

AN ANALYTICAL STUDY ON PEDAGOGICAL KNOWLEDGE AND PRACTICES OF TEACHER EDUCATORS IN EDUCATION COLLEGES

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Abstract

This paper intended to study pedagogical knowledge and practices of teacher educators in education colleges, There are two phases in this study, namely, quantitative study (questionnaire survey) and qualitative study (interviews and observation). Descriptive research method was used in this study. Two sets of questionnaires developed by the researcher: questionnaire for teacher educators' pedagogical knowledge and questionnaire for teacher educators' practices concerning their pedagogical knowledge were used. The reliability coefficient (Cronbach α) was 0.98 for the questionnaire for teacher educators' practices. In qualitative study, interview and observation were conducted. Out of twenty-five Education Colleges, three hundred and twenty teacher educators from eight Education Colleges were selected as subjects by the use of equal-sized stratified sampling method. Among them, twenty four teacher educators were selected as participants in qualitative study. Item Percent Correct (IPC), Descriptive statistics, Independent Samples *t*-Test, One-way ANOVA, Tukey HSD test, and multiple regression were used for the data analysis. The level of pedagogical knowledge and practices of teacher educators were found to be at satisfactory and above satisfactory except from three teacher educators who were at below satisfactory in pedagogical knowledge. There were statistically significant differences in pedagogical knowledge of teacher educators grouped by qualifications and teaching subject. Similarly, significant differences were found in teacher educators' practices in groups divided by gender, age, position, and service. The first predictor affecting pedagogical knowledge was teaching subject and the second one is qualifications. The gap between knowledge and practice in some dimensions of pedagogical knowledge was suggested by qualitative findings.

Keywords: Pedagogy, Pedagogical Knowledge, Teacher Educators

Introduction

In the present era, 21st century, education must focus on nurturing the whole child_ morally, intellectually, physically, socially and aesthetically. Students need to acquire new knowledge, skills and dispositions to ensure their survival and success as individuals, as members of the community, and as valuable citizens of the nation. It can be achieved only when teachers have the right values, skills, and knowledge to be effective practitioners. Since the quality of teachers determines the quality of education, teacher education plays a vital role in producing qualified teachers.

To promote teacher quality, the role of teacher educators who produce teachers in initial teacher training is vital. Teacher educators are crucial players for maintaining – and improving – the high quality of the teaching workforce. They can have a significant impact upon the quality of teaching and learning in our schools. Since it is a universally accepted fact that the quality of teaching force determines the quality of education in a nation, pedagogical knowledge and practices of teacher educators needs to be considered as a determinant in promoting the quality of teachers.

Moreover, according to the Global Monitoring Report on Quality of UNESCO (2005, as cited in European Commission, October 2013), in this global context, the classroom pedagogy used by teachers is consistently seen as the crucial variable for improving learning outcomes and is

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critical in any reform to improve quality. Loughran (2014) argued that pedagogy of teacher education was based on two complementary aspects of knowledge and practice: teaching about teaching and learning about teaching. Therefore, the pedagogical knowledge of teacher educators and how to apply this knowledge is one of the major areas of concern for the immediate future and crucial element to be successful education. To produce quality teachers, an analytical study of teacher educators' pedagogical knowledge and practices is needed for investigation in teacher education field.

Aims of the Study

The main aim of this study is to study pedagogical knowledge and practices of teacher educators in Education Colleges. The specific aims of this study are:

- (1) to study the pedagogical knowledge levels of teacher educators in Education Colleges,
- (2) to investigate the variations of teacher educators' pedagogical knowledge according to personal factors,
- (3) to study the levels of practices of teacher educators concerning their pedagogical knowledge,
- (4) to investigate the variations of teacher educators' practices concerning their pedagogical knowledge according to personal factors, and
- (5) to identify the predictors of teacher educators' personal factors on their pedagogical knowledge.

Research Questions

This research deals with the following questions regarding pedagogical knowledge and practices of teacher educators in Education Colleges.

- (1) What are the levels of pedagogical knowledge of teacher educators in Education Colleges?
- (2) Is there any variation of teacher educators' pedagogical knowledge according to personal factors?
- (3) What are the levels of practices of teacher educators concerning their pedagogical knowledge?
- (4) Is there any variation of teacher educators' practices concerning their pedagogical knowledge according to personal factors?
- (5) What are the predictors of teacher educators' personal factors on their pedagogical knowledge?

Theoretical Framework

This research work was guided by following theoretical framework. In this study, pedagogical knowledge and practices of teacher educators was investigated with seven dimensions based on the common domains and areas of teacher competency standards from Brunei Darussalam and standards for effective teacher educators from Australia. These seven dimensions are: (1) Knowledge of students and how they learn; (2) Knowledge of subject content; (3) Knowledge of how to plan the lesson; (4) Teaching subject content using various instructional strategies; (5) Creating a supportive and safe learning environment for students; (6) Assessing student learning; and (7) Communicating and collaborating with other teachers, parents, and community.

(1) Knowledge of students and how they learn: Teacher educators should know individual differences, multiple intelligences of the learners. They should have knowledge of connecting new material with existing knowledge of the students; listening for student's current ideas and thinking; guiding students toward more complete understanding about the lesson; creating the opportunities

for participating in group discussion or activities; making a dialogue with the students to identify and articulate not only what they expect to learn but also what they learn from the topic. Moreover, teacher educators should know Maslow's hierarchy needs of motivation to get students productively involved with the work of the class.

(2) Knowledge of subject content: Teacher educators should know the central concepts, objectives and structure of the subjects he or she teaches and create learning experiences. They should understand content organization and observe clear information about the specific outcomes that students are expected to acquire. They should not only study objectives teaching the respective subject but also read various reference books that support to the understanding of subject matter. They should realize how to organize the subject content to provide desirable learning outcomes for the students.

(3) Knowledge of how to plan the lesson: Teacher educators should have a clear idea of what students are able to do, understand at the end of instruction. They should know how to write objectives at all six levels of Bloom's Taxonomy. They should formulate learning objectives in line with objectives of the curriculum and use action verbs to describe learning outcomes of the learner. They should prepare a detailed lesson plan including instructional procedure to achieve learning objectives. Moreover, descriptions of teaching aids, instructional strategies, assessment techniques and time duration of every step should be involved in the lesson plan.

(4) Teaching subject content using various instructional strategies: Teacher educators should have knowledge of how to select proper instructional strategy and model application of these strategies in the classroom. They should organize full-class instruction which involves gaining attention, informing the learner of the objective, recalling prerequisite learning, presenting the material, and maximizing drill and practice. They should provide assignments and projects and facilitate students in the process of inquiry to construct their own knowledge. They should arrange group discussions and classroom activities and use the strategies that emphasize concept learning, inquiry, and problem solving to teach concepts, patterns, and abstractions. Moreover, teacher educators should integrate technology in classroom instruction as well as the use of various teaching aids.

(5) Creating a supportive and safe learning environment for students: Teacher educators should arrange physical condition of the classroom as a clean and tidy class with sufficient sunlight, fresh air, enough space for students to move around. They should display charts and artworks in the classroom to create attractive physical learning environment. They should make efforts to plan the seating arrangement such as U shape, circle, face-to-face in group discussion time. They should establish the agreed rules and procedures to ensure student safety within the classroom. They should build positive relationships with students and encourage them to interact with each other with mutual respect. They should provide access to available resources and technologies for students to support learning in the diverse physical locations and contexts.

(6) Assessing student learning: Teacher educators should have a sound knowledge of assessment strategies and they should demonstrate how to use them effectively. They need to recognize informal assessment as well as formal assessment. They should design assessment tools such as formal testing, classroom observation, using oral questions, portfolios, projects, and performance assessment and provide informative feedback so that students' focus of learning is appropriate. Moreover, they should communicate meaningful information with students, parents, and others about a student's work.

(7) Communicating and collaborating with other teachers, parents, and community: Teacher educators should communicate with parents and community to present as much performance information as the school can provide. They should make efforts to organize a conference with the

public or to participate in community. In addition, they should strive for these functions: initiating collaborative relationships to expand professional learning opportunities and engage in research; sharing their knowledge and experiences to colleagues and updating their practices; engaging in various professional activities such as networks for specific subject matter areas, and attending refresher course, and scholarship programs, etc.

Definition of Key Terms

Important terms are carefully defined so that the reader may understand the concepts underlying the development of the investigation.

- (1) **Pedagogy** refers to the art, science or profession of teaching and it includes the theory and practice of education, and therefore, the study and practice of how best to teach (TCSF, Myanmar, 2017).
- (2) **Pedagogical Knowledge** refers to the teacher's deep understanding of the processes and practices of teaching and learning and it includes understanding how students learn, general classroom management skills, lesson planning, and student assessment; and knowledge about techniques or methods used in the classroom, the nature of the target audience, and strategies for evaluating student understanding (Koehler & Mishra, 2009).
- (3) **Teacher Educator** refers to a person who works in tertiary institutions and is largely involved in the teaching of prospective teachers enrolled in a pre-service teacher preparation program (Loughran, 2014).

Operational Definitions

In this study, **teacher educators** are teaching staffs who instruct education, academic, and co-curricular subjects in education colleges to prepare student teachers to be effective and competent.

Pedagogical Knowledge, in this study, is composed of seven dimensions such as knowledge of how to plan the lesson; how students learn; subject content; creating safe and supportive learning environment for students; delivery of instruction; assessing student learning; and communicating and collaborating with colleagues, parents, and the community.

Methodology

Population and Sample: Out of 25 education colleges, 4 education colleges from Upper Myanmar (group A) and another 4 education colleges from Lower Myanmar (group B) were randomly selected in order to obtain the representative sample. From each education college, forty teacher educators were randomly selected as subjects, using equal-sized stratified sampling method (Gay & Airasian, 2003). Therefore, equal number of teacher educators (160) from each group was examined in this study and the number of teacher educators participated in this study was 320. In qualitative study, interview and observation were conducted. Out of 320, 24 teacher educators were selected as participants in qualitative study.

Instruments: Two main instruments which were developed by the researcher were used in this study. The first instrument was to study teacher educators' pedagogical knowledge in education colleges and it was mainly composed of three types of questions: thirty-seven true/false items to investigate their pedagogical knowledge concerning how students learn, subject content, creating learning environment, using teaching strategies, and communicating and working together with other teachers, parent and the community; seven multiple-choice items to study knowledge about how to assess their learners; and six matching items to examine how to write learning objectives in planning the lesson. The second one was structured with five-point Likert type items (1=never,

2=seldom, 3=sometimes, 4=often, 5=always). The total items were 52 items which included seven main dimensions of pedagogical practices. Two open-ended questions were investigated and eight interview questions were also included in qualitative study.

Findings

Research Question (1): What are the levels of pedagogical knowledge of teacher educators in Education Colleges?

According to table 1, it could be regarded that most of the teacher educators had satisfactory level of knowledge about their pedagogy except from three teacher educators who were at below satisfactory level.

Table 1 Number and Percentages of Teacher Educators Showing the level of Pedagogical Knowledge (N=320)

Scoring Range	No. of Teachers (%)	Remark
<50%	3 (0.9%)	Below satisfactory level
50%-74%	87 (27.2%)	Satisfactory level
≥75%	230 (71.9%)	Above satisfactory level

Scoring Range: <50% = Below satisfactory 50%-74% = Satisfactory ≥75% = Above satisfactory

Research Question (2): Is there any variation of teacher educators’ pedagogical knowledge according to personal factors such as gender, age, position, service, teaching subject, and qualifications?

In analyzing the variations of teacher educators’ pedagogical knowledge according to personal factors such as gender, age, position, service, teaching subject, and qualifications, it could be found that there were significant differences in teacher educators’ pedagogical knowledge according to their teaching subject and qualifications.

Table 2 One-way ANOVA Result Showing Teacher Educators’ Pedagogical Knowledge Grouped by Teaching Subject

Variable		Sum of Squares	df	Mean Square	F	p
Teacher Educators’ Pedagogical Knowledge	Between Groups	454.802	2	227.401	10.642	.000***
	Within Groups	6773.790	317	21.368		
	Total	7228.597	319			

Note: *** $p < .001$

Table 3 Tukey HSD Result Showing Multiple Comparisons for Teacher Educators’ Pedagogical Knowledge Grouped by Teaching Subject

Variable	(I) Teaching Subject	(J) Teaching Subject	Mean Difference (I-J)	p
Teacher Educators’ Pedagogical Knowledge	Educational Subjects	Academic Subjects	2.99 (*)	.001***
		Co-curriculum Subjects	3.06 (*)	.000***

Note: *** $p < .001$

According to table 2 and 3, it could be found that the group of teacher educators who taught educational subjects had better pedagogical knowledge than the other groups such as the groups of those who taught academic and co-curriculum subjects. Furthermore, according to table 4 and 5, it could be seen that the group of MEd degree holders had better knowledge than BEd degree holders and non-professional degree holders.

Table 4 One-way ANOVA Result Showing Teacher Educators' Pedagogical Knowledge Grouped by Qualifications

Variable		Sum of Squares	df	Mean Square	F	p
Teacher Educators' Pedagogical Knowledge	Between Groups	757.53	2	378.76	18.56	.000***
	Within Groups	6471.07	317	20.41		
	Total	7228.59	319			

Note: *** $p < .001$

Table 5 Tukey HSD Result Showing Multiple Comparisons for Teacher Educators' Pedagogical Knowledge Grouped by Qualifications

Variable	(I) Qualifications	(J) Qualifications	Mean Difference (I-J)	p
Teacher Educators' Pedagogical Knowledge	MEd	BA/BSc+MA/MSc+PhD (Academic)	4.83 (*)	.000***
		BEd	3.51 (*)	.000***

Note: *** $p < .001$

Research Question (3): What are the levels of practices of teacher educators concerning their pedagogical knowledge?

In practicing pedagogical knowledge, it was found that teacher educators' overall practices were at above satisfactory level in all dimensions except from the dimension of communicating and collaborating with other teachers, parent and the community as shown in Table 6.

Table 6 Mean Values Showing Overall Teacher Educators' Practices Concerning Pedagogical Knowledge (N=320)

No.	Dimensions	Mean	Remark
1	Knowledge of how to plan the lesson	4.34	Above Satisfactory
2	Knowledge of students and how they learn	4.33	Above Satisfactory
3	Knowledge of subject content	4.22	Above Satisfactory
4	Teaching subject content using various teaching strategies	3.79	Above Satisfactory
5	Assessing student learning	4.05	Above Satisfactory
6	Creating a safe and supportive learning environment	4.18	Above Satisfactory
7	Communicating and collaborating with other teachers, parent and the community	3.52	Satisfactory
Overall Teacher Educators' Practices		4.06	Above Satisfactory

Scoring Direction: 1.00-1.49= never 1.50-2.49= seldom 2.50-3.49= sometimes 3.50-4.49= often 4.50-5.00= always

Remark: 1.00-2.33= Below Satisfactory 2.34-3.67= Satisfactory 3.68-5.00=Above Satisfactory

Research Question (4): Is there any variation of teacher educators’ practices concerning their pedagogical knowledge according to personal factors such as gender, age, position, service, teaching subject, and qualifications?

In analyzing whether there were any variation of teacher educators’ practices concerning their pedagogical knowledge according to personal factors such as gender, age, position, service, teaching subject, and qualifications, it could be found that there were statistically significant differences between teacher educators’ pedagogical practices according to gender, age, position, service. In table 7, there were statistically significant differences between male and female in teacher educators’ practices concerning pedagogical knowledge.

Table 7 Independent Samples *t* Test Result Showing Teacher Educators’ Practices Grouped by Gender

Variable	Gender	Mean	<i>t</i>	<i>df</i>	<i>p</i>
Total Teacher Educators’ Practices	Male	3.80	-2.579	32.314	.015*
	Female	4.08			

Note: **p*<.05

As shown in Table 8, one-way ANOVA result indicated that there were significant differences in total teacher educators’ practices grouped by their age (*df*=3, *F*=3.743, *P*≤.001). Post hoc Tukey HSD analyses were also conducted in Table 9.

Table 8 One-way ANOVA Result Showing Teacher Educators’ Practices Grouped by Age

Variable		Sum of Squares	<i>df</i>	Mean Square	<i>F</i>	<i>p</i>
Total Teacher Educators’ Practices	Between Groups	2.278	3	.759	3.743	.011*
	Within Groups	64.126	316	.203		
	Total	66.404	319			

Note: **p*<.05

Table 9 Tukey HSD Result Showing Multiple Comparisons for Teacher Educators’ Practices Grouped by Age

Variable	(I) Age	(J) Age	Mean Difference (I-J)	<i>p</i>
Total Teacher Educators’ Practices	35-44yrs	25-34yrs	-.19	.041*
		45-54yrs	-.18	.041*
		≥55yrs	-.23	.021*

Note: **p*<.05

From Table 10, one-way ANOVA result described that there were significant differences in total teacher educators’ practices grouped by their position (*df*=2, *F*=3.634, *P*<.05). In Table 11, Post hoc Tukey HSD analyses were also conducted.

Table 10 One-way ANOVA Result Showing Teacher Educators' Practices Grouped by Position

Variable		Sum of Squares	df	Mean Square	F	p
Total Teacher Educators' Practices	Between Groups	1.488	2	.744	3.634	.028*
	Within Groups	64.916	317	.205		
	Total	66.404	319			

Note: * $p < .05$

As shown in Table 11, Post Hoc Tukey HSD result displayed that there were significant differences in total teacher educators' practices between the groups of lecturer and assistant lecturer.

Table 11 Tukey HSD Result Showing Multiple Comparisons for Teacher Educators' Practices Grouped by Position

Variable	(I) Position	(J) Position	Mean Difference (I-J)	p
Total Teacher Educators' Practices	Lecturer	Assistant Lecturer	.17	.021*

Note: * $p < .05$

In Table 12, the result displayed that there were significant differences in total teacher educators' practices grouped by their service ($df=3$, $F=3.143$, $P < .05$).

Table 12 One-way ANOVA Result Showing Teacher Educators' Practices Grouped by Service

Variable		Sum of Squares	df	Mean Square	F	p
Total Teacher Educators' Practices	Between Groups	1.924	3	.641	3.143	.026*
	Within Groups	64.480	316	.204		
	Total	66.404	319			

Note: * $p < .05$

As shown in Table 13, the result displayed that there were significant differences in total teacher educators' practices between the groups of 31 years and above and 11-20years service.

Table 13 Tukey HSD Result Showing Multiple Comparisons for Teacher Educators' Practices Grouped by Service

Variable	(I) Position	(J) Position	Mean Difference (I-J)	p
Total Teacher Educators' Practices	31 years and above	11-20years	.18	.041*

Note: * $p < .05$

Research Question (5): What are the predictors of personal factors on teacher educators' pedagogical knowledge?

The results of finding the potential factors from demographic data of teacher educators affecting their pedagogical knowledge appeared that teacher educators' pedagogical knowledge were significantly predicted by teaching subject and qualifications as shown in table 14. According to the β weights, teaching subject ($\beta=.232$, $p < .05$) appears to be the best predictor of teacher

educators' pedagogical knowledge. Qualifications ($\beta=.226$, $p<.001$) appears to be the second predictor of teacher educators' pedagogical knowledge. The adjusted R squared value was .21 and this indicated 21% of the variance in pedagogical knowledge. According to Cohen (1988, as cited in Morgan, Leech, Gloeckner, & Barrett, 2004), this is a typical effect.

Table 14 Simultaneous Multiple Regression Analysis for Teacher Educators' Personal Factors Predicting Pedagogical Knowledge

Variables	B	Std. Error	Beta	p
Gender	-.05	.89	-.03	.950
Age	-.43	.54	-.09	.427
Qualifications	1.75	.48	.226***	.000
Position	.55	.50	.08	.275
Service	-.21	.49	-.05	.662
Teaching Subject	-9.7	.42	.232*	.021

$R = .43$, $R^2 = .21$; $F(6, 313) = 7.16$, $*p < 0.05$, $***p < .001$

Qualitative Research Findings

In conducting qualitative studies, interview and observation were conducted to support quantitative findings. Twenty four teacher educators from four education colleges were participated in interview sessions. The number of interview question was eight questions which developed with seven components of teacher educators' pedagogical knowledge and practices.

The Results of Interview

In planning the lesson, out of twenty-four teacher educators (participants), eight teacher educators from group I and only five from Group II prepared carefully the lesson. The other teacher educators need to be improved in lesson preparation. As regards how students learn, nine teacher educators from group I and seven educators from group II among the twenty-four participants knew the nature of their students well and created suitable learning opportunities with adult learner. It was investigated that the other teacher educators paid attention on the behavior of students and trained in accordance with the physical characteristics of a good teacher.

In using various teaching strategies, it was found that although they were familiar with a variety of teaching methods, four teacher educators from group I and only two educators from group II taught through both direct and indirect instructional strategies. In the responses of other teacher educators, they used only direct instruction approach and they complained time limitation, too much content and many non-academic activities.

In creating a supportive and safe learning environment, it was found that four teacher educators from group I and only one teacher educator created both physical and social or emotional learning environment. The other six educators from group I and nine educators from group II was found that they emphasized to create only physical learning environment. The rest four educators from each group said that they motivated students to learn in order to support environment for learning and they had insufficient knowledge about creating social and emotional learning environment for their students. As regards assessing student learning, despite their knowledge of assessment techniques, eight teacher educators from group I and seven teacher educators from group II were investigated the use of various assessment techniques and the other educators conducted assessment with closed verbal questions in the class, tutorial, and giving assignment.

According to the quantitative and qualitative findings, it could be concluded that teacher educators' pedagogical knowledge vary depending on their personal factors such as teaching

subject and qualifications and their practices depended on their demographic data. In addition, the researcher was aware of the gap between pedagogical knowledge and practices of teacher educators.

The Results of Observation

Researcher conducted non-participant observation in order to investigate teacher educators' practices concerning lesson preparation, creating a supportive and safe learning environment, teaching and assessing student learning, communicating and collaborating with other teachers, parent and the community. As regards lesson preparation, teacher educators from Group I were found that they wrote lesson plan and diary weekly and submitted to their respective heads of department in order to be supervised their lesson preparation. In addition, records of lesson study were also found.

In creating a supportive and safe learning environment, despite positive relationship between teacher and students, and among the students, it could be observed that most teacher educators from ECs paid more attention to training student teachers to abide by the school rules. Researcher kept aware of the fact that only a few students discussed about learning materials with the teacher and most of the students were very obedient.

As regards teaching and assessing student learning, it could be found that only a few teacher educators used student-centered approach in their teaching practices although most of the teacher educators espoused theories of student-centered learning. For the component of assessment, it could be found that teacher educators seldom practiced classroom assessment techniques (CATs) in the class. In using summative forms of assessment, teacher educators took records of tutorial, submitted assignment, and exam at the end of semester in order to certify the grade of students. However, it could be said that teacher educators who taught co-curriculum subjects such as domestic science, music and dancing, and physical education used approaches like demonstration, observation, and performance assessment.

In addition, researcher grasped the information that teacher educators never practiced informing parents with school activities. Currently, they seldom practiced participating in collaboration which cooperates with the community. However, collaborating with colleagues was relatively found in education colleges.

Conclusion

Conclusion and Discussion

Based on the results from this study, a number of discussions that are worth of being mainly focused will be presented. Findings from analyzing the levels of pedagogical knowledge of teacher educators indicated that only 0.9% of those was at below satisfactory level. It could be interpreted that most teacher educators in selected education colleges had satisfactory level of pedagogical knowledge. Analyzing personal factors of teacher educators who were at below satisfactory level found to be two academic subject teachers and one from co-curriculum subject teacher and they had not graduated BEd and their teaching service was under 5 years. From the qualitative findings of this study revealed that teacher educators who had never any teacher training program were found to be lack of knowledge about pedagogy of teacher education. This result supports the findings of Goodwin, & et al. (2014).

Investigating the seven dimensions of teacher educators' practices indicated that the participant teachers had above satisfactory level in six dimensions except from the dimension of communicating and collaborating with other teachers, parent and the community. In this dimension, although it was found that they sometimes practiced "informing parents and the

community with school activities,” “participating in collaboration which cooperates with the community”, and “participating in school-university research program” in quantitative study, qualitative findings investigated that they never practiced “participating in school-university research program”, and “informing parents and the community with school activities”. The researcher is aware of the fact that student teachers attending in education colleges are at adult stage and most of their native towns are far from ECs and their teachers guard as their parents. Therefore, it could be interpreted that teacher educators’ poor practices were found in communicating and collaborating with parents.

In the dimension of teaching subject content using various teaching strategies, it was also found that most of the teacher educators taught subject content using only direct instructional approach instead of using various teaching strategies. This finding reflected the findings of Wan Aung, et al. (2013) which described teacher educators’ mostly used teaching methods. However, this is contradictory with the present finding in that teacher educators who taught methodology and English (academic subject) were found to be practiced a variety of teaching methods in their classroom.

Westrup (2014) found out that the majority of challenges and current development needs of teacher educators were associated with communication problems between university departments and partnership schools. Similarly, Wan Aung, et al. (2013) also found this fact in their study. The qualitative result of this study was consistent with the above findings in that direct contact with schools was rarely found in teacher educators from education colleges in the aspect of supervision and mentoring of their student teachers during 40-day teaching practicum.

Borich (2007) claimed that curriculum guides clearly specify what content must be covered in what period of time and the level of learning outcomes for an instructional unit or lesson according to curriculum guides will be selected before instruction. The qualitative finding of this study found that teacher educators who had attended teacher training program responded that they planned the lesson in accordance with curriculum guideline, they set learning objectives for the lesson being taught, and they prepared the necessary instructional materials and assessment techniques in line with allocated time. It was found that teacher educators who had never attended teacher training said that they prepared the lesson with the preview of learning materials, reading academic literature, and thinking about how to teach with examples.

Malcolm Knowles (1970, as cited in Sierra Training Associates, Inc., 2007) proposed that adults learn from experience and therefore creating learning environment should be based on listening for learner’s experience to support productive adult learning. In present finding of the study, it was also found that most of the teacher educators responded creating physical learning environment and modifying the behaviors of their students. Only a few of them paid attention to both physical and social or emotional learning environment. It could be interpreted that since Education Colleges (ECs) began from the nature of training school, setting strict rules and encouraging student teachers to abide by the rules were commonly found in teacher educators’ responses.

As regards assessing student learning, in the qualitative study, it could be found that teacher educators assessed the whole class with the use of closed questions instead of using various classroom assessment techniques (CATs). Innovative assessment practice such as portfolio was found to be unfamiliar with them and assessing with items that demand more open-ended responses in the classroom rarely practiced. The finding is consistent with findings of past study by Wan Aung, et al. (2013).

In analyzing variations of teacher educators’ pedagogical knowledge and practices according to personal factors, this study indicated that the most experienced teacher educators had better pedagogical knowledge and practices than the less experienced ones. Accordingly, the group of teacher educators who were fifty-five years and above old and the group of lecturers had better

pedagogical knowledge and practices than any other groups. The present finding also support Loughran's (2006) study which discussed that there were significant differences between newer graduates and more experienced teacher educators in terms of theoretical knowledge and application although effect sizes were small (as cited in Goodwin, & et al., 2014).

Loughran (2006) pointed out that more experienced teacher educators have been practicing for longer and they may likely to teach their newer teacher educators through mentoring, whether intentionally or not. Exceptionally, it was found that the group of teacher educators who were 25-34 years old had the highest mean scores among the age groups in investigating the variations of pedagogical knowledge of teacher educators. It could be interpreted that the age of most of the MEd graduates and PhD candidates who studied education specialization were in the range of 25 to 34 years.

According to Cochran-Smith (2004, as cited in Loughran, 2014), it is not sufficient for a teacher educator to pass on the accumulated tips and tricks of classroom teaching. Forgasz's (2013, as cited in Loughran, 2014) research also highlighted that since learning to teach must be complex, thoughtful, focused, and meaningful professional development for teacher educators is clearly required (as cited in Loughran, 2014). The result of the present study support the Cochran-Smith (2004) and Forgasz (2013)'s findings in that the differences of pedagogical knowledge and practices of teacher educators could be analyzed in terms of their commitment on professional development (Loughran, 2014). From the interview session with teacher educators who taught educational subject, academic subject, and co-curriculum subject, the selected participants responded that the more professional development activities they engaged in, the better their pedagogical knowledge and practices.

Furthermore, in the findings of this study, teaching subject and qualifications of teacher educators were found to be the predictors of demographic data on their pedagogical knowledge. From the qualitative study, it was discovered that teacher educators who held MEd and BED degrees showed better pedagogical knowledge than those who held any other degrees. Exceptionally, among the BED degree holders, a few teacher educators responded that they forgot some dimensions of pedagogical knowledge and some new concepts and ideas were unfamiliar with them because they had graduated BED from a long time ago and their teaching subject was not educational subjects. It could be suggested that the opportunities of continuous professional development (CPD) of teacher educators will be created and designed through the school-based approach. Accordingly, Soma (2014) also pointed out that the basic principle of CPD is that opportunities are provided not far from school, continuously, and are designed to address teachers' learning needs.

In the current status, education colleges are going to upgrade into the four-year degree college in the upcoming future. To achieve this, recruiting human resources such as new teacher educators and uplifting the competencies which a teacher educator need to know could be seen as fundamental requirement. Dr. Khin Zaw (2001) claimed, "No educational system can ever be better than its teachers. No teacher, regardless of race, creed or grade, can emerge fully qualified from an inferior teacher education program." Therefore, teacher educators who undertake the function of producing teachers, whatever their background knowledge or field of study may be, should be recognized that they need to make efforts to upgrade themselves through various professional development (PD) activities.

Based on the quantitative and qualitative findings, teacher educators' pedagogical knowledge and practices in selected education colleges were found to be satisfactory despite the dimensions that need to be improved. The findings of the present study will cover up to 2018 because programmes for upgrading from Education College to Education Degree College (EDCs) and developing new curriculum for EDCs were being implemented. However, it can be expected that pedagogical knowledge (PK) questions developed in this study will be useful as an instrument

for investigating pedagogical knowledge of new teacher educators who enter in teacher education field. Moreover, it can be hoped that some important findings of this research can be a fruitful source of information for any teacher educators who produce qualified teachers in teacher education institutions.

Recommendations

The following recommendations are based on the analyses of the research findings.

- Teacher educators should demonstrate exemplary practice of teaching because their performance and teaching style can influence upon teaching practice of their student teachers.
- Teacher educators should pay attention to creating a social or emotional learning environment for students to be safe and supportive as well as modifying their behaviors.
- Teacher educators should study adult learning theory, educational technology, and innovative pedagogic practices to organize teaching-learning situation that meets the needs of student teachers.
- Teacher educators should conduct reflective practice concerning their pedagogy.
- Teacher educators should make efforts to develop partnerships with schools and have much direct contact with schools in supervision and mentoring of student teachers in their practicum.
- Teacher educators should disseminate new information in college after they have participated in seminars, workshops and training.
- Teacher educators should engage in peer observation, invite for others' ideas and accept their suggestion about practices of teaching.
- Teacher educators who had never attended teacher training, especially academic subject teachers and some co-curriculum subject teachers should be engaged in orientation programmes about teacher education and pedagogy.
- Teacher educators who taught educational subjects should also strive for holding Master and PhD degrees in accordance with the minimum requirements of teacher educators from the four-year degree colleges.
- School-based mentoring program for new teacher educators should be considered and this program can be helpful to experienced teacher educators to update their knowledge.
- Since enhancing teacher educators' pedagogical knowledge can be affected by the support and guidance of principal in education colleges, positive communication and collaboration with their principals should be built and maintained.

Need for Further Research

Further study should be conducted to pedagogical content knowledge (PCK) of teacher educators who taught various subjects. Pedagogical knowledge and practices of teacher educators in Universities of Education can be analyzed as further research.

In order to enhance the quality of pedagogical knowledge, how well the teacher educators of education colleges perform professional development activities should be investigated. In addition, the effect of principal's instructional leadership practices on enhancing teacher educators' pedagogical knowledge should be examined. Furthermore, the effect of teacher educators' pedagogical practices on academic performance of student teachers should be analyzed. In contrast to the present study, each dimension of teacher educators' pedagogical knowledge and practices such as teaching subject content using various teaching strategies, and assessing student learning should be investigated in further study.

While discussing the need for further research, it must be mentioned that the most important topic of future research should be much wider and deeper than just pedagogical knowledge and practices of teacher educators in education colleges. The researcher would like to put forward the dire need for research concerning teacher educators' pedagogic professionalism. A pedagogic professional is usually distinguished by the teacher's length of theoretical or professional training and his/her years of practical experience.

In some of the developing countries of the East, negative attitudes towards the teaching profession and professional pedagogues are still far too rampant, to say the least. This is an unfortunate state of affairs, indicative or suggestive of a lose-lose situation, for all stakeholders including students, parents, and teachers alike. This grave and mistaken opinion must be corrected, at all costs (Khin Zaw, 1994). Future research on pedagogic theory and subsequent practices must be based on the present status of respectable professional performance contributed by highly motivated professional pedagogues of the country, no more or no less. The researcher firmly believes that this is the number one, or priority one, future research in pedagogy.

Acknowledgements

We would like to express our heartfelt gratitude to Dr. Khin Zaw (Retired Rector, Yangon University of Education), U Ye Myint (Retired Professor, Department of Educational Theory, Yangon University of Education), Dr. Pyone Pyone Aung (Pro-Rector, Yangon University of Education), Dr. Kay Thwe Hlaing (Pro-Rector, Yangon University of Education), and Dr. Su Su Thwin (Retired Professor and Head of Department of Educational Theory, Yangon University of Education), for their valuable expertise, support, constructive suggestions and criticisms to complete my work and members of the Dissertation Committee of Yangon University of Education who allowed us to do this dissertation. We would like to express our thanks to the principals of Education Colleges and teacher educators who participated in this study for their active participation with concerted effort.

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