AN INVESTIGATION INTO THE EFFECTIVENESS OF ACTIVITY-BASED LEARNING IN THE TEACHING OF MIDDLE SCHOOL GEOGRAPHY

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Abstract

The purpose of this study is to investigate into the effectiveness of activity-based learning in comparison to traditional learning in teaching of Middle School Geography students. Quantitative and qualitative QUAN → qual which is known as an explanatory sequential mixed method and nonequivalent control group design were used. The subjects were selected from three Basic Education schools (one from downtown, one from urban and one from outskirt) located in one out of eight townships in Nay Pyi Taw and three Basic Education schools (one from downtown, one from urban and one from outskirt) located in one out of ten townships in Mon State by using simple random sampling method. The instruments include pretest, posttest, teachers' attitudinal questionnaires, students' attitudinal questionnaires, observation checklist, teacher's interview questions and student's interview questions. The experimental groups were taught by activity-based learning while the control groups were taught by traditional methods to cover (20) lesson plans for Grade Seven geography. Students' geography learning achievement was compared and analysed by using one-way ANCOVA. The findings show that there were significant differences in posttest results between experimental and control groups, and most questionnaires and interview results were positive except moderately satisfactory responses from observation checklists.

Key words: Learning, Activity-Based Learning, Effectiveness, Geography, Model

Introduction

An effective way to facilitate learning is by creating a learning environment which gives learners opportunities to work collaboratively with others (Kagan, 1994, as cited in Kivunja, 2015). Activity-Based Learning (ABL) helps learners to construct mental models that allow for higher-order performance such as application of problem solving and transfer of information and skills. Therefore, teachers can create an effective learning environment by using ABL to promote student's engagement and learning achievement. Moreover, some researches show that (ABL) is a great importance in secondary school geography and lower secondary level geography by using different activities and tools (Demirci, Kesler & Kaya, 2010).

In Myanmar, the aim of teaching geography in middle school is to give students necessary knowledge and skills to understand the earth as their home and utilize its resources sustainably during their life-time (Department of Educational Research, Planning and Training, 2017). In order to meet these aims, teachers need to use effective instructional activities, assessment types which focus on promoting of students' active participation in their learning.

Statement of the Problem

The world in the 21st century has found enormous changes in education mainly due to the advance in science and technology. It is important to create an active learning environment for students to participate in any activities and practices. Traditional classroom practices seem to have many limitations such as large student-teacher ratio, teacher's role as of information distributer rather than as a facilitator of learning. Students are weak in conducting deep learning in some subjects, especially in learning geography. Consequently, the entrees to Middle Schools and High Schools seem to have little interest in learning geography. The activity-based learning (ABL) model could be able to reduce many of these barriers.

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The Main Purpose of the Study

The main purpose is to investigate into the effectiveness of activity-based learning in comparison to traditional learning in the teaching geography to Middle School students.

Specific Objectives

The specific objectives are as follows:

- To develop an activity-based learning model for geography teaching and learning
- To investigate the effectiveness of activity-based learning model in Grade Seven geography teaching
- To explore teachers' perceptions on activity-based learning in Grade Seven geography teaching
- To explore students' perceptions on activity-based learning in Grade Seven geography teaching
- To make suggestions and recommendations based on the research results for the improvement of geography teaching in Middle Schools of Myanmar

Research Hypotheses

(1) There is a significant difference in achievement of geography learning between Grade Seven students who are taught by activity-based learning model and those who are not taught it in responding the "remembering" level questions, "understanding" level questions, "applying" level questions, and "analysing" level questions.

(2) Students who are taught by the proposed activity-based learning model will have positive perception on Grade Seven geography learning.

(3) Teachers who use the proposed activity-based learning model will have positive perception on Grade Seven geography teaching.

Scope of the Study

The following points indicate the scope of the study.

1. This study is geographically restricted to one region and one state: Nay Pyi Taw region and Mon state.
2. Participants in this study are Grade Seven geography teachers and students from selected schools in 2022-2023 Academic Year.
3. The content area covered to some lessons of new Grade Seven geography curriculum.
4. The lessons are those that have not been taught to students before the experiment period.

Definitions of Key Terms

Essential terms are defined for the proposed study. They are described as follows:

Learning

Learning is a process that leads to change, which occurs as a result of experiences and increases the potential for improved performance and future learning (Kivunja, 2015, p. 526).

Activity-based learning

Activity-based learning is defined as learning by doing and comprises many different in and out-of-school activities practiced by students either individually or as a group (Demirci, Kesler & Kaya, 2010, p. 53).

Effectiveness

Effectiveness is the extent to which an activity fulfills its intended purpose or function (Harvey, 2004-19, p.35).

Geography

Geography refers to the examination, description, and explanation of Earth—its variability from place to place, how places and features change over time, and the processes responsible for these variations and changes (Petersen, Sack & Gabler, 2011, p. 2).

Model

A model is a conceptual structure that represents a way of thinking or understanding relationships involved in a process (Kivunja, 2015, p. 67).

Significance of the Study

Learning is acquiring new knowledge, understanding, behaviour, skills, values and preferences and it also involves synthesizing different types of information. It is also important that student processes the information with higher level thinking such as remembering, understanding, applying and analyzing. When this happens, the student is able to relate the information to any life situation, connects it with past learning, builds his or her own knowledge and becomes a knowledgeable and contributing citizen.

Geography is a vital subject for students to become knowledgeable and global citizens in 21st century, to enable students to face questions of what it means to live sustainably in an interdependent world (Harichandan, Shaik & Sunni, 2000). According to Demirci, Kesler, and Kaya (2010), the activity-based learning is especially important in teaching geography in secondary school. Myanmar education system must ensure for students to meet minimum national learning standards and to develop their critical, creative thinking skills, to understand, respect and fulfill rights and responsibilities of citizens and to gain leadership skills in communities (Ministry of Education, 2016).

Review of Related Literature

Foundational Philosophies of Activity-Based Learning

Educational philosophies related to this study include pragmatism, progressivism, cognitivism, constructivism, social-cognitive constructivism. Pragmatists believe that school programs should involve learners with practice in working with problems. The class discussions are the methods of the pragmatists. Progressivists believe that learning should be related to the interests of the child. Experience and experiment are two key words for the progressive educators (Kneller, 1976, as cited in Hessong & Weeks, 1991). Bloom and his colleagues claimed that there are three important domains of learning: cognitive domain (thinking), affective domain (feeling), and psychomotor domain (doing). In the activity-based learning, students will be given opportunity to learn how to learn, how to do, how to participate in their learning, and how to collaborate with the peer. The activity-based learning follows the constructivist educational theory. Geography teachers can apply the child-centered pedagogy with the relevant activities in their teaching. Group activity is necessary to use in teaching-learning process of geography. Group work can be a very effective way of using scaffolding principles in the classroom because students can learn from each other while working together on a project.

Learning Theories of the Activity-Based Learning

A theory of learning is a general concept which applies to all organisms, to all learning tasks, and to situations, both in and out of school, in which learning may occur (Khin Zaw, 2001). This study includes experiential learning theory, Jean Piaget cognitive development theory, constructivist learning theory and cognitive learning theory. Kolb's experiential learning theory works on two levels: a four-stage cycle of learning and four separate learning styles. He also states that learning involves the acquisitions of abstract concepts that can be applied flexibly

in a range of situations (McLeod, 2017). The researchers assume that laboratory activity, projects, inquiry activity and field work in Geography lesson are related to the experiential learning theory.

Formal operational stage (12 and up) of Jean Piaget's theory of cognitive development is related to the age of Grade Seven Middle School students in Myanmar. From the constructivists' theory, learners interact more with the subject matter and with one another, to construct and own knowledge. They are not considered to be empty vessels into which knowledge is poured. Active learning activities are important to promote thoughtful engagement, to encourage analytical thinking and reasoning, to foster the integration and application of knowledge, and are designed around well-defined learning activities (Greeno, 2006, as cited in Mohammed, 2014).

Foundational Models Related to Activity-Based Learning

This study uses some models, namely, the Interaction analysis model, Robert Glaser basic teaching model, Psychological Cybernetic model, Multimodal model, 5E instructional model, and Cooperative Learning model.

Ned Flanders has developed social-interaction models in learning psychology. He classifies the statements of students and teachers into ten categories. It is found that the stated model can be used in implementing the activity-based learning.

A brief analysis of each of the four components of the Robert Glaser basic teaching model is as follows-

(i) **Instructional Objectives (IO)** are those the students should attain upon completion of one segment of instruction. Instructional objectives should be EXPLICIT, PRECISE and EASILY VERIFIABLE.

(ii) **Entering Behavior (EB)** describes the student's level before instruction begins. It refers to what he has previously learned, his state of MOTIVATION, and certain social and cultural determinants of his learning ability. Entering behavior is a more precise term than the usual alternatives – human ability, individual differences, and readiness.

(iii) **Instructional Procedures (IP)** describes the teaching process; most decisions a teacher makes are on these procedures. Proper management of this component results in those changes which are generally called learning or achievement.

(iv) **Performance Assessment (PA)** of the tests and observations used to determine how well the student has achieved the instructional objectives. Important points to ponder here are those concerning objective and non-objective testing methods, and TERMINAL or AUXILARY performance evaluation procedures.

The components of this teaching model play an important part in implementing activities such as group work, pair work and inquiry learning activities by students and teacher. So, this model was based in designing activity-based learning model for the current study.

The works of Galperin, Slavina and Talyzina are deemed today as most valuable to the international field of ontogenetic research. The implication of this work is that the results may be generalized to normal children. In teaching geography, teacher will provide initial orientation for prior knowledge, explain students to make relevant physical responses with concrete objects like maps, globe and some real objects related to the lessons. Children will master their activities as long as teacher can guide them well.

Professor Dr. Khin Zaw's Multimodal Model's Theoretical Constructs consist of five main principles…..

(1) Channel Capacity;

(2) Brain Resilience;

(3) Redundancy;
(4) Unitizing/ Symbolizing Modes, and
(5) Diffusing/ Re-synthesizing Mode.

The five main principles of Professor Dr. Khin Zaw are related to the activity-based learning model in teaching geography. Only when teacher understands the importance of Channel Capacity, Brain Resilience, Redundancy, Unitizing/ Symbolizing Modes, and Diffusing/ Re-synthesizing Mode, students will learn more and geography teaching will be more effective.

The steps of 5E instructional model 'Engage', 'Explore', 'Explain', 'Elaborate' are useful for a geography teacher in assigning mind map, map works, pair works, group works, observation activities and inquiry activities to students during the activities. Therefore, this study was based on 5E instructional model phase to make intervention in teaching Grade Seven Geography to students in Myanmar.

Cooperative learning is effective for encouraging content learning, and social effectiveness by a meta-analysis of the research by Marzano et al. (2001) and studies by Maheady, Michielli-Pendl, Mallette, and Harper (2002, as cited in Kivunja, 2015) and Baker, Gersten, and Lee (2002, as cited in Kivunja, 2015). The cooperative learning is necessary to organise team work, group work, pair work in teaching Grade Seven Geography to students in Middle Schools in Myanmar.

Proposed Activity-Based Learning Model for Grade Seven Geography Teaching

Proposed model is based on the above theoretical foundations and models. In the proposed model, four stages are sequentially organized: Pre-Planning, Student engagement, Sequential learning process and Summative assessment. Therefore, this proposed model is named as PS3 Activity-Based Learning model. This model is presented in Figure 1.

The Proposed Activity-Based Learning (ABL) Model

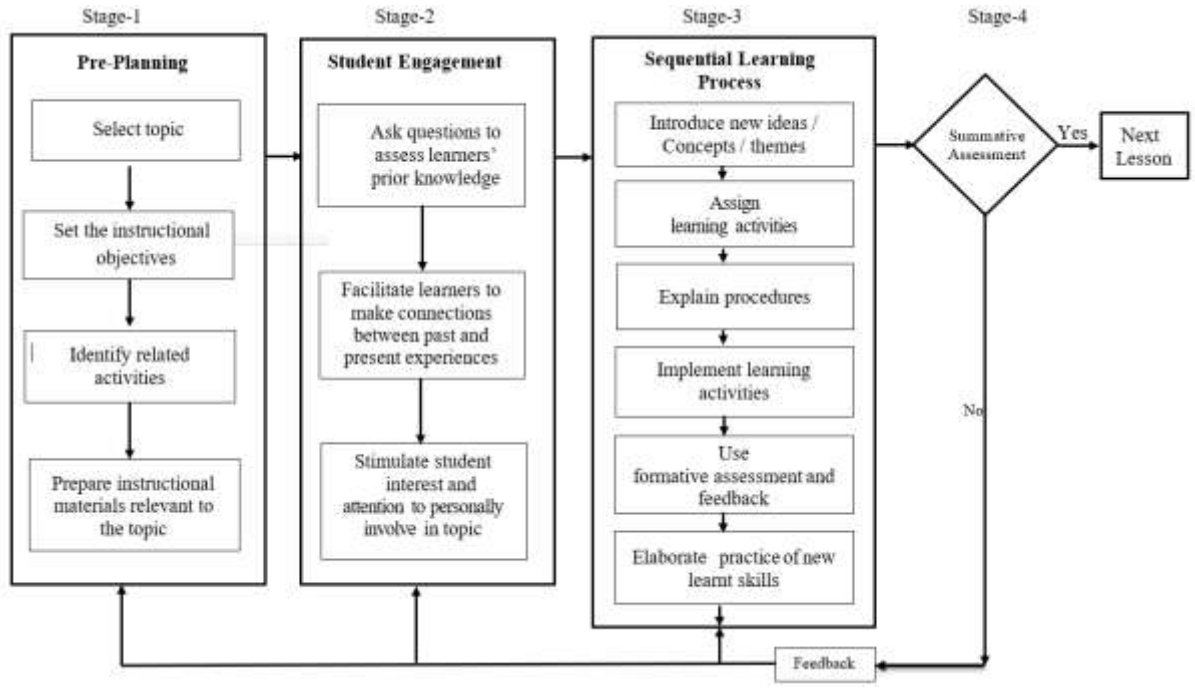

Figure 1 PS3 Activity-Based Learning Model for Grade Seven Geography Teaching

Research Method

Research Design

This study used the quantitative and qualitative QUAN → qual (Creswell & Plano Clark, 2011; Mills & Gay, 2019). This study also used nonequivalent control group design known as quasi-experimental design.

Quantitative Research Method

Quantitative research method was used to reveal the results of hypotheses such as there is a significant difference in achievement of geography learning between Grade Seven students who are taught by activity-based learning model and those who are not taught it in the performing various levels such as remembering, understanding, applying, and analyzing.

Population and Sample Size

One out of eight townships from Nay Pyi Taw Region, and one out of ten townships from Mon State and three Basic Education Schools from each sample township were selected by using simple random sampling respectively. Schools were one from downtown, one from urban, and one from outskirt in each township. Students, teachers and head teachers from sample schools were involved in this study.

Instruments

Pretest and posttest were used as quantitative research instruments. Pretest question includes multiple choice items, completion items, shorts answer questions and essay type questions in the posttest. Posttest includes ten multiple choice items, ten completion items, two shorts answer questions, and two essay type questions. The overall scores for posttest were (50) marks and one hour was allowed for test time. For pretest, test items were constructed based on the Grade Six geography textbook and the posttest items were constructed based on Grade Seven geography textbook.

The questionnaires include close-ended questions and Five-point Likert scale items with five strands to indicate the perceptions on each item. In teachers' questionnaires, there are four components to explore perception on activity-based learning model in geography teaching. Moreover, there are (5) open-ended questions to get in-depth discussions. Similarly, students' questionnaires involved (20) items and it took about (30) minutes for students and about (60) minutes for the teachers to complete the questionnaires. Observation checklist for teaching and learning were distributed to experienced teachers to get the validation and it was also modified. It included (10) items on teaching and (10) items on learning.

Learning materials

Learning materials included lesson plans, variety of teaching learning aids, and textbook and teachers guide.

Procedures

Firstly, pilot study was done with a sample of (40) Grade Seven students at No. 11 Basic Education High School in Nay Pyi Taw. It was conducted from third week of June to second week of July, 2022. In the posttest, among (39) geography periods, (20) periods (lesson plans) were taught for this study. Cronbach's Alpha was calculated and the value range is 0.80 to 0.89.

Qualitative Research Method

Qualitative research method was used to investigate the hypothesis 2: Teachers who use the proposed activity-based learning model will have positive perception on Grade Seven geography teaching and hypothesis 3: Students who are taught by the proposed activity-based learning model will have positive perception on Grade Seven geography learning.

Population and Sample Size

One out of eight townships from Nay Pyi Taw Region, and one out of ten townships from Mon State and three Basic Education Schools from each sample township were selected by using simple random sampling respectively. To explore students' perceptions and teachers' perceptions on activity-based learning model, two participants from each school were interviewed and there were twelve participants in total selected by simple random sampling method.

Instruments

In this phase, teachers' interview questions were involved (10) items and students' interview questions were involved (5) items. Moreover, video recording was made for teachers and students during the interview. Observation checklist included (10) items for teaching and (10) items for learning.

Procedures

A semi-structured interview form was developed. Then, the developed interview question form was presented to the experienced teachers. After that, the interview questions were modified according to the feedback provided by the experienced teachers. During the interview, the video recording was made for clear evidence, and it was transcribed. The interview took about 10 minutes for each person.

Data Analysis

Data are analyzed to test the research hypothesis or answer the research question (Mills & Gay, 2016). Both quantitative and qualitative analysis of the data were used in this study. Quantitative data obtained through the test results of the students and questionnaires (close-ended questions) were analyzed via Statistical Package for the Social Studies, (SPSS, 2018) by using One-Way analysis of covariance (ANCOVA) to compare the differences between the experimental groups and the control groups. Qualitatively, a thematic analysis approach was used manually.

Findings

Quantitative Research Findings

In this study, the findings from such areas as remembering level, understanding level, applying level, and analysing level questions were analysed by using One-Way ANCOVA to find out significant differences between experimental and control groups. Data were collected and analysed to show whether they are compatible to the research hypotheses or not.

Findings of the Students' Achievement in Pretest

Findings of the students' achievement in pretest show that there were no significant differences between experimental groups and control groups in five schools except school six which had significant difference. The following Table 1 depicts students' achievement results from pretest.

Table 1 Findings of the Students' Achievement in Pretest

School	Group	*N*	*M*	*SD*	*MD*	*F*	*p*
S1	EG	45	19.58	4.12	0.31	107	.745 (ns)
	CG	37	19.27	4.38			
S2	EG	53	20.58	2.69	-0.05	0.01	.925 (ns)
	CG	52	20.63	2.69			
S3	EG	36	15.39	3.35	-0.61	0.57	.453 (ns)
	CG	43	16.00	3.78			
S4	EG	31	23.71	2.97	1.21	2.02	.161 (ns)
	CG	30	22.50	3.66			

School	Group	*N*	*M*	*SD*	*MD*	*F*	*p*
S5	EG	30	28.37	1.25	0.20	0.29	.595 (ns)
	CG	23	28.17	1.37			
S6	EG	41	17.54	6.51	3.04	7.75	.007**
	CG	40	14.50	2.32			

Note. S1 = Basic Education Middle School (Branch), Myoma; S2 = Basic Education High School, Alar, S3 = Basic Education High School (Branch), Tharyargone; S4 = Basic Education Middle School (Branch), Set Thit; S5 = Basic Education High School, Kyonkadat; S6 = Basic Education High School (Branch), Anin; EG = Experimental Group; CG = Control group; ns = not significant, ***p* <. 01.

Findings of Students Achievement in Posttest

Relating to posttest results, findings show that most schools had significant differences at applying and analysing level while no significant difference was found at understanding level and remembering level questions in a few schools. The following Table 2 summarises ANCOVA results of both groups in each school.

Table 2 Summary of ANCOVA Results of both Groups in each School

School	Group	*N*	*M*	*SD*	*MD*	*F*	*p*
S1	EG	45	28.11	5.49	2.77	7.89	.006**
	CG	37	25.34	2.69			
S2	EG	53	35.85	2.99	8.14	145.64	.000***
S3	EG	36	20.70	1.71	0.24	0.13	.724 (ns)
	CG	43	20.46	3.83			
S4	EG	31	33.45	3.39	3.22	9.41	.003**
	CG	30	30.23	4.79			
S5	EG	30	38.57	2.52	3.78	27.27	.000***
	CG	23	34.79	2.66			
S6	EG	41	35.29	5.81	8.97	37.29	.000***
	CG	40	26.32	6.96			

Note. S1= Basic Education Middle School (Branch), Myoma; S2 = Basic Education High School, Alar, S3 = Basic Education High School (Branch), Tharyargone; S4 = Basic Education Middle School (Branch), Set Thit; S5 = Basic Education High School, Kyonkadat; S6 = Basic Education High School (Branch), Anin; ns = not significant, ***p*<.01, ****p*< .001.

The following Figure 2 compares ANCOVA results of posttest scores achieved by both groups in each school.

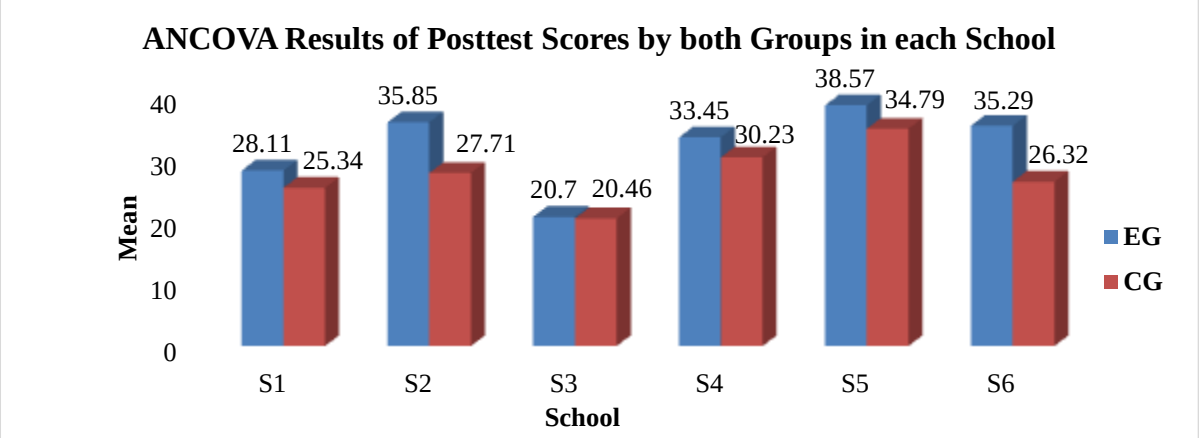

Figure 2 Comparison of ANCOVA Results of Posttest Scores by both Groups in each School

Note. S1 = Basic Education Middle School (Branch), Myoma; S2 = Basic Education High School, Alar, S3 = Basic Education High School (Branch), Tharyargone; S4 = Basic Education

Middle School (Branch), Set Thit; S5 = Basic Education High School, Kyonkadat; S6 = Basic Education High School (Branch), Anin.

Table 3 Summary of Students' Questionnaires Results

Area A	Attitudes towards the Development of Subject Mastery					
Statement	**N**	**SD (%)**	**D (%)**	**N (%)**	**A (%)**	**SA (%)**
1	240	-	0.8	2.1	50.8	46.3
2	240	-	0.8	2.1	36.3	60.8
3	240	-	5.4	22.5	45	27.1
4	240	0.4	3.4	7.9	47.5	40.4
5	240	-	1.6	9.2	50.4	38.8
Area B	**Attitudes towards the Development of Self-Confidence**					
1	240	0.8	1.7	4.6	38.3	54.6
2	240	-	3.7	7.9	44.6	43.8
3	240	-	2.9	6.7	39.2	51.2
4	240	-	3.3	10	51.2	35.4
5	240	-	2.9	5.8	39.6	51.7
1	240	0.4	2.5	11.7	62.9	22.5
2	240	-	2.1	9.1	54.2	34.6
3	240	-	0.4	0.4	39.6	59.6
4	240	1.3	4.1	10	50	34.6
5	240	1.3	2.5	4.1	32.9	59.2
Area D	**Attitudes towards the Development of Creativity**					
1	240	1.3	4.6	13.3	47.5	33.3
2	240	3.3	3.8	28.7	45	19.2
3	240	1.7	5	15.5	52.1	25.7
4	240	1.3	2.4	3.8	39.2	53.3
5	240	1.7	1.3	9.5	42.5	45

Note. SD = Strongly Disagree; D = Disagree; N = Neutral; A = Agree; SA = Strongly Agree

Table 4 Summary of Teachers' Questionnaires Results

No.	Statement	N	SD (%)	D (%)	N (%)	A (%)	SA (%)
A	**Teachers' Attitude towards Lesson Preparation in Teaching Geography through Activity-Based Learning**						
1	Suitable lesson activities should be prepared in teaching through activity-based learning (ABL).	6	-	-	-	83.3	16.7
2	In teaching by ABL, I assume that lessons should be prepared not only with activities in the textbook but also with the teacher's creativity.	6	-	-	-	83.3	16.7
3	In order to teach lessons by ABL, it is necessary to include learning outcomes when learning objectives are set.	6	-	-	-	66.7	33.3
4	In preparing the lesson by ABL, teacher should consider students' mental development when the activities are planned.	6	-	-	-	33.3	66.7
5	In preparing the lesson by ABL, it is necessary to consider students' prior knowledge to lesson topic.	6	-	-	-	33.3	66.7
6	In preparing the lesson by ABL, the teaching aids must be planned in advance.	6	-	-	-	33.3	66.7
7	In preparing the lesson by ABL, it is necessary to plan formative assessments to be carried out during instructional process.	6	-	33.4	-	33.3	33.3

No.	Statement	N	SD (%)	D (%)	N (%)	A (%)	SA (%)
8	In preparing the lesson by ABL, written questions should be prepared to find out the achievement of learning objectives.	6	-	-	33.4	33.3	33.3
9	In preparing the lesson by ABL, it is necessary to prepare Observation Checklist to assess state of the learning.	6	-	-	-	100	-
10	In preparing the lesson by ABL, not only the activities in the textbook but also extended assignments should be planned.	6	-	-	33.4	33.3	33.3
B	**Teachers' Attitudes towards Geography Teaching by Activity-Based Learning**						
1	In teaching lessons by ABL, the teacher should study concepts and principles of ABL to carry out the learning activities.	6	-	-	-	33.3	66.7
2	In teaching lessons by ABL, the teacher must prepare active learning activities before instruction begins.	6	-	-	-	83.3	16.7
3	In teaching lessons by ABL, the teacher needs to explain procedures of individual and group activities before they are carried out.	6	-	-	-	83.3	16.7
4	I think the ABL is helpful to motivate students to develop creative activities related to the lesson.	6	-	-	-	50	50
5	In teaching lessons by ABL, the teacher must allow students to ask questions about unclear information during learning activities.	6	-	-	-	66.7	33.3
6	In teaching lessons by ABL, the teacher should provide constructive criticism and advice to supplement what students need during their learning activities.	6	-	-	-	66.7	33.3
7	In teaching lessons by ABL, I think that the teacher needs to continuously check and evaluate the progress of the work while the students are doing the learning activities.	6	-	-	-	66.7	33.3
8	In teaching lessons by ABL, the teacher must evaluate the students' learning, review his teaching, and prepare the necessary steps.	6	-	-	-	50	50
9	In teaching lessons by ABL, it is not necessary to assess learning by assigning project work.	6	-	-	-	83.3	16.7
10	I think that the set teaching duration is not enough when ABL is implemented properly.	6	-	-	-	83.3	16.7
C	**Teachers' Attitudes towards Students' Learning in Teaching Geography through Activity-Based Learning**						
1	In using ABL, students must be given the opportunity to practice learning materials related to the lesson.	6	-	-	-	66.7	33.3
2	When learning lessons by ABL, I think that teacher should help students to present how the learning activities have been carried out.	6	-	-	-	83.3	16.7
3	When learning lessons by ABL, it is considered that learning activities should be clear before students learn.	6	-	-	-	100	-
4	When learning lessons by ABL, students are allowed to discuss and exchange their ideas with each other while doing learning activities.	6	-	-	-	50	50
5	When learning lessons by ABL, the teacher must plan activities for all students in advance so that they participate in learning.	6	-	-	-	50	50
6	The ABL helps students acquire the ability to apply what they have learned in the classroom to an environment outside of school.	6	-	-	-	66.7	33.3
7	When learning lessons by ABL, students will develop accountability for their learning.	6	-	-	-	50	50

No.	Statement	N	SD (%)	D (%)	N (%)	A (%)	SA (%)
8	When learning lessons by ABL, I think that students will get more team spirit by doing learning activities together.	6	-	-	-	33.3	66.7
9	When learning lessons by ABL, students are more interested in Geography.	6	-	-	-	66.7	33.3
10	I think that the ABL can contribute to get more students' interest in teaching not only Geography but also other subjects.	6	-	-	-	50	50
D	**Teachers' Attitudes on Assessment of Students' Learning Achievement in Teaching Geography through Activity-Based Learning**						
1	In teaching lesson by ABL, I think that formative assessment can identify the state of students' learning.	6	-	-	-	66.7	33.3
2	In using ABL, the written test is considered essential in evaluating end-of-year achievement.	6	-	-	-	16.7	83.3
3	Peer assessment can also be used in using ABL.	6	-	-	-	100	
4	In ABL, learning achievement can be evaluated by keeping Performance Assessment Record.	6	-	-	-	66.7	33.3
5	The teacher should use portfolios of student to evaluate the individual learning progress.	6	-	-	33.3	50	16.7
6	In teaching lesson by ABL, it is assumed that formative assessment can identify students' strengths and weaknesses and necessary feedbacks can be given.	6	-	-	-	83.3	16.7
7	In using ABL, it is necessary to give individual activities and check them when learning achievement is assessed.	6	-	-	16.7	50	33.3
8	In using ABL, learning achievement can be assessed not only directed assessment techniques but also using extended activities.	6	-	-	33.4	33.3	33.3
9	In using ABL, assigning homework and assessment are essential.	6	-	-	-	33.3	66.7
10	As the ABL activities take time, I think that there is not enough time to do assessment after learning a lesson.	6	-	-	-	33.3	66.7

Note. SD =Strongly Disagree; D =Disagree; N =Neutral; A =Agree; SA = Strongly Agree

The following Figure 3 describes observation results by teachers to Geography teacher.

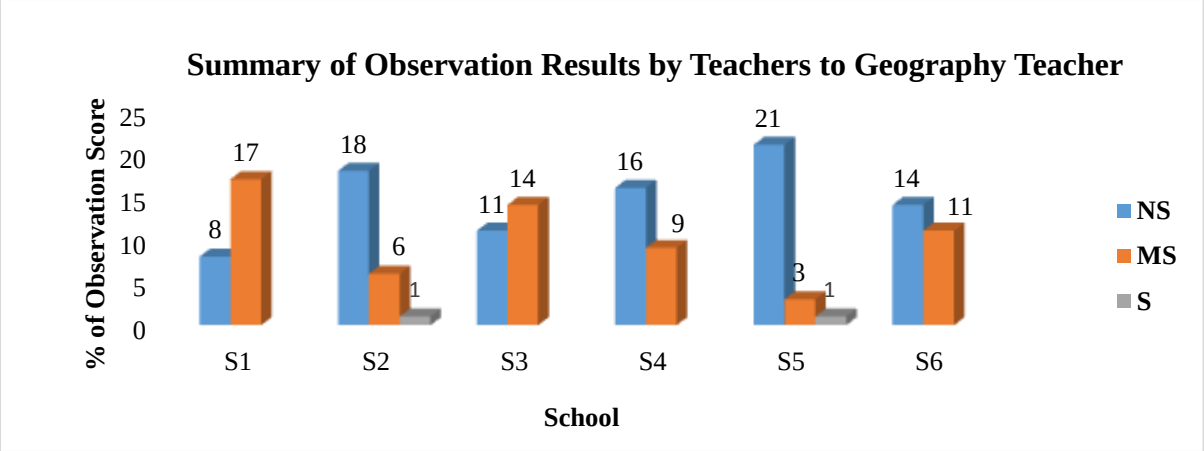

Figure 3 Summary of Observation Results by Teachers to Geography Teacher

S1 = BEMS Myoma; S2 = BEHS Alar; S3 = BEHS (Branch) Tharyargone;
S4 = BEMS Set Thit; S5 = BEHS Kyonkadat; S6 =BEHS (Branch) Anin
NS = Not Satisfied; MS = Moderately Satisfied; S = Satisfied

The Table 5 described below summarises the observation results by teachers to geography teacher.

Table 5 Summary of Observation Results by Teachers to Geography Teacher

School	S1	S2	S3	S4	S5	S6
NS	8	18	11	16	21	14
MS	17	6	14	9	3	11
S	-	1	-	-	1	-

Note. NS = Not Satisfied; MS = Moderately Satisfied; S = Satisfied

Table 6 described below summarises observation results by principals to geography teachers.

Table 6 Summary of Observation Results by Principals to Geography Teachers

School	S1	S2	S3	S4	S5	S6
NS	8	18	11	16	12	16
MS	17	6	14	9	13	9
S (%)	-	1	-	-	-	-

Note. S1 = BEMS Myoma; S2 = BEHS Alar; S3 = BEHS (Branch) Tharyargone;
S4 = BEMS Set Thit; S5 = BEHS Kyonkadat; S6 =BEHS (Branch) Anin
NS = Not Satisfied; MS = Moderately Satisfied; S = Satisfied

The following Figure 4 describes observation results by principals to geography teachers.

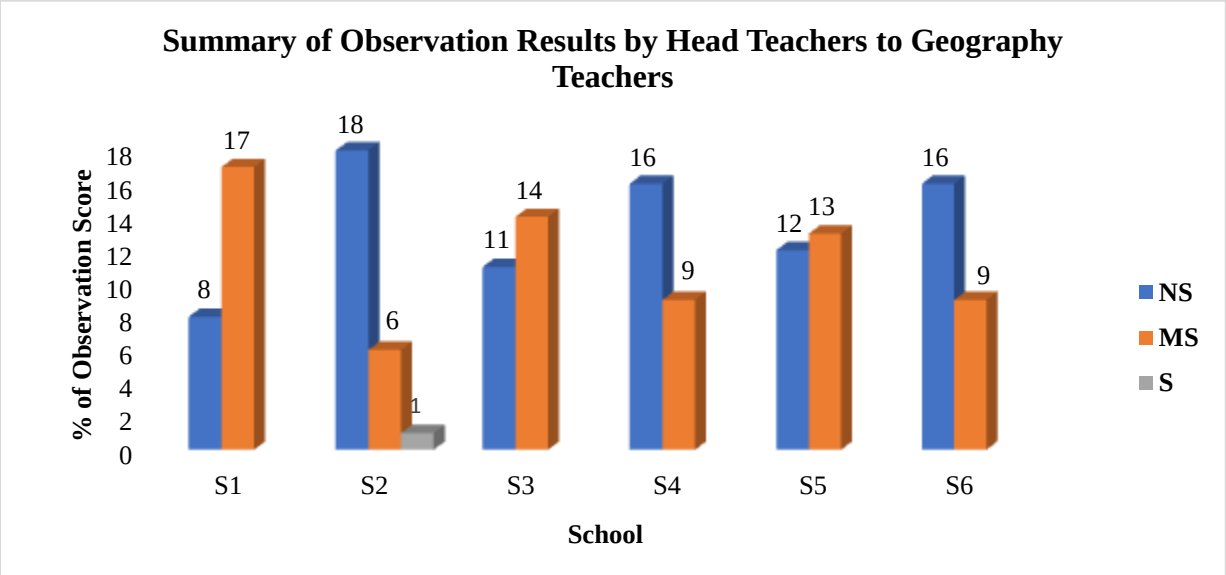

Figure 4 Summary of Observation Results by Principals to Geography Teachers

Note. S1 = BEMS Myoma; S2 = BEHS Alar; S3 = BEHS (Branch) Tharyargone;
S4 = BEMS Set Thit; S5 = BEHS Kyonkadat; S6 =BEHS (Branch) Anin
NS = Not Satisfied; MS = Moderately Satisfied; S = Satisfied

Data Analysis Method and Interview for Qualitative Findings

Interviews were conducted to a teacher and 2 students from each school to know their insights towards the proposed ABL model in teaching and learning Grade Seven Geography and so there were 6 teachers and 12 students in total. Coding analysis and thematic analysis were done to explore appearing themes from the study.

Thematic Analysis on Findings from Teacher

There are some similarities among observed teachers and so, their responses are analysed and synthesized into themes. Based on responses of teachers, the following themes can be explored. For preparation, teachers replied that they prepared lessons to include all students, like verbal questions and written questions, preparation of necessary teaching aids and use of more

time to study lessons in advance. For Preferences, teachers found students satisfied the ABL, for example, use of different soils for growing plants, active participation in activities, more enjoyment of ABL. For benefits of using ABL, teachers found that students improved reflective skills, participation of lone learner in group work, and improvement of team-work skills.

For difficulties**,** teachers saw poor learners reluctant to come to the front and so they gave answers from their place. Some students were not interested in and some were afraid of telling answers. For suggestions, teachers responded that ABL could be used for mathematics, science, history subjects because these subjects also need group work and hands-on activities.

Thematic Analysis on Findings from Student

There are some similarities among observed students and so, their responses are analysed and synthesized into themes. Based on responses of students, the following themes can be explored. For preparation, interviewed students also responded that they used soft pens, colour pens, maps, filling in maps and different soils. For preferences, students responded that they were happy to learn Geography by ABL because they got experiences of working in groups. They preferred group activities to individual activities that take time in finding answers. In group work, they can ask help from others, exchange knowledge and discuss among friends. For benefits of Activity-based learning, students responded that they got more friendship with group members and teacher. And doing competition motivated them to get more marks and facts compared to other groups. For suggestions, students replied that they wanted to learn history, science subjects and mathematics volume 2 by ABL.

Discussion

In terms of statistical results, experimental groups students from Nay Pyi Taw and Mon State got higher achievement than those from control groups. Most of the positive responses from teacher questionnaires and student questionnaires show that ABL model has positive impact on teachers and students in Geography teaching. However, observation results by Grade six teachers and principals to Grade seven geography teachers show that geography teachers instruction remained at moderately satisfactory level. This could be that observers reached the classroom at busy hours of students and observers' little knowledge on ABL nature. Based on findings from interview responses, five themes were explored and they are preparation, preferences, benefits of activity-based learning, difficulties and suggestions. Both teachers and students expressed the importance of lesson preparation, their likes and dislikes, improvement and advantages of activity-based learning, some difficulties experienced by teachers and students and their suggestions. In summary, among 236 students from six schools, around 80% of responses were positive replies while less than 10% were negative replies from those schools. The remaining percentages were neutral responses on given statements. The questionnaire responses show that students from experimental groups in both locations (Nay Pyi Taw and Mon State) preferred activity-based learning model and related activities to those of traditional learning method. All in all, the findings agree with hypothesis 6: students who are taught with the proposed Activity-Based Learning (ABL) Model will have positive attitudes towards Grade Seven Geography learning. The current findings are supported by previous studies as follows.

Study of (Anwer, 2019) who included students' favorite learning strategy found that, in experimental group, 46% students selected usage of activities, 20% found conceptual worksheet and 13% found questioning technique helpful for better understanding.

Noreen and Rana (2019) and Anwar and Majoka (2011) argued that activity-based learning integrated with peer instruction creates an ideal situation for teaching science subjects and

especially physics. Students are actively involved in hands-on experiences and get chance to relate abstract ideas and theories with concrete observations. This helps them to make deep understanding of scientific concepts. Moreover, Anwer (2019) stated that students liked those teachers most who were energetic and enthusiastic, gave hands-on activities and used visual aids to make the class interesting. Some liked group work and explanation through real examples. Moreover, activity-based learning engaged more students compared to formal teaching in that study. Therefore, these related studies agree with findings from current study of the proposed ABL Model.

Suggestions

According to the research findings, the following suggestions are provided to different stakeholders.

(a) Suggestion to Middle School Geography Teachers

In carrying out effective geography teaching, geography teachers play an important role and the following suggestions are provided for further implementation.

- Teachers should take time to prepare lessons and teaching-learning materials. It should be developed by teachers and students collaboratively. It is also necessary to use suitable teaching-learning materials which are relevant to the content.
- Based on students' responses, they were happy to learn Geography by getting experiences of working in groups, asking help from others, exchanging knowledge and discussing with friends. So, knowledge on different methods of teaching, especially, teamwork and collaborative learning are necessary for instructional process. In this case, teacher should spend time on preparation and it saves time of teachers and students.

(b) Suggestion to Middle School and High School Principals

Quality education is not the work a person and it is the concerted effort of all stakeholders. Based on the research findings, the following suggestions are given to middle school and high school principals.

- Principals should monitor and assess instructional process of Geography teaching. Principals should catch up with updated knowledge, information and educational technology so that they can provide teachers to conduct effective teaching-learning environment.
- It is also necessary to mentor and coach teachers to fulfill their professional development. In this case, principals should have instructional leadership skills so that they can lead not only administrative but also instructional roles.
- Principals should learn the activities of certain method that they are going to observe in class so that their findings will not have negative effect on research results.

(c) Suggestion to Administrators

Administrators play an important role in implementing effective teaching and learning as they are superior and more powerful compared to classroom teachers. The following suggestions are provided for administrators.

- Administrators at different levels should pay attention to develop school appearance and quality learning such as supporting necessary furniture and teaching-learning materials.
- It is essential to provide teachers to take continuous professional development (CPD) programmes in their respective fields. Refresher courses and workshops should be arranged regularly for Geography teachers to promote their professional knowledge, skills, and attitude.

(d) Suggestion to Curriculum Planners

In carrying out the curriculum effectively, curriculum planners play an important role as they need to disseminate necessary knowledge to curriculum workers. Therefore, some suggestions are provided for curriculum planners.

- Based on findings, curriculum planners play an important role of effective curriculum implementation. Therefore, they should provide updated knowledge of curriculum implementation to teachers at the grass-root level.
- Moreover, core curricular activities have to be implemented to middle and high school students so that they will not waste much of their free time on games, drugs and other violent activities.

Recommendations

Based on the findings from the current study, the following considerations are thought to be important to do further research.

- The current study was carried out in one region and one state: Nay Pyi Taw Region and Mon State. Future research should be done in other regions and states in order to validate the current results.
- Participants in the current study are Grade Seven Geography teachers and students from selected schools in 2022-2023 Academic Year. The proposed ABL Model should be researched with teachers and students from other grades and other schools to get comprehensive results.
- The current study covered 20 lessons of new Grade Seven Geography curriculum. Further research could be done with more content areas and more lessons not only in Geography but also in other subjects, for example, science, history, economics and languages at different grades in order to validate the result of this study.

Conclusion

In conclusion, the results of quantitative and qualitative study show that ABL model is an effective model for higher achievement of teachers and students. It is recommended to do further research with this model in other subjects, other grades, other regions and states. Further study should be carried out to study at creating level of Bloom's Taxonomy with different learning styles, learning methods, perceptions of administrators and to achieve linkage between KG+9 and vocational education policy. By using ABL model, teaching learning situation will become active learning environment. As a final conclusive recommendation, the researcher would like to present a felt need for elaborate investigations into cyberspace and virtual reality-based models of teaching and/or learning. In this ultra-modern age of cybernetics and information technology, VR (virtual reality) is meant to be a computer-mediated, multisensory experience. Brand new perceptions and ideas may thus arise as a consequence of such multichanneled sensory input. Cyberspace or CS, as the sharing by two or more individuals of a VR experience, also invites new thoughts, and ideas. Unfortunately, there is very little psychological knowledge to help guide teachers and/or students along this cybernetics-based path of technological development. Hence the need for research into CS/VR based pedagogics has become extremely acute, urgent, and highly prioritized.

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