Inventory was adapted from Entwistle, Tait, & McCune (2000) [9]. This instrument has 52-items which are intended to measure the three approaches to learning: deep, strategic, and surface learning approaches. It has a 5-point Likert-type scale, ranging from 1 (disagree) to 5 (agree). Based on the pilot study, 45 items, fifteen for each sub scale were selected. The reliability of the whole scale was $\alpha = 0.70$ and that of each sub scales was found as follows: Deep ($\alpha = .715$), strategic ($\alpha = .728$) and surface ($\alpha = .720$).

3. Results and Discussion

3.1 Descriptive Statistics for Students' Achievement Goal Orientation

According to Table 1, among achievement goal orientations, mean value of “mastery goal orientation” is highest ($\bar{X}=23.86$) and that of “performance avoidance goal orientation” is lowest ($\bar{X}=19.41$). Therefore, it can be concluded that student teachers commonly try hard in their lessons to be mastered. However, they seldom study their lessons to avoid failure. Moreover, since the sample mean of the overall achievement goal orientation is 65.54, it is greater than theoretical mean (54). Therefore, it can be said that student teachers always set any goal and they intentionally try hard in their learning.

Table 1 Descriptive Statistics for Students' Achievement Goal Orientation

	Mean	Std. Deviation
Mastery Goal Orientation	23.86	3.183
Performance Approach Goal Orientation	22.27	4.292
Performance Avoidance Goal Orientation	19.41	3.993
Overall Achievement Goal Orientation	65.54	8.963

3.2 Descriptive Statistics for Students' Approaches to Learning

In order to investigate students' approaches to learning, statistical procedure was carried out by using the received data from Students' Approaches to Learning Inventory. The result was shown in Table 2. Mean value of “strategic approach” is highest ($\bar{X}=59.73$) and that of “surface approach” is lowest ($\bar{X}=48.15$). Therefore, it can be concluded that student teachers commonly learn their lessons by systematic ways. They generally make good use of their time during the day and usually plan out their week's works in advance. However, they tend to read very little beyond what is actually required to pass. In other words, their learning is just surface learning. Moreover, since the sample mean of the overall approaches to learning is 166.25, it is greater than theoretical mean (135). Therefore, it can be said that student teachers always use any approach to learn their lessons.

Table 2 Descriptive Statistics for Students' Approaches to Learning

	N	Mean	Std. Deviation
Deep Approach	592	58.38	5.612
Strategic Approach	592	59.73	6.641
Surface Approach	592	48.15	6.735
Overall Approaches to Learning	592	166.25	14.124

The Relationship between Achievement Goal Orientation and Approaches to Learning

To investigate the relationship between achievement goal orientation and approaches to learning, the Pearson Product Moment Correlation coefficient was initially calculated. The intercorrelation was reported in Table 3.

Table 3 Intercorrelation Results Between Achievement Goal Orientation and Approaches to Learning

	Deep Approach	Strategic Approach	Surface Approach	Overall Approaches to Learning
Mastery Goal	.635**	.650**	.053	.583**
Performance Approach Goal	.341**	.407**	.246**	.444**
Performance Avoidance Goal	.256**	.250**	.419**	.419**
Overall Achievement Goal Orientation	.503**	.537**	.323**	.607**

** . Correlation is significant at the 0.01 level (2-tailed)

Table 3 indicated that there was a significant moderate correlation between achievement goal orientation and their approaches to learning ($r = .607, p < 0.01$). Therefore, it can be said that students who have high achievement goal orientation will obtain better their approaches to learning. Moreover, all subscales of achievement goal orientation were significantly positive intercorrelated with the subscales of approaches to learning at 0.01 level. However, there was no significant correlation between mastery goal orientation and surface approach.

3.4 Regression Analysis Results of Achievement Goal Orientation on Approaches to Learning

In order to investigate how well students' achievement goal orientation (AGO) predicted on their approaches to learning (AL), a linear regression was computed. The results were statistically significant $F(1, 590) = 343.447$. The adjusted R squared value was .367. The result indicated that 36.7% of the students' approaches to learning can be predicted from achievement goal orientation. Therefore, it can be concluded the higher achievement goal orientation, the better approaches to learning they will get.

Table 4. Results of Linear Regression Analysis of Achievement Goal Orientation as Predictor of Approaches to Learning

Model	Unstandardized Coefficients		Standardized Coefficients	<i>t</i>	Sig.
	B	Std. Error	Beta		
(Constant)	103.61	3.412		30.370	.000
Achievement Goal Orientation	.956	.052	.607	18.532	.000

Dependent Variable: Approaches to Learning

According to Table 4, the resultant model of linear regression expressing the relationship between achievement goal orientation and approaches to learning was presented in the following equation.

$$AL = 103.61 + 0.956AGO$$

AL = Approaches to Learning

AGO = Achievement Goal Orientation

Table 5. Standardized Regression Coefficients (β) of Achievement Goal Orientation Factors on Each Approach to Learning

Predictors	Approaches to Learning		
	Deep	Strategic	Surface
Mastery Goal Orientation	0.590**	0.580**	-0.079
Performance Approach Goal Orientation	0.071	0.170**	0.016
Performance Avoidance Goal Orientation	0.063	0.007	0.407**
Adjusted R^2	0.413	0.446	0.177

Note: ** $p < 0.001$.

Then and there, in order to find out the best orientation predictors for each approach to learning, multiple linear regression analysis was conducted. The results and standardized beta coefficients are described in Table 5. The R^2 values suggested that 41.3% of the variability in deep approach, 44.6% of the variability in strategic approach and 17.7% of the variability in surface approach can be explained by the three achievement goal orientations.

Specifically, the results of the regression advocated that among the three achievement goal orientations, only mastery goal orientation can significantly predict student teachers' deep learning. However, it was found that mastery and performance approach goal orientations are the best predictors for strategic learning and only performance avoidance goal orientation is the best predictor for surface learning.

4. Conclusion

First of all, according to the result of the descriptive statistics, it can be concluded that students' overall achievement goal orientation scores were good enough and satisfactory in this study. Moreover, it can also be said that students' overall approaches to learning scores were good enough in this study.

In the correlation matrix, there was significant moderate correlation between achievement goal orientation and their approaches to learning ($r = .607, p < 0.01$). Moreover, mastery goal, performance approach goal and performance avoidance goal are best predictors for approaches to learning. Therefore, it can be said that students who have high achievement goal orientation will use better approaches to learning. It is consistent with the results of Shih (2005) [10] and Geta (2012) [11]. They found that there was positive correlation between achievement goal orientation and approaches to learning.

According to the results of this study, it is obvious that the students' achievement goal orientation largely depends on their approaches to learning. For this reason, the following suggestions and recommendations would like to be conveyed to students and teachers for the improvement of learning.

- Early identification of students' goal orientation type is important to develop the desired goal
- Student teachers are needed to be equipped with study skills to organize their study more effectively and to understand their learning materials at a deeper level.
- Teacher educators should help their students desire to be mastered and to perform in learning so that their learning becomes deep and strategic.
- Teachers should improve the students learning by employing active learning methods, using assessment techniques that place more emphasis on understanding of the subject and avoiding inappropriate workload on learners.

To sum up, in order to upgrade education system, the teachers' qualities are needed to be improved. Therefore, they should be well trained since their student teacher life. Only if they have well constructive motivation to achieve, their learning will be more effective and successful. Therefore, this study highlighted student teachers' approaches to learning in keeping with their achievement goal orientations. Therefore, it is hoped that these valuable results can be any help and support for Myanmar teacher education sector.

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The Sociolinguistics Study of Myanmar Syntax Error from Current Myanmar Journals

Mon Mon Aung¹

Abstract

This paper deals with the sociolinguistic study of common Myanmar syntax errors in current Myanmar journals. The aim of this paper is to find out how Myanmar syntax errors relate to Myanmar syntax standards. The standards of Myanmar language were considered in 1947, 1974 and 2008. A **syntax error** is an error in the grammar of a sentence that goes against this grammar. This paper studies Myanmar language journals published between 2016 and 2018 in the Union of Myanmar. Sociolinguistics is a branch of linguistics which studies all aspects of the relationship between language and society. The research questions are (1) how do we solve the Myanmar syntax error? And (2) Which effect can influence of Myanmar syntax error in Myanmar social media? This paper is focused on sociolinguistics as a descriptive method.

Key Words: Myanmar syntax, Myanmar syntax error, Myanmar Journals, Language and Society.

1. Introduction

This paper will present the sociolinguistics of Myanmar syntax errors in current Myanmar journals. It has two parts, firstly sociolinguistics and the role of sentence in Myanmar language and then secondly, the analysis of syntax error of current Myanmar Journals. In this paper, the errors are taken from Journals published 2016 to 2018 in the Union of Myanmar.

Aim

The aim of this paper is to find out how Myanmar syntax errors relate to Myanmar syntax standards.

Research Problem and Research Design

Myanmar language is the national language of Myanmar, spoken and written also by Myanmar many ethnic minorities. 1947 Constitution Article 216 described Myanmar language must be an official language. In Article 152(B) of a law passed in 1974 Constitution, it is described Myanmar language should be considered a public language. In Article 450 of a law passed in 2008 Constitution, it is described how the Myanmar language must be treated as the official national language of Myanmar. So, Myanmar language is a standard language. Although it is standard language, the syntax error can be found in some current Myanmar Journals.

The research questions are

- (1) How do we solve the Myanmar syntax error?
- (2) Which effect can influence of Myanmar syntax error in Myanmar social media.

This paper is focused by descriptive method of Sociolinguistics.

¹ Dr. Professor, Department of Myanmar, University of Dawei, Union of Myanmar

Hypothesis

If the positions of phrase will correct place, Myanmar sentence will be corrected and every Myanmar can easily read the correct meaning in social life.

2. Sociolinguistics and The role of Sentence in Myanmar language

This paper will be solved by Descriptive Research Method from the aspect of Sociolinguistics.

Sociolinguistics is a branch of linguistics which studies all aspects of the relationship between language and society.¹

In Linguistics terms and Concepts,

Sociolinguistics, or the study of Language in relation to society, is a relative newcomer to the linguistic fold. It was not until the early 1960s, largely as a result of William Labov's work in America, and Peter Trudgill's in Britain, that it developed into a recognized branch of Linguistics.²

According to this point, Sociolinguistics is the study of the relationship between Language and its society.

In sociolinguistics, it has language functions.

It has been pointed out that apart from conveying information from one person to another, language may be used to express emotions from one person to another, language may be used to express emotions and to direct the activities of other people.³

Language has its functions in sociolinguistics. C- Criper and H.G. Widdowson (1975) distinguished seven factors of language functions. They are

- (1) Referential function
- (2) Expressive or emotive function
- (3) Directive function
- (4) Phatic or contact function
- (5) Contextual function
- (6) Metalinguistic function
- (7) Poetic function.⁴

This paper will be analyzed the Myanmar syntax error by seven language functions of sociolinguistics.

The syntax is the grammatical arrangement of words in a sentence. The **syntax error** is an error in the syntax of a sequence of sentence.

¹ Crystal, 2003, 422.

² Finch, 2000, 193.

³ Criper & Widdowson, 1975, 195.

⁴ Criper & Widdowson, 1975, 195-197.

In that, sentence is defined as Myanmar Grammar Volume 3,

Sentence is a systematically arrangement of phrases to become a meaningful sentence.¹

In Oxford Dictionary

A sentence is a set of words that is complete in itself, typically containing a subject and predicate, conveying a statement, question, exclamation, or command, and consisting of a main clause and sometimes one or more subordinate clauses.²

According to the above points, Sentence is a set of words that is systematically arrangement to become a meaningful sentence. So, position of phrase is the impact of sentence.

In this case, the positions of phrase is impact of Myanmar grammar. So, the association of Myanmar academy of Arts and science had described the meaning of the position of phrases.

(1) Position of Subject

The position of subject is a start of sentence or in front of the verb.³

(2) Position of Adjective

The adjective with 'thaw' (aom) particle is in front of noun modifier.⁴

(3) Position of Adverb

The position of adverb is in front of verb.⁵

The position of phrase is the impact of Myanmar sentence. If the position of phrase is right, the sentence will be right.

2.1 Literature Review

The research concerning with Myanmar syntax can be found in the Ph.D. Thesis of Maung Ko Lay (2003) at University of Yangon, 'Myanmar Grammar'. In that, he described word, phrase, sub- sentence and Sentence classifying aspects of linguistics.

Besides, University of Yangon Ph.D. Thesis of Ma Choon Ma Ma (2006), 'Sentence's meaning and context in Myanmar language' showed Sentence's meaning and context in Myanmar language aspects of pragmatics.

Similarly, University of Yangon Ph.D. Thesis of Ma Moe Moe (2007), 'The study of Sentence's meaning' that is described the sentence's meaning aspects of semantics and sociolinguistics.

The above researches can be found the study of Myanmar syntax aspects of linguistics, semantics and sociolinguistics. But they did not analyze syntax error aspects of sociolinguistics. So this paper will be fulfilled a part of this blank.

¹ jrempmtz 1988? 62/

² Wehmeier, 2000, 1165.

³ jrempmtz 1992? 90/

⁴ jrempmtz 1992? 93/

⁵ jrempmtz 1992? 95/

3. Analysis of Myanmar Syntax error in current Myanmar Journals.

Some of the Myanmar current journal can be found syntax error. If the syntax is error, the meaning will be wrong.

(1) In the news of 7 Days news Journal¹

ရှေးဟောင်းမြို့တော် ပုဂံဒေသကို ယူနက်စကို၏ကမ္ဘာ့အမွေအနှစ်စာရင်း ဝင်နိုင်၊ မဝင်နိုင် အစီရင်ခံစာရေးရန် လာရောက်စစ်ဆေးသော ပညာရှင်ကစာမေးပွဲ အောင်ဟုပြောကြောင်း သာသနာရေးနှင့် ယဉ်ကျေးမှုဝန်ကြီးဌာန ပြည်ထောင်စုဝန်ကြီး သူရဦးအောင်ကိုက စက်တင်ဘာ ၂၇ ရက်တွင် ပြောကြားသည်။

On 27th September, Thura U Aung Ko, the minister of Ministry of Religious Affairs and Culture said that 'the scholar who is writing the report and examine of Ancient Bagan city can involve or not in UNESCO's heritage list told pass the examination'.

Syntax error -အစီရင်ခံစာရေးရန် လာရောက်စစ်ဆေးသောပညာရှင်က စာမေးပွဲအောင်
Grammar classifier - Subject and Verb

Language function- Referential function, Emotive function, Contextual function,

Metalinguistic function

Correct syntax- ယူနက်စကို၏ကမ္ဘာ့အမွေအနှစ်စာရင်း ဝင်နိုင်၊ မဝင်နိုင် အစီရင်ခံစာရေးရန် လာရောက် စစ်ဆေးသော ပညာရှင်က ရှေးဟောင်းမြို့တော် ပုဂံဒေသကို စာမေးပွဲ အောင်သည်ဟု ပြောကြောင်းသာသနာရေးနှင့် ယဉ်ကျေးမှုဝန်ကြီးဌာန ပြည်ထောင်စုဝန်ကြီး သူရ ဦးအောင်ကိုက စက်တင်ဘာ ၂၇ ရက်တွင် ပြောကြားသည်။

On 27th September, Thura U Aung Ko, the minister of Ministry of Religious Affairs and Culture said that 'the scholar who is writing the report and examine of Bagan can involve or not in UNESCO's heritage list told Ancient Bagan city is passed the examination'.

Analysis

In the above case, Syntax error is 'အစီရင်ခံစာရေးရန် လာရောက်စစ်ဆေးသော ပညာရှင်က စာမေးပွဲအောင်' (the scholar who is writing the report and examine told pass the examination). So, the reader can think this meaning is the scholar pass the examination. The correct sentence is 'On 27th September, Thura U Aung Ko, the minister of Ministry of Religious Affairs and Culture said that 'the scholar who is writing the report and examine of Bagan can involve or not in UNESCO's heritage list told Ancient Bagan city is passed the examination'. The omit object is ရှေးဟောင်းမြို့တော် ပုဂံဒေသကို (Ancient Bagan city).

အစီရင်ခံစာရေးရန်လာရောက်စစ်ဆေးသော ပညာရှင် (the scholar who is writing the report and examine) and ယဉ်ကျေးမှုဝန်ကြီးဌာန ပြည်ထောင်စုဝန်ကြီး သူရဦးအောင်ကို (Thura U Aung Ko, the minister of Ministry of Religious Affairs and Culture) performed contextual function, it described Ancient Bagan city is passed the examination, performed referential function, emotive function and metalinguistic function.

¹ 7 Day News Journal, (3.10.2018),11.

(2) In the news heading of 7 Days news Journal¹

ရဲမှူးချုပ်ငါးဦး နေရာအပြောင်းအရွှေ့ပြုလုပ်

The five chief police officers do transfer.

Syntax error - ရဲမှူးချုပ်ငါးဦး

Grammar classifier - Subject

Language function- Referential function, Emotive function, Directive function, Contextual function

Correct syntax- ရဲမှူးချုပ်ငါးဦးကို နေရာအပြောင်းအရွှေ့ပြုလုပ်

The five chief police officers are done transfer.

Analysis

In the above sentence, the error is the subject ရဲမှူးချုပ်ငါးဦး (The five chief police officers). So, it must be object ရဲမှူးချုပ်ငါးဦးကို နေရာအပြောင်းအရွှေ့ပြုလုပ် (The five chief police officers are done transfer).

In that, ရဲမှူးချုပ်ငါးဦး (The five chief police officers) performed contextual function and referential function. These officers are done transfer so it performed emotive function, directive function.

(3) In the news heading of Newsweek journal²

ဆူးလေရှန်ဂရီလာ အဆောက်အအုံသစ်မှ အများသုံးသန့်စင်ခန်းခွဲထားရှိမှုအပေါ်
ပန်းပဲတန်းပြည်သူများ ကန့်ကွက်

Pabedan people demur the public toilet from the new building of Sule Shangarilar.

Syntax error - ဆူးလေရှန်ဂရီလာအဆောက်အအုံသစ်မှ

from the new building of Sule Shangarilar

Grammar classifier - Noun phrase

Language function- Referential function, Emotive function, Directive function, Contextual function

Correct syntax- ဆူးလေရှန်ဂရီလာအဆောက်အအုံသစ်မှာ အများသုံးသန့်စင်ခန်းထားရှိမှုအပေါ်
ပန်းပဲတန်းပြည်သူများ ကန့်ကွက်

Pabedan people demur the public toilet at the new building of Sule Shangarilar.

Analysis

In the above sentence, မှ is the departure showed particle and the place showed particles are တွင်၊ ဌာ၊ မှာ ၊ ဝယ် in Myanmar. So, the correct sentence is (ဆူးလေရှန်ဂရီလာ အဆောက်အအုံ

¹ 7 Days News Journal, (6.10.2017), 1.

² Newsweek Journal, (20.10.2016), extra sheet.

သစ်မှာ အများသုံးသန့်စင်ခန်းထားရှိမှုအပေါ် ပန်းပဲတန်းပြည်သူများ ကန့်ကွက်) Pabedan people demur the public toilet at the new building of Sule Shangarilar.

In that, it is intended 'the public toilet at the new building of Sule Shangarilar', so it performed referential function. ပန်းပဲတန်းပြည်သူများ (Pabedan people) performed contextual function. 'Pabedan people demur the public toilet at the new building of Sule Shangarilar' that performed emotive function and directive function.

(5) In the news heading of News watch Journal,¹

တိုင်ကြားခံထားရသော ဘုတလင်မြို့နယ်ဆေးရုံအုပ်ကြီးက စစ်ဆေးသည့်အခါ အမှန်
တရား ပေါ်ပေါက်လာလိမ့်မည်ဟုပြော

He said, when the complained Butalin township Medical superintendent have examined, the truth will be formed.

Syntax error - ဘုတလင်မြို့နယ်ဆေးရုံအုပ်ကြီးက

Butalin township Medical superintendent

Grammar classifier - Subject

Language function- Referential function, Emotive function, Contextual function

Correct syntax- တိုင်ကြားခံထားရသော ဘုတလင်မြို့နယ်ဆေးရုံအုပ်ကြီးကို စစ်ဆေးသည့်အခါ
အမှန်တရား ပေါ်ပေါက်လာလိမ့်မည်ဟုပြော။

He said, when the complained Butalin township Medical superintendent have been examined, the truth will be formed.

Analysis

In the above sentence, the error is ဘုတလင်မြို့နယ်ဆေးရုံအုပ်ကြီးက 'Butalin township Medical superintendent'. The correct sentence is တိုင်ကြားခံထားရသော ဘုတလင်မြို့နယ် ဆေးရုံ အုပ်ကြီးကို စစ်ဆေးသည့်အခါ အမှန်တရား ပေါ်ပေါက်လာလိမ့်မည် ဟုပြော။ 'He said, when the complained Butalin township Medical superintendent have been examined, the truth will be formed.'

In that, the sentence intended 'Butalin township Medical superintendent', so it performed referential function and contextual function. The sentence, 'when the complained Butalin township Medical superintendent have been examined, the truth will be formed' intended emotive function.

4. Conclusion and Finding

This paper was presented the sociolinguistics study of Myanmar syntax error from current Myanmar Journals. It has two parts, sociolinguistics and the role of sentence in Myanmar language and then the analysis of syntax error of current Myanmar Journals.

¹ News watch Journal, (2.6. 2018), extra sheet.

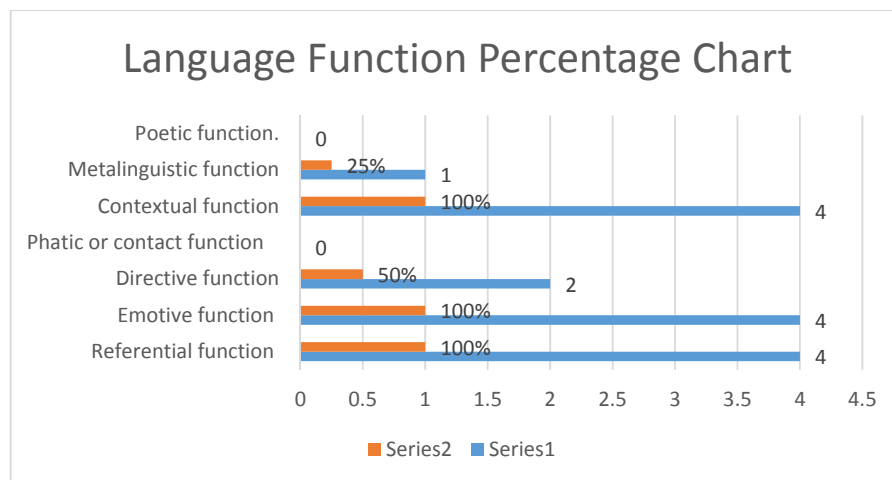
In that, it is analyzed the syntax errors from 7 Day News Journal, Newsweek journal and News watch Journal.

The syntax errors can be found, they are

- (1) The omitting object (e.g, ပုဂံဒေသကို)
- (2) The omitting the object particle (e.g, ရဲမှူးချုပ်ငါးဦးကို)
- (၃) The wrong usage of the departure showed particle (မှ) and the place showed particle (မှာ)
- (၄) The wrong usage of subject and object (ဘုတလင်မြို့နယ်ဆေးရုံအုပ်ကြီးက၊ ဘုတလင်မြို့နယ်ဆေးရုံအုပ်ကြီးကို)

These sentences are performed language functions.

No.	Sentences	Language function	Times	Percentage
1.	Four sentences	Referential function	4	100 %
		Emotive function	4	100%
		Directive function	2	50%
		Phatic or contact function	-	
		Contextual function	4	100%
		Metalinguistic function	1	25%
		Poetic function.	-	



According to the above chart, the analysis of four sentences, there are not poetic function and phatic or contact function because of the news and heading. There are 25% of Metalinguistic function, 50% of directive function, 100% of emotive function, contextual function and referential function.

In the syntax errors, one is the news and three are the news' heading. Why they are wrong, because of the summary writing style. The errors are the position of phrase wrong and omitting the phrase.

After reading the syntax error consists of the news in Journals, the readers took a photo of this error and then posted to the face book. People who are reading that error in social media, they will laugh and think Myanmar people cannot able to write for understanding Myanmar audients. So, they can notice the phrase errors and they can repair the error. If the positions of phrase will correct place, Myanmar sentence will be corrected and every Myanmar can easily read the correct meaning in social life.

Therefore, the syntax becomes to right in Myanmar Journals, Myanmar language and literature will be developed.

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- ခင်မင်၊မောင်(ခန့်ဖြူ)။(၂၀၁၈)။ *ဘာသာစာပေသုတေသနစာတမ်းများ*။ ရန်ကုန်၊ ရာပြည့်စာအုပ်တိုက်။
- ချုံမမ။(၂၀၀၆)။ *မြန်မာဘာသာစကားရှိ ဝါကျများ၏ အနက်အဓိပ္ပာယ်နှင့် အဆက်အစပ်သဘော*။ ပါရဂူဘွဲ့.အတွက်တင်သွင်းသောကျမ်း၊ ရန်ကုန်တက္ကသိုလ်။
- ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်။(၁၉၄၇)။*ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်ဖွဲ့စည်းအုပ်ချုပ်ပုံအခြေခံဥပဒေ*။
- ပြည်ထောင်စုဆိုရှယ်လစ်သမ္မတမြန်မာနိုင်ငံတော်။(၁၉၇၄)။*ပြည်ထောင်စုဆိုရှယ်လစ်သမ္မတမြန်မာနိုင်ငံတော်ဖွဲ့စည်းပုံအခြေခံဥပဒေ*။
- ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်။(၂၀၀၈)။*ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်ဖွဲ့စည်းပုံအခြေခံဥပဒေ*။
- မိုးမိုး။(၂၀၀၇)။*မြန်မာဝါကျများ၏အနက်အဓိပ္ပာယ်လေ့လာခြင်း*။ပါရဂူဘွဲ့.အတွက်တင်သွင်းသောကျမ်း၊ရန်ကုန်တက္ကသိုလ်။
- မြန်မာစာအဖွဲ့။(၁၉၈၈)။ *မြန်မာသဒ္ဒါ အတွဲ(၃)*။ ရန်ကုန်၊ မြန်မာစာအဖွဲ့ဦးစီးဌာန။
- မြန်မာစာအဖွဲ့။(၁၉၉၂)။ *မြန်မာသဒ္ဒါ အတွဲ(၂)*။ ရန်ကုန်၊ မြန်မာစာအဖွဲ့ဦးစီးဌာန။
- အောင်မြင်ဦး၊ဒေါက်တာ။(၂၀၀၃)။*လူမှုဘာသာဗေဒမိတ်ဆက်*။ရန်ကုန်၊ပညာတန်ဆောင်ပုံနှိပ်တိုက်။
- အောင်မြင်ဦး၊ဒေါက်တာ။(၂၀၀၅)။*လူမှုဘာသာဗေဒသဘောတရား*။ရန်ကုန်၊ပညာတန်ဆောင်ပုံနှိပ်တိုက်။
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Myanmar Language Practice: Brief Approach to Myanmar Linguistic Culture

Aung Myint Oo¹

Abstract

This paper gives an analysis of the practice of language being used and spoken within Myanmar society. Area studies conducted and answered which language use or language variety is suitable and should be used within Myanmar Society. This studies based on the scope of sociolinguistics. During the survey, the method of literature survey, excursion and interviews are mostly emphasized. Throughout the studies of language spoken within Myanmar society, it mainly focused on 5 main areas. 1. Practice of language using in introducing each other, greeting and leave taking. 2. Practice of address term 3. Practice of linguistic politeness. 4. Linguistic behaviour concerns with gender. 5. Practice of paralinguistic behaviour. In this paper, I propose an assemble approach of Myanmar society and language among the society. It helps to understand the way of using Myanmar language properly and according to situations. Moreover, Myanmar Language Practice can be compared any other language practice of other countries.

Keywords: language practice, greeting and leave-taking, address term, linguistic politeness, gender, using sociolect

1. Introduction

This paper gives an analysis of the practice of language being used and spoken within Myanmar society. What is language practice? Language practice is the working with language and linguistic behaviour of speakers in society. It is one of the study area of Sociolinguistics. Sociolinguistics reveals the correlation between a society and its language. It is derived from linguistics. Learners of a language, if they have studied sociolinguistics, they will understand the language and its correlation with the society and it will be easier to study the language and also to apply, what has been learnt in a more efficient or useful manner. This paper is mentioned Myanmar language variation and use in Myanmar society.

2. Background

Language is a social phenomenon. Language and society are always combined. Those who are studying a language must also do the same to the corresponding society. In a society, depending on social situations, the use of language differs from time to time. Sociolinguistics is a study of the relation between the language and the society. Those who studying the Myanmar language and not only must understand the Myanmar language but also Myanmar society.

Myanmar language is in Tibeto-Burman language family, sub-family of Sino-Tibetan language. Lewis (2009) expressed class of Myanmar is “Sino-Tibetan, Tibeto-Burmese, Lolo- Burmese, Burmish, Southern” (p.482). Tone is very important in Myanmar language. Myanmar language can be classified as tone/tonal language. Tone language is a language which the tone or pitch on a syllable is phonemic, so that words with identical segments but different tones are different words (Formkin, 2003, p.597). Myanmar language has three tones. There are many dialects in Myanmar such as Myeik, Dawae, Yaw, Danu, Inthar. Preferred variety is spoken in Mandalay. Many ethnic groups are monolinguals in Myanmar language and some are bilinguals.

¹ Dr. Professor/Head, Department of Myanmar, University of Yangon.

Myanmar greeting and leave-taking describe not only to know Myanmar language practice but also to understand about Myanmar society.

3.1 Address Term

Secondly this presentation is moved to Myanmar address terms which are how to use in Myanmar society as Myanmar language practice. In sociolinguistics, the pronoun used by the speaker to represent the hearer is called address terms or address forms. Address terms are a social phenomenon in society, there are general rules of their usage, but because of social factors, they vary in different situations. The study of address terms is a field of study in sociolinguistics. There are many forms of address terms to make representation for the hearer. An address form should be chosen according to social situation.

In Myanmar language, according to tradition and linguistic culture there are many forms of address terms. If the address terms in Myanmar language can be categorized in general into six categories. They are (1) address terms according to age, (2) Address terms according to relation, (3) Address terms according to rank (4) Address terms according to social relation status such (5) Address terms according to names: giving name, nick name, pet name, and (6) General address term.

Address terms according to age such as ၵဝဉာဏ်း / u: le: / (uncle), တေး / ə dO / (aunty), တာ / ə me / (mother) , တပုလ / ə ko / (brother), တပု / ə ma. / (sister), အိမ်လေး / maū le: / (younger brother), နှစ်လေး / jə ma. le: / (younger sister), အိမ်လေး / kaū le: / (boy), အိမ်လေး / kaū ma. le: / (girl) , ယု / k^hə lè: / (baby) , etc.

Address terms according to relation such as ၵဝဉာဏ်း / u: le: / (uncle), တေး / ə dO / , အေး / a' : / dO dO / (aunty), တာ / ə me / , အမေ / me me / (mother) / အေး / ə p^he / azaz / p^he p^he / (father) , တပုလ / ə ko / ယုလ / ko ko / (elder brother), တပု / ə ma. / အေး / ma. ma. / (elder sister) , နှစ်လေး / jə le: / အိမ်လေး / maū le: / (younger brother), etc.

Address terms according to rank such as အဆရာ / s^hə ja / (teacher), အဆရာမ / s^hə ja ma. / (teacher), အဆရာမ / shə ja dʒi: / (master), အဆရာမ / s^hə ja ma. dʒi: / (mistress), အဆရာမ / bo hmuʔ dʒi: / (colonel), အဆရာမ / oht rwa / θə ə ma? tɕi: / (ambassador), အဆရာမ / hnt dʒou? tɕi: / (director general) etc. Address terms according to the kind of work such as အဆရာမ / ka:s^hə ja / (driver), အဆရာမ / pufyi q & m / sɛ? pji s^hə ja / (mechanic), အဆရာမ / pma & q & m / sa je: s^hə ja / (writer), အဆရာမ / t q hwm / ə sho dO / (singer), etc.

Address terms according to social relation status such as အဆရာမ / s^hə ja / (teacher), အဆရာမ / s^hə ja θə ma: / (master), အဆရာမ / o li , tɕi t / θə ɲe dʒi: / (friend), အဆရာမ / t c p / ə tɕi? / (darling), etc.

Address terms according to giving names such as အဆရာမ / nwe ni oū: / , အဆရာမ / sã: sã: nwe / , အဆရာမ / sã da wɛ: / , အဆရာမ / la. mɛ: swe / , အဆရာမ / θu ji. ja. / etc.

Nick name address terms such as အဆရာမ / pjaū dʒi: / (bald head), အဆရာမ / t & s hwm / ə cɛ dʒi: / (tall person), အဆရာမ / a v: v / le: loū: / (person with spectacles), အဆရာမ / z u w / p^hɛ? ti: / (fat

[[u^{le}]] / tɔ̃ ma. / , [[i]] / ɲa / , [[u]] / tɔu / , [[u^{le}]] / tɔ nou? / , [[u]] / ko / , [[ʔ]] / do. / , [[o^{le}]] / θə mɪt / , [[om]] / θaɪ / etc. The speaker or the addresser has to choose correctly a pronoun for him-self or her-self having in mind whom the one has to speak to. Concerning with linguistic politeness, the suitable choice has to be done in according with the age, social status, role of relation, and gender of the hearer. If the hearer or addresser is younger than the speaker, pronoun [[i]] / ɲa / can be used to represent the speaker. If the hearer is younger but his or her social status is higher than the speaker it's not suitable and impolite to use the pronoun [[i]] / ɲa / for himself or herself. In that situation it is only suitable to use [[u^{le}]] / tɔ̃ ma. / if the speaker is a female and [[u^{le}]] / tɔ̃ do / if the one is a male. Then, if the hearer though is older in age and his or her social status is higher, the speaker can use [[i]] / ɲa / , if the speaker and the hearer are very friendly or intimate. This manner is the same in choosing a pronoun for the hearer.

Minimum responses are essential for linguistic politeness in conversation. Language practice studies in sociolinguistics besides the common speaking forms, minimum responses which is used according to discourse and conversation. Minimum responses show respect of hearer during conversation. Myanmar language learners if they know and study the minimum responses they would be more convenient in speaking the Myanmar language. Some minimum responses in Myanmar conversation are: [[at]] / ɔ / , [[at^{le}at]] / ɔ ɔ / , [[ti]] / ɿ / , [[ti^{le}ti]] / ɿ ɿ / , [[ti^{le}av]] / ɿ le / , [[at^{le}av]] / e le / , [[at^{le}at]] / e e / , [[ti^{le}ay]] / ɿ pɔ / , [[at^{le}ay]] / e pɔ / , [[ti^{le}aem]] / ɿ nɔ / , [[at^{le}aem]] / e nɔ / , [[at^{le}aygaem]] / e pɔ nɔ / , [[ti^{le}aygaem]] / ɿ pɔ nɔ / , [[w]] / hou? kɛ / , [[w]] / hou? / . If the hearer do not make any minimum responses it seem to be impolite behaviour.

In speaking with the Myanmar language, there are many euphemism applied to form a polite form in accordance with the social situation. Euphemism is a word or phrase that replaces a taboo word or is used to avoid reference to certain acts of subject (Fromkin, 2003, p.581). For example, [[u]] / vubɛpɪtɛ / ko le? θã. ʔi kʰã / (cleaning room) for [[tɪ]] / ɛɪ ða / (toilet) in Myanmar. If there is a pregnancy, it's more polite to say [[u]] / Deɒn / ko wũ ðɛ / (carry a pregnancy), [[u]] / Deɒn / ko wũ ɛɪ. ðɪ / (there's a pregnancy), [[uav]] / kʰã le: ɛɪ. ðɪ / (there is a child), than to say [[u]] / Aluɒn / bai? tɛɪ ðɪ / (big belly). It's more polite to say [[pɪvɛrma&raumi]] / sei? tɛã: ma je: m/ kaũt̚ du / (to have a mental illness), than [[tɪ]] / ɔ ju: / (idiot). It's more polite to say [[u]] / vubɛpɪɒn / ko le? θã. ʔi ðɪ / (clean the body and hands), than [[tɪ]] / ɛɪ ða tɛ? θɪ / (going to toilet). Similarly taboo (impolite dirty terms) can be changed into polite forms by use of euphemisms. In learning Myanmar language it is also need to study euphemism.

3.3 Language and Gender

In sociolinguistics, language and nature of gender is studied as a chapter. Myanmar language and nature of gender, "Is there gender in Myanmar language?" is a question commonly raised by Myanmar language learners. Unlike German, France and Pali, there is no grammatical gender system in Myanmar language. But there is a natural gender system to show the difference

in gender. It is required to address correctly the type of gender (male, female) with the nature of gender system. In Myanmar language the words which separate the male and female are-

၂၁, မူမံး / jau? tɕa: / (man) - ၂ရဲး / merɕ ma. / (woman)

၂ဝံး / θa: / (son) - ၂ဝဲး / θ/ mɪt / (daughter)

၂ဝဲး / ɾ / (husband) - ၂မံး / m/ jaɪ / (wife)

၂ဝဲး / k^h bu / (husband) - ၂ဝဲး / z/ nɪt / (wife)

၂ဝဲး / p^hoũ: / (monk) - ၂ဝဲး / θɪ la. ɕ / (nun)

၂ဝဲး / lu. ɾ / (lad) - ၂ဝဲး / loũ ma. / (lass)

၂ဝဲး / lu bjo / (boy virgin) - ၂ဝဲး / pjo / (girl virgin), etc.

For other words, the particles indicating male sex ၂ဝံး / θa: / (son), ၂မံး / maũ / (boy) may be suffixed to nouns and the particles indicating female sex ၂ဝဲး / θə mɪ: / (daughter), ၂မံး / ma. / (girl), ၂ဝဲး / θu / , / ðu / (a person), ၂မံး / me / (a gentle woman, a female) are usually suffixed to nouns of the common gender where there are need to do so. For example ၂ဝဲး / mjo: θa: / (a gentleman), ၂ဝဲး / mjo: θə mɪ: / (a lady) , ၂ဝဲး / si? θa: / (soldier) , ၂ဝဲး / si? θə mɪ: / (woman soldier), ၂ဝဲး / mĩ: ða: / (actor/prince), ၂ဝဲး / mĩ: θə mɪ: / (actress/princess), ၂ဝဲး / ðə do. θa: / (bridegroom), ၂ဝဲး / ðə do. θə mɪ: / (bride), ၂ဝဲး / tɕaũ: ða: / (male student), ၂ဝဲး / tɕaũ: ðu / (female student), ၂ဝဲး / joũ: ða: / (male office staff), ၂ဝဲး / joũ: ðu / (female office staff) , ၂ဝဲး / shə ja wũ / (man doctor), ၂ဝဲး / shə ja wũ ma. / (female doctor), ၂ဝဲး / s^hə ja / (male teacher), ၂ဝဲး / s^hə ja ma. / (female teacher) , ၂ဝဲး / sa je: s^hə ja / (man author), ၂ဝဲး / sa je: shə ja ma. / (female author), ၂ဝဲး / ɕɪ ɕɪ / (male house owner), ၂ဝဲး / ɕɪ ɕɪ ma. / (female house owner), ၂ဝဲး / le ɾ maũ / (man air hostess), ၂ဝဲး / le ɾ me / (woman air hostess), ၂ဝဲး / jeɪ ða: / (policeman), ၂ဝဲး / je: me / (police woman) and so on.

There are words by which the addresser shows his or her gender. Pronouns such as ၂ဝဲး / tɕu dɔ / (I) for male, ၂ဝဲး / tɕu ma. / (I) for female, ၂ဝဲး / də bɪ. dɔ / (your disciple for male) - ၂ဝဲး / də bɪ. dɔ ma. / (your disciple for female), etc.

There are also objects for ending of sentences. ၂ဝဲး / k^h bja / , ၂ဝဲး / k^h bja. / , ၂ဝဲး / bja / , ၂ဝဲး / bja. / , ၂ဝဲး / ɕɪ / , ၂ဝဲး / ɕɪ. / etc. If the speaker is a man ၂ဝဲး / k^h bja / , ၂ဝဲး / k^h bja. / , ၂ဝဲး / bja / , ၂ဝဲး / bja. / are used and if the one is a woman ၂ဝဲး / ɕɪ / , ၂ဝဲး / ɕɪ. / are chosen to use. It is made according to the basic of gender.

3.4 Using Sociolects

One of the language practice or linguistic behaviour of Myanmar society is using sociolects like other societies. Sociolect is a variety of language that differs from one social class or social status to the next. Crystal (2008) defined that “A term used by some sociolinguists

refers to a linguistic variety (or lect) defined on social (as opposed to regional) grounds, e.g. correlating with a particular social class or occupational group” (p. 440). Sociolect is applied in accordance with the social boundary. Sociolects are used every society in Myanmar.

For Example, in the transportation situation we can heard many sociolects by bus drivers and spares and taxi drivers. Passengers coming along in a bus holding hands to something at the entrance of the car are called *tʷɔ̃ ftwɔ̃* / ə tʷɛ ə ta / (the original meaning is dearly loved and hard to be parted), a traffic policeman is called *bɔ̃* / bɛ: u. / (duck egg) because the round white hats they wear look like duck egg and so on.

The group of earners buying and selling in trading, is growing and people of the group have their own words to be used within their group. For example, wanting to sell for urgent need of money is called *Aluɛm* / baɪ? na / (belly pain-in a sense that the person's belly is aching and a latrine is urgently needs to release his bowel), a price lower than the usual value is called *atmɔ̃hps* / au? ze: / (sub price), a good thing obtained with an unreasonably low price is termed *aygacmiɔ̃umif* / pɔ̃ tɕʰaũ kaũ: / (cheap, easy and good), selling a bad thing fraud is termed *tɪxɔ̃k/ɪ tʰe.* /, *tɪxɔ̃k/ɪ tʰu.* / (apply in wood- in a sense that selling out a bad wood with a good price).

Slangs are mostly used by young people from urban area in Myanmar. For example, to scold is called *yɔ̃f* / pʷā / (the sound of the beep of a car), *yɔ̃k* / pə lɛt kha. / (descending of pearls) for crying, *iɔ̃wɔ̃wɔ̃h* / ɲou? tou? me. / (become unconscious while sitting) for being stunned, *ɔ̃h* / lɛɪ. / (roll), and , *ɔ̃f* / jũ: / (change position), and ' *ɔ̃* / do: / (a child playing pebble which easily rolls) for coming or going, *Wiɔ̃* / tɪ: / (tense) and *Enɔ̃pɪ* / hna kɪ? / (an uneasy feeling in the nose) for getting angry. *Uɔ̃* / tɔ̃o: / (broken) for a tiredly and sound sleep, *Zh* / pʰɛ. / (to breach out a part) for a physical or mental assault, and so on are used very commonly. These usages are taste of the age group. Some old people also apply the usage to become a friendly person in the group. But if an old person is applying these usage in abundance, he will be graded an indecent speaker.

4. Conclusion

The Myanmar are generous, genial and open people. Myanmar language and Myanmar society are always combined. Those who are studying Myanmar language must also do the same to the corresponding the society. In the society, depending on social situations, the use of language differs from time to time. Those who studying the Myanmar language and not only must understand the Myanmar language but also Myanmar society. In this presentation We've look at five of the main areas of Myanmar language practice: greeting and leave -taking, address terms, linguistic politeness, language and gender, and using sociolect. All these areas are connected with Myanmar society. This paper support to understand Myanmar language more and more and to use Myanmar language well in the Myanmar society.

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A Comparative Study of the Usage of "에/에, 에서/에 sò/" in Korean Language and "ၫᄃᆞᆫ, ၫᄃᆞᆫ" in Myanmar Language

Htwe Su Hlaing¹

Abstract

The research analyses and presents about the usages of “에/에, 에서/에 sò/” in Korean Language and “ၫᄃᆞᆫ ၫᄃᆞᆫ” in Myanmar Language comparatively. The aim of this study is for students learning Korean Language to comprehend well about the complex usages as well as for effective teaching. The principles of Myanmar and Korean Grammar to apprehend similarities and differences of practical use of above mentioned two languages though they are derived from the same root and have same grammatical use are briefly and firstly described, and errors committed by students are followed as examples. It is comparatively presented how aforementioned “ၫᄃᆞᆫ ၫᄃᆞᆫ” and “에/에, 에서/에 sò/” usages are used in Myanmar and Korea Languages. With the objective of revealing the effective and comprehensive methods for students in teaching the usages “에/에, 에서/에 sò/” in Korean Language, this research is presented. Unlike Korean Language, Myanmar Language has written and spoken usages. Hence, relating with “ၫᄃᆞᆫ ၫᄃᆞᆫ” usages in Myanmar Language, some Myanmar daily usages, the way in written and spoken usages, are presented.

Keywords: Korean Grammar, Myanmar Grammar, auxiliary particle

1. Introduction

This research aims to contrast differences between two adverbial particles in Korean '에/에, 에서/에 sò' and postpositional markers in Myanmar “ၫᄃᆞᆫ ၫᄃᆞᆫ” in terms of their usages, grammatical functions and the use.

While studying a language, four skills (speaking, writing, listening and reading) must be studied. Nowadays, technology for various fields is developing and it is necessary to communicate with each other by means of language. It is necessary to use the grammar of a language systematically for the correct language use since grammar is the basic standard of a language. In a language, correct usage of basic grammar is necessary to communicate successfully. Therefore, it is important for people who use a particular language to understand its grammatical structures for successful social interaction. In writing or speaking, noun and verb play important roles in a sentence, yet the sentence cannot be created without particles. The reason is that in speaking and writing, particle plays a vital role in combining nouns and verbs to form a sentence. Particle defines whether a noun is a subject or an object, and it helps to state the meaning of a sentence well, so the role of particle is the most important in creating a sentence. Therefore, it is important for learners studying Korean as a foreign language to know the use of particles in Korean grammar. Moreover, learners studying basic Korean have to study case ending first, but even advanced learners make mistakes in the use of case ending, which seems to be easy.

¹ Dr. Lecturer, Department of Korean, Mandalay University of Foreign Languages, Myanmar.
htwesuhlaing98@gmail.com

Learners who are studying Korean as a foreign language compare and contrast it with the mother tongue. Korean and Myanmar belongs to different language families, yet they have a lot of similarities. According to language system, Korean belongs to the Altaic family of languages, and Myanmar belongs to sino-tipet system. However, both languages have same word order (Subject+ Object + Verb) and they both have a wide use of part of speech. However, students have difficulties in using particles and they make mistakes because adverbial particles in Korean have different usages and a variety of meanings ,they have mother tongue influence and two languages have different case endings. For the above reasons, the usages of adverbial particle in Korean and Myanmar particles “*ᄃᆞ(hma) ᄃᆞ(ᄃᆞ)*” will be examined in this study.

2. Methods

The use of two case endings in Korean ‘ “*ᄃᆞ/ᄃᆞ, ᄃᆞᄃᆞ/ᄃᆞᄃᆞ*” and Myanmar particles “*ᄃᆞ(hma) ᄃᆞ(ᄃᆞ)* ” will be compared and contracted in this study. While studying Korean as a foreign language, case endings “*ᄃᆞ/ᄃᆞ, ᄃᆞᄃᆞ/ᄃᆞᄃᆞ*” in basic grammar semasiologically have many connotations and semasiology synth of case endings “*ᄃᆞ/ᄃᆞ, ᄃᆞᄃᆞ/ᄃᆞᄃᆞ*” in the book “The Use of Korean Grammar for Foreigners” (2005) is used. The use of Myanmar particles “*ᄃᆞ(hma) ᄃᆞ(ᄃᆞ)*” is extracted from Myanmar Grammar book published by Department of Myanmar and Language Education, Ministry of Education in 2005. Different meanings of particles in Korean and Myanmar are classified and the unique features of case endings are highlighted in this study. The meanings of Korean case endings “*ᄃᆞ/ᄃᆞ, ᄃᆞᄃᆞ/ᄃᆞᄃᆞ*” and their functions are analysed. Likewise, the meanings of Korean case endings “*ᄃᆞ(hma) ᄃᆞ(ᄃᆞ)*” and their functions are analysed. Based on the results, similarities and differences between particles in Myanmar and Korean languages are compared and contrasted.

3. Results and Discussion

3.1 Meaning and Classification of Particles in Korean

Particle is one of the parts of speech in Korean. Parts of speech indicate different grammatical features of a word. There are nine parts of speech in Korean, namely – noun, pronoun, numeral, verb, adjective, unanjugation adjective or modifier, adverb, exclamation, interjection and postposition¹.

Postposition can be classified into three parts – case ending, special postposition and joining postposition. Case ending is a postposition which describes grammatical features of independence morpheme. There are nominative subjective case, objective case, meter, predicative, the vocative case, an adverbial and adjective. Special postposition is a postposition which describes the meanings of the combination of words which can stand independently whereas joining postposition has the function of associating two words. There are nine parts of speech in Myanmar. Parts of speech indicate the function of a word spoken to get the meaning. Nine parts of speech in Myanmar are classified as noun, pronoun, verb, adjective, adverb,

¹ The Use of Korean Grammar for Foreigners, 2005, pp.18

postpositional marker, conjunctions, particles and interjection.¹ Myanmar Grammar(2005) focuses on written grammar. Postpositional markers are used as suffixes after nouns or pronouns and they identify whether the given noun or pronoun is subject or object. Moreover, they are used as suffixed after verbs and they indicate time and types of verbs. Conjunctions are words that connect either other words or sentences or meaning reciprocally. Particles support the meanings of noun, pronoun, adjective, verb and adverb.

Myanmar Grammar (2005) is used to study grammar while learning Myanmar as a second language, yet the book only focuses on written grammar. There are differences in spoken language and written language in Myanmar and there is no stability of grammar usage. Therefore, the grammatical function of “ရှ်(hma) ဝါ(ဝံ)” in Myanmar is different depending on the sentence. This research analyses different functions of “ရှ်(hma) ဝါ(ဝံ)” in a sentence. Grammatical usages in Myanmar Grammar (2005), which is traditionally used, are found to have different grammatical functions in spoken languages.

3.2 The Meaning of “에/에/, 에서/에ś/” in Korean Language

The meaning of Korean case ending “에/에/” is semantically analysed. The Use of Korean Language for foreigners published by national Korean Center (2005) states that the meaning of “에/에/” shows location, time, reason, direction, purpose, object, standard, unit, receiver of a behavior, abstract fact and state and quality. It is used to support the superior word or add the front word. “에/에/” is used as a comparison when more than two things are combined. Its usages can be seen in the following sentences.

e.g (1). 부모님은 대전에 살고 계십니다.(shows location)

(2). 내일은 한시에 만나요. (shows time)

(3). 서울에 오니 사람도 많고 공기도 탁해 답답하군요.(shows direction)

(4). 비에 옷이 다 젖었네. (shows reason)

(5). 돈을 지갑에 넣어 두어라.(shows receiver)

(6). 옷이 마음에 안 들어요. (shows behaviour)

(7). 칼에 손을 베었어요. (identifies object)

(8). 보약은 허약해진 몸에 특히 좋다. (identifies purpose)

(9). 그의 실력은 전문가에 가까웠다.(identifies purpose)

(10). 더운 날씨에 건강히 잘 지내시는지요? (identifies situation)

¹ Myanmar Commission, Myanmar Grammar, 1975-2005, pp-69

- (11). 수박은 한 개에 만 원입니다. (shows number)
- (12). 총무에 그 사람이 제격이다. (shows position)
- (13). 이 문제에 관한 의견을 말씀해 바랍니다. (shows indication)
- (14). 3 에 5 를 더하면 8 이 된다. (shows combination)
- (15). 영수는 생일 선물로 연필에 가방에 장난감에 이것저것 많이 받았다.
(shows comparison)

According to the book “ The Use of Korean Grammar”(2005) for foreigners published by National Korean Center, " 에서/ésð/" shows location, departure, time etc.

- e.g (16). 보통 오전에는 학교에서 공부해요. (shows location)
- (17). 학교에서 가면 얼마 걸리겠어요? (shows departure)
 - (18). 너에게 조금이나마 도움이 되고자 하는 뜻에 한 마디만 하겠다. (shows reason)
 - (19).세상에 가장 아름다운 것이 바로 사랑이다. (shows collectivity and background)
 - (20).이 상황에서 어떻게 더 좋아질 수가 있겠어요?(shows compared thing)
 - (21).정부에서 실시한 조사 결과가 발표되었다. (shows subject)

3.3 Comparison of “에/é/” and “에서/ésð/”

In Korean language, “에/é/” is used to show location, destination, place of arrival, reason and situation, whereas “에서/ésð/” is used to shows location, departure, reasons and comparison. They have semantically same grammatical usages when they are used to show location.

e.g. (22) 나는 양곤에 산다.

(23) 나는 양곤에서 산다.

Both “에” in sentence (22) and “에서/ésð/” in sentence (23) have the same grammatical usage when they are used with the verb “살다” which means “live”. Although they have the same grammatical functions, they have different meanings in the sentence.

e.g.(24) 친구가 밖에 서 있다.

(25) 친구가 밖에서 서 있다.

In sentence (31), “*ṛṣ(hma)*” is used to emphasize the speaker’s immediate thought to call the teacher and it is used as a particle that is used after a sentence. Besides, in sentence (32), “*ṛṣ(hma)*” has different grammatical function, joining two sentences “*eiṣmonṭ*” and “*iḡyer, ṭ* .

“*Ṣ(ṭó)*” in Myanmar is semantically analysed. According to Myanmar Grammar (2005) by Department of Myanmar and Language Education, Ministry of Education, it is used as a postpositional marker to show destination or arrival. Its usages can be found in the following sentences.

e.g (33) *armi ṭ aumi ṭ Ṣ(ṭó) onṭ* Mg Ba goes to school.

(34) *armi ṭ aumi ṭ Ṣ(ṭó) onṭ* Mg Ba goes to school.

In the above sentences, “*aumi ṭ* (school)” is Mg Ba’s destination or the place of arrival. “*Ṣ(ṭó)*” is used after the noun “*aumi ṭ* (school)” to emphasize that Mg Ba arrives there. However, “*Ṣ(ṭó)*” is widely used as a postpositional marker ,that shows arrival, only in written language. In spoken language, “*Ṣ*” is used instead of “*Ṣ(ṭó)*”. This can be found in sentence (34).

The usages, unique features and different usages of particles and postpositional markers in two languages are analysed with example sentences, by comparing two adverbial particles “*Ṣ/ṭ, Ṣ ṭ/ṣṭ*” in Korean and “*ṛṣ(hma), Ṣ*” in Myanmar. This can be found as follows:

It is found out that two case ending in Korean language “*Ṣ/ṭ, Ṣ ṭ/ṣṭ*” have various meanings. “*Ṣ/ṭ*” in Korean language shows location, destination, arrival, reason and situation whereas “*Ṣ/ṭ, Ṣ ṭ/ṣṭ*” shows location, departure, reason and comparison. Both of them can be used to show location, yet they have different meanings in term of the whole sentence. “*Ṣ/ṭ*” shows location while “*Ṣ/ṭ, Ṣ ṭ/ṣṭ*” shows the place where the action happens, so they are not interchangeable. In Korean grammar, words have same lexical meaning but in a sentence, they have different grammatical functions. Moreover, non-native speakers of Korean language can make mistakes in using particles since they have many grammatical functions.

Korean case ending “*Ṣ/ṭ*” is used as a postpositional marker that shows arrival. Likewise, “*Ṣ*” in Myanmar has same grammatical function. There is instability in Myanmar grammar because postpositional marker used in written language can be substituted by another one in spoken language. Korean grammar has stability because there are same particles for both spoken and written language.

Case ending “*Ṣ ṭ/ṣṭ*” in Korean shows departure and it has the same grammatical function with Myanmar word “*ṛṣ(hma)*”. However, “*ṛṣ*” is only used in written language, not in spoken language. Besides, “*ṛṣ(hma)*”, one of the postpositional marker, which is used to show departure has other grammatical functions in a sentence.

4. Conclusion

This study helps Myanmar students who are studying Korean understand the usages of “에/에/, 에서/에스/” in Korean language and “(h)ma O(θó)” in Myanmar, the use of particles in two languages, their unique features and different usages. It is found out that particles in Korean language have different connotations. Korean grammar is stable because there is no change in the usage of grammar both in spoken and written language. Postpositional markers in Myanmar have different meanings and different grammatical function when they are in isolation and within a sentence. Moreover, Myanmar grammar is instable because different grammatical units are used in written language and spoken language. Myanmar students who are studying Korean have difficulties in Korean grammar exercises because of the differences stated above. Furthermore, mother tongue influence is one of the cause of committing errors. Therefore, this study highlights similarities and differences of two languages by comparing usages of particles in two languages. People should use a language systematically because language is the main part of the society. Moreover, there are many things that should be studied in a language because language is always improving. Therefore, further researches concerning particles in Korean language and Myanmar language will be conducted in the future.

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Relationship between Women's Empowerment and Socioeconomic Status in Myanmar: An Emphasis on Participation in Household Decision Making and Experience of Domestic Violence

Mya Thandar¹, Hlaing Hlaing Moe²

Abstract

Women's empowerment is one of the United Nations Sustainable Development Goals (SDGs). The Goal 5: "Achieve gender equity and empower all women and girls" is especially aimed at improving the status of females. Women's rights and issues have become a subject of serious concern among both academicians and policymakers. This paper explores how socioeconomic characteristics shape two aspects of women's empowerment: decision making in the household and experience of domestic violence. Data for currently married women age (15-49) from the 2015-2016 Myanmar Demographic and Health Survey (MDHS) are analyzed using logistic regression analysis. This study shows that household decision-making is associated with women's employment status, age, residence, education and wealth index. Women's experience in domestic violence is related to women's employment status, residence, education, and wealth index as well as husband-wife age difference. The study highlights that age and women's employment status are major determinants of women's participation in household decision making while wealth index mainly influences on experiencing domestic violence. In acceptance of traditional gender roles, it is not sufficient to assert women's empowerment in Myanmar and there would be under reporting the prevalence of domestic violence. The results of this study could contribute to the government's efforts to mainstream the gender dimension into the country's development policies and programs.

Keywords: women's empowerment, socioeconomic status, decision-making in the household, domestic violence

1. Introduction

Since the 1990s, women have been identified as key agents of sustainable development, with women's empowerment and equity viewed as important aspects of social and economic progress. At the UN Fourth World Conference on Women, held in Beijing in 1995, women's empowerment was introduced to an expanded audience of state actors and governments.

The UN Human Development Report ranks Myanmar as 80th of 159 countries in the 2015 gender inequality index (UNDP 2016)¹. The government has been striving to achieve women's empowerment and gender equality by collaborating with the UN, non-governmental organizations (NGOs), and international nongovernmental organizations (INGOs). The government makes concerted efforts through the National Strategic Plan for the Advancement of Women (2013-2022) by the Ministry of Social Welfare, Relief, and Resettlement to empower women and to integrate gender equity in policies and programs. Research on women's empowerment supports the view that it is a multidimensional, complex and context-specific issue (Kabeer 2005)². Therefore, what is valid in one region may not be valid for other regions, while socio-cultural systems vary considerably from one setting to another, and even within the

¹ Professor, Department of Statistics, Yangon University of Economics, myathandaryie@gmail.com

² Lecturer, Department of Statistics, Yangon University of Economics, hlainghlaingmoe.moe@gmail.com

same country (Pambè et. al., 2014)³. It is necessary to study women's empowerment from the perspective of women's socioeconomic characteristics. This paper thus raises the question as to how socioeconomic factors shape two aspects of women's empowerment in Myanmar, namely decision making in the household and experience of domestic violence. Reducing violence against women, as well as enhancing their capacity to decide for themselves, is important in empowering women. This paper aims to advance the understanding of women's empowerment and domestic violence in Myanmar to contribute the government's efforts to mainstream the gender dimension into the country's development policies and programs.

2. Method

2.1 Data

Data for the analysis are drawn from the newly available national 2015-16 Myanmar Demographic and Health Survey (MDHS), which collected data for multiple indicators of demographic and health information (Ministry of Health and Sports and ICF 2017)⁴. Approval was obtained from Myanmar Ministry of Health and Sports and The DHS Program to use the datasets for this study. The MDHS data are publicly available free of charge from The DHS Program in the form of standard recode data files, at <https://www.dhsprogram.com/Data/>.

The data analysis of this study focuses only on currently married women age 15-49. Although data on 12,885 women are available from the 2015-16 MDHS, among them 7,870 are currently married women age 15-49. To obtain nationally representative estimates, sampling weight was applied and the final weighted samples included 7,758 currently married women age 15-49 were considered.

The MFDHS 2015-16 provides information on participation in decision making and domestic violence, among other things, in Myanmar. Our research focuses on women who were currently married and who successfully completed the interview on domestic violence, yielding a sample size of 3059 which is only 40% of currently married women. The main concerns are that questions concerning domestic violence might not be response due to of cultural norms, among other reasons and women might be hesitant these issues to strangers, as it is seriously perceived in the community.

2.2 Key Variables

The two outcome variables analyzed in this study are women's participation in decision making and women's report of their experience of domestic violence. Women's participation in decision making was assessed through three types of household decision-making: woman's own health care, major household purchases, and visits to family or relatives. For each of these three dimensions of decision-making, women are asked who usually makes the decisions. Each question had five response options: respondent alone, respondent and husband/partner, husband/partner alone; someone else; and others. We created a binary variable for each type of decision-making by grouping together the first two responses in which women participate in decision-making, coded as 1, and other responses together in which she has no say in decision making, coded as 0.

In the DHS domestic violence module, women were asked a series of questions about their experience of domestic violence by husband/partner, i.e. physical (if the respondent has ever been: pushed, shook or had something thrown at; slapped; punched with fist or hit by something harmful; kicked or dragged; strangled or burnt; threatened with a weapon); emotional (if the respondent has ever been humiliated or threatened with harm) and sexual violence (if the respondent has ever been physically forced into unwanted sex or other unwanted sexual acts). Each question has four responses for married women: never, often, sometimes, yes but not in the last 12 months. In this study, we considered experience of domestic violence within the last 12 months prior to the survey. Women reporting that they experienced violence “often” or “sometimes” were categorized as having experienced domestic violence in the last 12 months and coded as 1, and other responses were categorized as no experience of domestic violence in the last 12 months and coded as 0.

The key independent variables used in the study are women’s education, employment status, and household wealth index. Women’s education is coded into four categories: not educated, primary, secondary and higher. Employment status includes two categories: not employed, and employed. Wealth index is categorized as, poor, middle, and rich. The wealth indexes are constructed using information on household ownership of consumer items. This recoded variable is included in the MDHS 2015-16 data.

2.3 Statistical Analysis

A binary logistic regression model is used when the dependent variable is dichotomous such as participation in decision-making and experience domestic violence (Fox, 1999)⁵. Logistic regression provides odd ratios, which represent the ratio of two probabilities: the probability that the event occur (P) and the probability that it does not occur (1-P) (Wooldridge, 2013)⁶. The odds ratio is interpreted in terms of deviation from a reference category. For women’s participation in household decision making, three separate models are fitted, one for each of the three variables. For the three domestic violence outcomes – physical violence, sexual violence and emotional violence, separate logistic regression models were built to examine their association with women’s socioeconomic characteristics. A number of socioeconomic and demographic variables were controlled for in the regressions, including women’s age, education, employment status, wealth index, spousal age difference, spousal education difference and area of residence.

3. Results and Discussion

3.1 Descriptive Analysis

Table 1 shows that information on socioeconomic and demographic characteristics of women included in this study as well as descriptive statistics on their participation in household decision making and experience of domestic violence in last 12 months. It is found that nearly 75% of the women are likely to live in rural areas, about 50% of those have only primary level of education, around two-third of the women are younger than their husbands and more than 40% of those are poor. Approximately two-third of women is employed and more than half of them have equal education level with their husbands.

Table 1. Percent Distribution of Women who Participate in Household Decision Making and who Experienced Various Forms of Domestic Violence by Measures of Socioeconomic Status and Background Characteristics

Characteristics	Percent	Decision making			Domestic violence		
		oman's own health care	aking major household purchase	isits to family or relatives	Physical violence	Emotional violence	Sexual violence
Socioeconomic Status							
Education							
No education	15.4	81.1	73.3	86.7	10.5	15.9	4.2
Primary	47.1	82.6	74.8	87.3	13.2	14.4	3.5
Secondary	29.5	84.1	73.5	87.5	10.8	13.8	3.1
Higher	8.0	90.5	76.6	89.4	7.9	7.4	0.9
Employment							
No	36.3	82.0	72.1	85.1	10.7	13.3	3.6
Yes	63.7	84.2	75.6	89.2	12.3	14.3	3.1
Wealth index							
Poor	41.3	79.9	74.3	85.3	14.0	17.2	4.1
Middle	20.1	84.9	73.0	88.9	11.4	11.9	3.4
Rich	38.6	86.5	75.1	89.6	8.9	11.3	2.1
Background Characteristics							
Age							
15-19	3.0	69.7	54.4	81.1	12.9	20.3	2.7
20-24	10.7	76.1	62.1	81.9	12.6	13.9	4.3
25-29	16.2	84.2	72.9	85.8	12.2	15.2	3.8
30-34	19.4	85.7	75.4	87.6	12.1	13.0	2.8
35-39	19.1	84.3	77.0	89.9	11.2	13.1	3.0
40-44	16.5	84.7	79.5	89.5	12.7	13.3	3.4
45-49	15.1	85.0	78.1	90.3	9.0	14.9	3.3
Residence							
Rural	73.9	81.8	73.7	87.2	12.2	14.1	3.4
Urban	26.1	88.1	76.3	89.0	10.1	13.4	3.1
Husband-wife age difference							
Wife is same age	10.5	84.7	75.0	88.5	13.1	16.4	2.2
Wife is older	21.5	84.8	75.8	89.0	8.5	13.4	3.0
Wife is young	68.0	82.8	73.8	87.2	12.5	13.7	3.6
Husband-wife education difference							
Both have equal education	54.6	83.5	74.2	87.4	11.9	13.9	3.7
Wife has more education	20.0	84.5	74.4	88.3	11.2	16.2	3.1
Husband has more education	25.4	82.4	74.6	87.9	11.7	12.3	2.7

Source: Authors' Calculations from 2015-16 MDHS Data

Women's participation in Household Decision Making

Analysis of women's participation in household decision making shows that women with higher level of education and employed women are more likely to participate in all three types of decision making, similar to rich women and those from urban area. The older the women the more they participate for visits to family or relatives. Also, the younger the wife, the lower the women's involvement in all three types of decision making. When the wife has more education, they are more likely to participate in all three types of decision making.

Women's Experience of Domestic Violence

As to women's experience of domestic violence, women with higher level of education, rich women and those from urban are less likely to experience all three types of domestic violence. When considering physical violence and emotional violence, employed women are more likely to report these forms of domestic violence while the older the wife, they are less likely to report them. Concerning sexual violence, employed women are less likely to report their experience. When wife has more education, they are less likely to report physical violence whereas if husband has more education, women are less likely to report emotional violence. However, the sexual violence does not show clear patterns by background characteristics except for residence.

3.2 Multivariate Analysis

Table 2 provides the results on the binary logistic analysis on the determinants of both three aspects of decision making and domestic violence. The results present the adjusted associations between each of the three measures of socioeconomic status and each of the aspects of two outcomes variables, after controlling for key characteristics that could confound the association.

Socioeconomic Determinants of Decision Making

Conditional on these key background variables, it is found that employed women are more likely to participate in all three types of decision making. Woman's decision making on own health care appears higher among women with higher education. The women participating in decisions for visits to family and relatives are higher among women living in middle and rich household quintile than poor women, but wealth status does not have a significant association with women's decision making on large household purchases. The results also highlight women's age as an important determinant of household decision making. Older women are more likely to participate in all three types of household decision making. In terms of place of residence, women in urban are more likely to participate in decision making on own health care. However, findings do not reveal significant differences between women by spousal age difference and education difference.

Socioeconomic Determinants of Domestic Violence

Of the three measures of socioeconomic status, only wealth quintile is significantly associated with women's experience of all three types domestic of violence. The rich women are less likely to experience the physical and sexual violence. Similarly, wealth status' effect is significant for middle and rich women for emotional violence. After adjusting for control variables, women with higher education have less likely to experience emotional violence than women with no education. But, the results do not show significant association between education level of women and experiencing other two types of domestic violence. Unexpectedly, employed women are more likely to experience the physical violence than those are unemployed. The differences are not significant for urban-rural residence, except that experiencing emotional violence is greater for urban women. As for background variables, age of women and education difference are not statistically significant for all three types of domestic violence. Regarding husband-wife age difference is significant for physical and emotional violence. If wife is older than husband, she is less likely to experience physical and emotional violence than the wife's age is same with husband. Similarly, wife is younger than husband; she is less likely to experience emotional violence than woman' age is same with him.

Table 2. Relationship between Measures of Socioeconomic Characteristics and Women's Participation in Household Decision Making, and Women's Experience of Domestic Violence among Married Women Age 15-49 in Myanmar

Characteristics	Decision making			Domestic violence		
	Woman's own health care	Making major household purchase	Visits to family or relatives	Physical violence	Emotional violence	Sexual violence
Constant	1.71**	1.02	2.96***	0.13***	0.31***	0.02***
Socioeconomic Status						
Education						
No education (reference)	1	1	1	1	1	1
Primary	1.11	1.11	1.14	1.40	1.05	0.96
Secondary	1.11	1.16	1.07	1.18	0.83	0.75
Higher	1.51*	1.17	1.00	0.92	0.42**	0.63
Employment						
No (reference)	1	1	1	1	1	1
Yes	1.16*	1.16**	1.39***	1.34**	1.12	1.13
Wealth index						
Poor (reference)	1	1	1	1	1	1
Middle	1.32***	0.86	1.29**	0.86	0.55***	0.76
Rich	1.26**	0.93	1.44***	0.58***	0.58***	0.29***
Background Characteristics						
Age						
15-19 (reference)	1	1	1	1	1	1
20-24	1.36*	1.38*	1.04	0.99	0.71	1.81
25-29	2.19***	2.23***	1.33	0.98	0.88	1.31
30-34	2.45***	2.53***	1.51*	0.94	0.62	0.83
35-39	2.15***	2.76***	1.85***	0.90	0.71	1.17
40-44	2.21***	3.22***	1.77***	0.92	0.69	1.07
45-49	2.23***	3.00***	1.89***	0.70	0.66	1.1
Residence						
Rural (reference)	1	1	1	1	1	1
Urban	1.42***	1.15	1.03	1.06	1.43**	1.31
Husband-wife age difference						
Wife is same age (reference)	1	1	1	1	1	1
Wife is older	0.98	0.98	1.01	0.57**	0.71*	1.76
Wife is young	0.94	0.99	0.94	0.82	0.63**	1.72
Husband-wife education difference						
Both have equal education (reference)	1	1	1	1	1	1
Wife has more education	1.06	1.03	1.15	1.20	1.19	0.86
Husband has more education	0.93	1.02	1.01	0.95	0.87	0.74

Note: ***, **, * represent 1%, 5% and 10% level of significance Source: Authors' Calculations from 2015-16 MDHS Data

4. Conclusions

This paper focuses on the relationship between women's socioeconomic characteristics and their empowerment in the household (participation in decision making in the couple and experience of domestic violence) in Myanmar. It could be that the socioeconomic factors included in this study are more closely related to women's decision making, than to domestic violence. The overall findings of this study raise questions about the poor link between domestic violence and socioeconomic status and the low prevalence of reported domestic violence in Myanmar. Factors surrounding women's empowerment form part of the causes of domestic violence. Whatever their level of education or contribution to household wealth, having a conjugal home is a central issue for women in Myanmar. It might be that regardless of the level of education and financial contribution to household wealth, women in Myanmar are respectful of the traditional gender norms and consequently might not dispute the authority of the husband as chief of the family, what glaringly contributes to an apparent harmony in couple relationships. One of the major concerns highlighted by this study is that domestic violence in Myanmar might be under-reported because of cultural norms, among other reasons. Women might be reluctant to disclose intimate issues to strangers, as it is badly perceived in the society (Randall et al. 2013)⁷. Some studies have also found that the estimated prevalence of domestic violence is lower in the DHS than in focused surveys (Ellsberg et. al., 2001)⁸. Other caveat might be that DHS data are cross-sectional and therefore do not help capture causal relationships between explanatory factors and main outcome variables. This study adds an insight into the understanding of women's empowerment in Myanmar, where to our knowledge there is a scarcity of studies on this issue. Our findings confirm the major role of education for improving women's status in terms of participation in the decision making in the household. It provides thus additional arguments for the continuity of actions in favour of girl's education at higher levels of schooling in addition to the primary level. The development of national policies and programs aiming to substantially increase women's status in Myanmar should foster positive socio-cultural attitudes toward gender equality.

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A Critical Study of Gender Representation in Life (Intermediate) Coursebook

Su Khine Oo¹

Abstract

Life is a six-level series which focuses on communicative skills in English through the use of real-world content. It encourages students to think critically through informative topics from real-life communication. This paper investigates a critical study of gender representation found in listening comprehension exercises along with pictures in Life (Intermediate). Mixed method which includes descriptive qualitative as well as quantitative approach was used to reveal visibility, gender firstness, gender neutral and gender specific nouns, and gender stereotypes with reference to Porreca's (1984) framework. The importance of gender-based characters was measured using Leiskin's (2001) framework. The results of the research showed that dominance of female representation can be found in dialogues related to beliefs and traditions whereas male dominance can be found in dialogues concerning doubtful thoughts. Only limited number of gender stereotypes was found due to the fact that being published by National Geographic Learning, recording includes characters who are created as authentic as possible to the current trend in which most male and female share the same interest like travelling and music. It is hoped that this paper will be useful for language instructors and students who study English from the point of view of gender representation and stereotypes.

Keywords: gender representation, visibility, gender firstness, gender neutral and specific nouns, gender stereotypes

1. Introduction

Tannenbaum et al. (2016) claimed that "Gender roles, gender identity, gender relations, and institutionalized gender influence the way in which an implementation strategy works, for whom, under what circumstances and why." Gender representation has become one of the most controversial topics in language learning and teaching continuum especially in the 21st century. People no longer go along with the outdated sayings and proverbs like *Let women stay at home and hold their peace* by Aeschylus in 467 B.C., *Woman's place is in the kitchen* by Morrison in 1878, *Woman's place is in the home* by Levesen in 1945. Söğüt (2018) raised the awareness on gender representation in teaching and learning process by insisting that it has "the potential to affect learners and teacher in terms of their attitudes, mindsets, and values." This paper therefore attempts to find out gender representation in listening comprehension exercises of Life (Intermediate) Course book which has been used at English Language Proficiency Course (Basic II) by CHRD in Yangon University of Foreign Languages. It is found that most previous works on gender representation were based on coursebooks specifically written to fit the culture of respective learners. For this reason, contents are culture-bound and reflect their own culture as these coursebooks were designed for local use. However, in this paper, the material chosen to analyze is a coursebook meant for international adult English learners and therefore Myanmar culture is not found in this coursebook. Therefore, the results of this research are also dramatically different from those of previous researches.

¹ Dr., Assistant Lecturer, Department of English, Yangon University of Foreign Languages, dkosyufl@gmail.com

1.2 Aim and Objectives

The aim of this paper is to engage in critical analysis of gender representation found in the coursebook *Life* (Intermediate).

Objectives of this paper are:

- (1) To identify gender visibility, gender firstness, gender neutral and specific nouns, gender stereotypes in selected coursebook
- (2) To explore different jobs and interests based on gender
- (3) To observe attitudes and beliefs of different gender from their dialogues
- (4) To highlight how both men and women share the same role in society

This paper attempts to answer the following research questions:

- (1) How did the coursebook writer assign roles to men and women?
- (2) To what extent do men and women share same interests and attitudes towards different topics used?
- (3) What are the roles of men and women based on content of different units?

1.3 Literature Survey

Gender representation in ELT context

In general, gender is a naturally gifted criterion which pre-defines the abilities of males and females. In this 21st century, Gender Equality Commission of the Council of Europe (2015) ascertains that the historical relations of power of men over women as well as sexist attitudes impeded the advancement of women. Gender representation goes beyond simply being male or female but is related to implied meanings and expectations in terms of society and culture.

According to the research done in Asian and Middle Eastern countries by Ansary and Babaii (2003) cited in Hall (2014), gender stereotypes found in some coursebooks like men jobs are related to science, arts, army, politics and medicine. The most significant job allocation for women in most ELT coursebooks are related to education like teachers, educational consultants, research consultants and to government like government officers.

According to Mustapha and Mills (2015), "some teachers and students are minimally aware of gender stereotyping in their coursebooks while others deny or ignore its existence." They also pointed out the importance of gender issues in ELT context related to society, religion and culture. ELT teachers should be aware and should raise awareness among students to such differences in terms of target language relativity and determinism, and those of mother tongue.

1.4 Porreca's (1984) framework

Porreca (1984) proposed different aspects of gender representation known as the frequency of occurrence of males and females, gender firstness, or the frequency of context in which males or females are presented first and the frequency of nouns designating male or female characters or gender stereotypes. In doing critical analysis of gender representation, she suggested finding out how many times male and female characters are found, how many times male or female characters appear first and how these characters are assigned roles in society.

In addition, she focused on omission of gender in the text, occupational visibility, masculine generic constructions and adjectives used in gender representation. She highlighted some situations in coursebooks in which male or female is not important and therefore omission of gender is found. She believed that some roles like teacher, accountant and housekeeper are commonly designated to female characters whereas those such as politicians, computer programmers and soldiers are assigned to males. She attempted to take linguistic forms that are used mostly by men into consideration in observing gender differences. In accordance with Yule (2014), generic words and constructions vary from gender to gender. Women language is poised and polite whereas that of men is dominant and influential on others.

1.5 Leiskin's (2001) framework

Leiskin (2001) proposed systematic method of analysis in measuring the importance of roles the characters have. She claimed that gender bias did exist in communicative dominance and social dominance. Communicative dominance is characterized by frequent turns of speaking in dominant manner where as social dominance refers to "the maintenance and stability of group-based social hierarchies."

Leiskin insisted that "People who are centers of conversations, topics of writing, or the information focus would seem to have more social prominence than people who are not." She elaborated the dominance of gender depending on different contextual background. For example, if the theme of conversation is about environmental conservation, it is likely that men will lead the floor whereas women-led conversations are mostly about babysitting and beauty.

1.6 Life (Intermediate) Coursebook

Life is a coursebook which comes in six levels as adult series published by National Geographic Learning. It helps adult learners improve their English language proficiency through exploration of the world. All of its series include real-life experiences, attractive visuals, interesting articles and interactive videos which certainly help adults learn English in creative atmosphere. Main components of every series are comprehensive grammar, language functions, vocabulary, pronunciation and language skills which are designed to enrich communicative and creative skills. At the end of every unit, in Review sections, self-reflective checklists are included so that students can reflect whether they can do things in checklist efficiently. This can serve as a ruler to measure the success of teaching and learning processes.

In terms of CEFR, the level of Life (Intermediate) chosen to analyze is B1. Although most grammar sections are familiar to adult learners of CHRD evening class, they can gain benefit from vivid grammar explanations and practice exercises. In addition, most students believe that they can engage in vocabulary enrichment because of interesting topics used. What is more, they can practise all four language skills of English in addition to critical thinking and creative skills.

1.7 Previous Researches

Nagatomo (2010) investigated "A Critical Analysis of Gender Representation in an EFL Textbook," using Conversation Topics for Japanese University Students in accordance with theoretical frameworks by Porreca (1978) and Leiskin (2001). The findings of her research showed that female characters were more significant and were given more active roles, and that social dominance was not found in terms of sentence structure.

Hall (2014) did a research on "Gender Representation in Current EFL Textbooks [Right Path to English I and II] in Iranian Secondary Schools" through systematic quantitative approach. His focuses were on gender visibility and gender-oriented dialogues using the framework of of Porreca (1984). He then used qualitative approach in identifying "(1) male-centred language including: (a) firstness and (b) masculine generic construction; (2) gender-linked occupation possibilities; (3) distribution of household responsibilities, and (4) distribution of spare time and leisure activities" The results of his research proved that there was unequal distribution of gender representation in selected textbooks.

Hafidhoh, et.al. (2018) conducted a research on Gender Representation on Reading Texts, Dialogues and Pictures in "When English Rings a Bell" for Grade VII Junior High School." Their focus was on gender representation found in reading texts, dialogues and illustrations found in the coursebook. Descriptive qualitative approach and Porreca's (1984) gender analysis was used to identify differences and similarities in both representations. Outcomes of their research ascertained that female dominance was found in reading texts and dialogues, but that male dominance was observed in illustrations.

2. Research Methods

Research methods serve as a foundational framework for the emergence of reliable research results. Being the lifeblood of an effective research, research methods have been given the first priority in conducting every empirical research. This paper was carried out using both quantitative and descriptive qualitative research methods. Firstly, the data on gender representation were collected from selected coursebook Life (Intermediate) and were statistically entered. Then using Porreca's (1984) and Leiskin's (2001) frameworks, collected data were analyzed. Analysis section was divided into sections: (1) Gender-linked nouns used for designation, (2) Gender-related leisure activities, (3) Gender visibility, and (4) Gender firstness. The third step known as interpretation of analyzed data was done through descriptive qualitative method. Gender stereotypes, Communicative dominance and social dominance found in this coursebook were discussed in Results and Discussion section.

2.1 Analysis of Gender Representation in Life (Intermediate)

Gender representation plays a vital role in coursebooks as it can affect the beliefs and attitudes of teachers and learners in teaching and learning processes. Coursebooks which are not specifically meant for target learners are designed as scrupulously as possible not to have negative impact on gender representation in different cultures.

The following is the table which shows gender-linked nouns related to designations for males and females. M refers to Male and F refers to Female.

Table 1: Gender Representation Related to Occupations

No	Unit	Occupation	M	F	No	Unit	Occupation	M	F
1	1a	IT student	0	1	33	6d	Waiter	1	0
2		Finance assistant	1	0	34	7	Architect	0	1
3		Sales assistant	0	1	35	7a	Photographer	4	0
4	1c	Anthropologist	2	0	36	7b	Presenter	0	1
5		primate researcher	0	1	37	7b	Ecologist	1	0
6	1d	art director	1	0	38	7d	estate agent	1	0
7		electronics company staff	0	1	39	8b	Artist	1	0
8	1f	Peruvian weaver	1	0	40	8c	Aviator	0	1
9		Gold-medal winning swimmer	0	1	41		Navigator	1	0
10	2a	Presenter	1	0	42		Archaeologist	0	1
11	2b	Dancer	1	0	43		Geneticist	1	0
12	2e	Film director	1	0	44	9	market researcher	1	0
13	2f	Taiko master	1	0	45	9a	police officer	1	0
14	3	Radio presenter	0	1	46	9b	shopping expert	0	1
15	3a	Raft woman	0	1	47	9d	Sales assistant	1	0
16	3c	Marine ecologist	1	0	48		Sales operator	0	1
17	3f	Project Manager	1	0	49	10	marathon athlete	1	0
18	4	Office staff	1	2	50	10a	Presenter	1	0
19	4a	Accountant	0	2	51	10b	President of the Mars society	1	0
20		Nurse	0	1	52	10c	Runner	0	1
21		Senior Technician	1	0	53		Hitchhiker	1	0
22		Farmer	1	0	54	11a	Survival International Spokesman	1	0
23		Manager	1	0	55	11b	travel journalist	0	1
24	4b	Gas station Attendant	0	1	56	11c	Technician	1	0
25		factory worker	0	1	57	11d	Secretary	0	1
26		Student	0	1	58	11R	Google's executive chairman	1	0
27	5a	Biologist	1	0	59	12	Interpreter	0	1
28		Conservationist	1	0	60		Fisherman	1	0
29	5b	Holidaymaker	1	0	61	12a	wildlife researcher	0	1
30	5d	Tour guide	0	1	62		Biologist	0	1
31	6c	Neuroscientist	1	0	63	12b	Explorer	1	0
32		restaurant owner	1	0	64	12c	Samurai	1	0
					65	12R	wildlife photographer	1	0

It is said that depending on gender, they have different interests for pastime activities. For instance, teenage boys would consider playing football while girls would think of going shopping for clothes.

Table 2: Gender Representation Related to Leisure Activities

No	Unit	Leisure	M	F	No	Unit	Leisure	M	F
1	2d	Going out	1	1	5	5b	Going on a trip	2	2
2	3b	Travelling	0	1	6	9c	mountaineering	1	0
3	3e	Picnic	1	0	7	11f	Skiing	0	2
4	5	Going on a round-the-world trip	0	1					

Gender visibility was analyzed using significant visual aids in all 12 units of coursebook. Gender visibility based on visuals in Life (Intermediate) coursebook is as follows.

Table 3: Frequency of Gender Visibility in Visuals

No	Unit	Description	M	F	No	Unit	Description	M	F
1	1	Family event	0	2	30	7f	Immigrants	3	0
2	1a	Using mobile phone	1	0	31	8c	Pilot	0	1
3		Quechua high school student	1	0	32	9b	Shopping expert	0	1
4	1b	Birthday party	0	2	33		Shopper	0	1
5	1d	Job interview	1	2	34	9f	Buyer	1	0
6	1f	Peruvian weaver	1	0	35		Seller	1	0
7	1R	Olympic athlete	0	1	36	10	Marathon runners	1	1
8	2	Mexican folk dancer	0	2	37	10a	Doctor	1	0
9	2a	musician	4	0	38		Patient	0	1
10	2b	Singer	1	0	39	10c	Skier	1	0
11		Hip Hop dancer	3	2	40		Refugee	1	0
12	2d	Film director	1	0	41	10d	Police	1	0
13	2f	Taiko master	1	0	42		Victim	1	0
14	3	Water fetcher	0	12	43	10f	Hiker	1	0
15	3a	Raft rower	3	0	44	11	Koro language speaker	0	1
16	3c	Adventurer	1	0	45		Linguist	1	0
17	4	Children playing inside old jeep	3	0	46	11a	Tribe	4	1
18	4a	Bikers	3	0	47	11e	Residents' meeting	1	2
19	4b	Gas station attendant	0	1	48	11f	Antarctic walkers	0	2
20		Factory worker	0	1	49	11R	Newspaper reader	1	0
21		Graduate	0	1	50	12	Fisherman	1	0
22		Student	0	1	51	12a	Wildlife researcher	0	1
23	4c	Chinese factory workers	11	7	52		Biologist	0	1
24	4f	Dancer	0	1	53	12b	Man eating his boots	1	0
25	4f	Businessmen	2	0	54	12c	Samurai	1	0
26	5a	Long walker	1	0	55	12d	Man looking at his watch	1	0
27	5c	Hiker	1	0	56	12e	Au pair	0	1
28	6b	Man engaging in imaginary eating	1	0	57		Host	2	2
29	7c	Amateur singer	4	0					

The following table shows the frequency of gender firstness in listening comprehension of Life (Intermediate) coursebook.

Table 4: Frequency and Percentage of Gender Firstness

Male (%)	Female (%)
38 (47.5%)	42 52.5%)

3. Results and Discussion

With regard to the analysis, it was found that coursebook writer of Life (Intermediate) attempted to give equal role of importance in most parts of the coursebook although standard deviations of occupation and visibility were higher than other areas. To start with, it was observed that the role of office assistant was shared by both males and females in Unit 4 Open-up. What was surprising in findings of this research is culture-bound. Some gender-linked occupations are no longer confined to gender but their professionalism and discipline. For instance, according to Table 1, it was seen that an IT student, aviator, archeologist, travel journalist, and wildlife researcher are females. It deviated the widely accepted relativism that those jobs are mostly done by males. It was even noted that people doing extreme sports like white water rafting in Unit 3a and walkers in Antarctica in Unit 11f are females. These extreme sports are done mostly by male athletes but this coursebook tends to highlight gender equality in terms of physical ability and mental strength. This wanes the power of male dominance over females as the latter have engaged in such male-related activities nowadays.

With regard to analysis of this paper, it can be observed that occupations like weaver are confined to females only in Myanmar society. There is a substantial number of occupations which fit the view of Myanmar society as well. Most females' jobs are related to public relations like interviewer, dancers, secretaries, radio presenters and so on. Most males' jobs are related to hard infrastructure like technicians, neuroscientists and navigators, and to politics and those at the top of hierarchical position like President of the Mars society, spokesman and executive chairman. In addition, all musicians and singers illustrated in this coursebook like those in Unit 2a are males.

In terms of leisure activities, it was obvious that both males and females are interested in going out for dinner or for fun in Unit 2d, and in going on a trip or travelling in Unit 3b and 5b. Due to diachronic changes in beliefs and attitudes, females are no longer absorbed in their household activities but in outdoor activities like going out for shopping and travelling to different places. It was found that gender-linked designations were assigned to males and females based on widely accepted values in that native society. For instance, in Unit 1a, Quechua high school student wearing traditional costume is male as only males are allowed to complete their studies until high school. In Unit 2f, Taiko master is a male because of common beliefs and culture in Japanese society as it is related to Buddhist and Shinto religions, and Taiko is regarded as a sacred instrument to be play by males only. 12 female water fetchers from Indian villages in Unit 3 Open-Up still reflects females from some distant villages of Myanmar. Occupations which are considered dangerous like Hiker in Unit 10f, fishermen in Unit 12 and explorer in Unit 12b are normally done by males mostly in societies.

Although most Asian society gives more role to males in conversations, results of this paper proved that both males and females were given equal importance to reinforce gender equality. It was

found that even conversations related to extreme sports and adventures like in Unit 3a were led by females and they had communicative dominance over males as they served the central role in these conversations. The following Table 5 and Figure 1 show the overall results of the research.

Table 5. Gender Representation in Life (Intermediate) Coursebook

Gender Representation	Male	Female	Standard Deviation
Occupation	44	28	11
Leisure Activities	5	7	1
Visibility	69	51	13
Firstness	38	42	3
Total	156	128	20
Overall Percentage	55	45	7

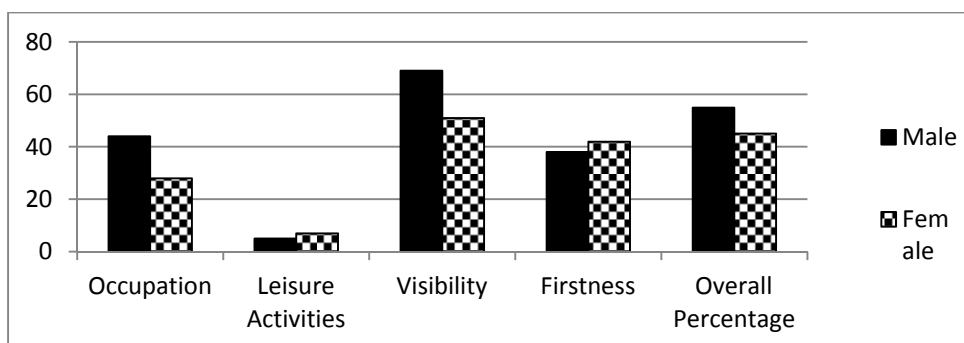


Figure 1: Gender Representation in Life (Intermediate) Coursebook

Overall results of this research as shown in Table 5 and Figure 1 are in line with those of Hafidhoh, et.al. (2018) in that male dominance (a total of 69 times) over female (a total of 51 times) was found in visibility through illustrations. It is likely that coursebook writers attempt to preserve widely accepted values and at the same time raise awareness on coursebook users that the role of women has become as significant as that of men in different cultures these days. It attempts to balance gender representation in terms of gender visibility, gender firstness, gender-free occupations and gender-free activities as much as possible. However, male dominance was found in Occupation (44) and Visibility (69) whilst female dominance was observed in Leisure Activities (7) and Firstness (42). Coursebook writers did not give dominance to only one type of gender. It is one of the factors which make this coursebook applicable and acceptable by both teachers and learners from different countries.

Similar to findings of Nagatomo (2010) in "A Critical Analysis of Gender Representation in an EFL Textbook," female characters (52.5%) were slightly more significant than males in terms of gender firstness found in selected coursebook. Unlike the results of Nagatomo's research, gender-related household activities except fetching water were not found in selected coursebook. As the main purpose of National Geographic Learning is to help its users learn English through exploration of the world, the coursebook does not stick to only one culture but to those around the world.

Like the findings of Hall (2014), male dominance (55%) was found in overall percentage of gender representation. As the standard deviation for overall percentage was only 7, it can be assumed that significant dominance was not found. Unlike the research done by Hall, the significance of male-centered language was not found as more or less equal importance was given in different contexts in the coursebook. Contrary to his research, both men and women shared most of the spare time and leisure activities like going out and travelling. Approximately equal distribution of gender representation was observed through values and traditions around the world.

4. Conclusion

To wind up briefly, this paper attempts to highlight gender representation in Life (Intermediate) with focus on gender-related designations, gender-related leisure activities, gender visibility and gender firstness. With regard to statistical data and data interpretation based on frameworks of Porreca (1984) and Leiskin (2001), it can be concluded that an effective coursebook meant for general adult users is free from gender imbalance and bias on gender representation so that it does not have negative impact on understanding of widely accepted values and beliefs of users around the world who are trying to improve their language proficiency through observing different contexts worldwide. Further researches can be done on other coursebooks relating representation of gender and cultural notes. It is hoped that this paper will be useful for those who are interested in observing the role of gender representation in Life series.

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