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Development of Teacher-Designed Self-Learning Kit in Geometry for the Subanen, Maranaos and Visayans

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Abstract. This study is a comparative analysis on the effectiveness of the teacher-designed self-learning kit (SLK) in Geometry for the Subanen, Meranaos, and Visayans, reflecting the culture, tradition and ethnicity of these tribes. The researcher used quasi experimental design involving quantitative and qualitative approaches. The respondents were grouped into control and experimental and purposively assigned to their respective groups. Achievement test was given to the respondents in the control and experimental groups after the implementation of the SLK. SLK was developed based on Taba Model: Diagnoses of needs, formulation of objectives, selection of content, logical organization of content, selection of learning experiences, organization of learning activities, evaluation and means of evaluation. Effectiveness of the SLK in teaching Geometry was evaluated through observations and interviews gathering the information qualitatively, particularly the insights and beliefs of students on self-learning kit. Findings revealed that the mean achievement scores between experimental and control group vary significantly. The mean scores of Subanen tribe differ significantly from the mean scores of Meranao and Visayan tribes. The untoward peace and order incident that happened in Lapuyan, Zamboanga del Sur affected so much the performance in the achievement test of both experimental and control groups in the Subanen tribe. All the respondents rated the SLK "excellent" in their evaluation. The student-respondents showed positive insights and perceptions in the use of SLK in their learning process. It enhanced their critical thinking, promoted their creativeness, and interests. Moreover, they become more motivated to learn the concepts and they enjoyed their interactive learning.

Keywords: self –learning kit; geometry; language

Introduction

Developing countries lack material resources in teaching Science and Mathematics at all levels (Talisayon, 1990). Kline (1996) commented that if Mathematics is indeed a creative activity, what driving force causes men to pursue it? The most obvious, though not necessarily the most important motive

for mathematical investigations, is to answer questions arising directly out of social needs. Commercial and financial transaction, navigation, calendar reckoning, construction of bridges, dams, and churches, the design of fortification and weapons of warfare, and other numerous human pursuits involve problems which can best resolved through Mathematics. The use of mathematics as a universal tool is specifically true of our modern technological age. Quantum leaps that the modern age boasts of could not have been possible without mathematics. This is the reason why Schoenfield (1992) said that success in Mathematics needs to be built in the classroom. Students need to experience success early when they begin a mathematics class. This success enables them to develop confidence in their ability to do Mathematics, which in turn paves the way for further positive feedback in this field. However, there is a dearth of learning materials in the secondary schools in the Department of Education. This is true in Math particularly in Geometry. Secondly, the existing teaching learning materials do not consider the culture of the learners, specifically their traditions, realities and localities. Hence, these factors make the indigenous students find mathematics alien hence, more difficult.

Moreover, the Department of Science and Technology-Science Education Institute (DOST-SEI) (1998) reiterated that Mathematics and Science continue to be the most difficult subjects up to this time. It is because the results in the National Secondary Achievement Test (NSAT) for two consecutive years, that is 1996 and 1997, were below 50%. In the Division of Lanao del Norte, the results were attributed to the teachers who were not major in the key learning areas in Science, Mathematics, English, and Filipino. Specifically, the least number of teachers (1.4%) have specialized in science and small 6% in Mathematics. These statistics confirmed that many teachers are not well prepared to teach the critical subject areas of Science and Mathematics (Oreta, T. A., 2000). This situation is particularly true in the Lanao areas, hence, there is a need for Self-Learning Kit to guide these non- Math majors in teaching. Besides, it is a known fact that many teachers, even Math majors, find teaching Geometry difficult. Therefore a Self-Learning Kit (SLK) will be a welcome innovation to facilitate teaching of this subject.

According to Airasian (1994), classrooms are busy places. Every day in every classroom, teachers make decisions about their pupils' behavior, the success of their instruction, the classroom climate and the availability of instructional resources influence not only the nature of instruction but as well as the learning outcomes. Since the teachers are considered the key factors in the students' understanding of Mathematics' concepts, they should have instructional materials that would facilitate the teaching of Mathematics. Lack of texbooks and other resource materials was the primary problem encountered by both Mathematics teachers and students in the Division of Lanao del Norte. Mathematics is a vital subject that cannot be taken for granted since it is the heart of science. However, we cannot escape from reality that there are students who have negative attitudes toward it. Most students consider it as difficult because of endless repetition, meaningless memorization, never ending services

of worksheets or fracture exercises, and in general, the lack of interest and understanding in Mathematics.

By developing a Self-Learning Kit (SLK) in Geometry students may be motivated to explore and become more creative. It may erase the negative perceptions of the students towards Mathematics. This kit motivates students to love, and be interested in learning Mathematics particularly Geometry. It is in this light that the researcher developed a Self-Learning Kit (SLK) tailored for Subanen, Meranaos and Visayans. This kit is expected to cater to the level of understanding of the students. Self-learning kit is a tool that enhances learning Mathematics. It aims to develop creativity through manipulative processes and thinking skills. It also relates the lesson to the real world, and develops self-confidence in Mathematics among the students. In addition, several studies have shown that beliefs about oneself have a remarkable connection with success in Mathematics. The more students learn the more confident they become, and the more enjoyable experience of learning it becomes. The self-learning kit developed and used in this study is expected to cater to the level of understanding of the students reflecting their own culture and tradition, ethnicity and locality.

The SLK has the following aims: (a) knowledge based culture and their application to culture based teaching of basic education; (b) opportunities for critical dialogue with the local culture; (c) contribute to a deeper understanding and appreciation of culture. These aims are congruent to the aims of the Department of Education in initiating a scholarship program for the graduate certificate in cultural education which was already started last summer 2011. To uplift the teacher's capacity in the teaching-learning strategies among the Indigenous Peoples and Meranao teachers must uphold with the modern pedagogy that is fitted to the learners, embracing their cultural identity as the basic examples in the teaching-learning process. SLK is useful for the scholars and mentors to bring innovations to teaching-learning process especially to the Indigenous Peoples' and Meranao students.

Research Methodology

This research used quasi experimental posttest design involving quantitative and qualitative approaches. Quantitative approach was used to interpret the numerical value obtained in this study. Qualitative approach, on the other hand was used to qualify the data that would triangulate the quantitative results. Moreover, qualitative data need not be analyzed using statistical. Generally, the study was based on experimental design using Self Learning Kit (SLK) as an intervention. The respondents were grouped into control and experimental. They were purposively assigned to their respective groups through pairing of students using their previous grades in Mathematics III and draw lots. Then, achievement test was given to the respondents after the implementation of the SLK. Observations and interviews were employed in gathering the information qualitatively, particularly the insights and beliefs of students on the self - learning kit, and the feedbacks of the teachers regarding the self-learning kit as a tool in the classroom instructions.

Mindanao is the southernmost and the second largest island in the Philippines was chosen as the research locale of the study. Specifically Lapuyan, Zamboanga del Sur; Pantao Ragat, Lanao del Norte; and, Aurora, Zamboanga del Sur. These municipalities were chosen since Subanen, Meranaos, and Visayans are dominant in these places. The respondents of the study were the third year high school students and their respective teachers of Lapuyan National High School (LNHS), Pantao Ragat Agro Industrial High School (PRAIHS), and Commonwealth National High School (CNHS). The teacher-respondents handle both the experimental and control groups. These students belong to the tribe of Subanens, Meranaos, and Visayans.

Subanen tribe is one of the indigenous peoples in the Philippines. They are originally found along the river banks or "suba" but now reside in the mountains of Lapuyan, Zamboanga del Sur (Daligang, 2011). In the olden days, Subanen did not go to schools. Their parents were in charge of their schooling. Generally, the mothers or the fathers sang Subanen epics, poems and read legends and stories. The Mother also trained their daughters to weave abacca cloth. While, the fathers trained their son to do wood carvings, to weave rattan baskets, and to make musical instruments out of bamboo and wood (Wikipedia, 2011).

On the other hand, the Meranao tribe is the largest Moro and cultural minority in the Philippines (FEMAS, 1999). Together with the Ilanuns and Maguindanaos, the Meranaos are one of the three indigenous Muslim groups who are natives to the island in Mindanao in the south western part of the Philippines. This tribal group shares in a generalized Southern Asian culture but has its own cultural identity. Almost all Meranaos are Muslims, but some groups living in the hills around Lake Lanao are committed to a version of Islam that is fused with traces of pre-Islamic traditions. The spreading of Islam in Mindanao created a differentiation between its native people, those who became Muslims were named "Moro" and those who did not are called "Lumad". Lastly, the Visayans (Bisaya, Bisayan, Pintado) is a general term for a large segment about a quarter of the Philippine population. The term "Visayan "refers to people who inhabit in the islands surrounding the Visayan Sea. Most of the Visayans are Roman Catholic, and they make up a large part of Christian population that is loosely labeled Filipino. At first when discovered by the Spaniards, they were named "Pintados "because they used to paint their bodies. The popular image of Visayans is of passionate, fun-loving, brave, and musical people. Their major economic activity is the cultivation of maize and irrigated rice. Those who have settled in Mindanao in recent decades have often become involved in fighting local Muslims for land (Dumont, 1991).

The breakdown of the respondents based on match pairing is shown in table 1 below. This table showed that the experimental group is composed of 65 respondents while, the control group is 65 respondents. The total respondents were one hundred thirty (130) students. The table also shows that the Subanen tribe has the least number of respondents.

Table 1
Distribution of Respondents in the Study

Tribes	Group		Total
	Experimental	Control	
Lapuyan National High School (LNHS) Subanen	16	16	32
Pantao Ragat Agro Industrial High School (PRAIHS) Meranao	29	29	58
Commonwealth National High School (CNHS) Visayan	20	20	40
Total	65	65	130

This study used six (6) different sets of tests, namely: Achievement Test, Self-Learning Kit (SLK), Readability Test, Journal Writing, SLK Evaluation Checklist, and Teacher's Evaluation Checklist. These instruments were all used to gather the data. Achievement test was constructed by the researcher based on the topic on triangle similarity which is chapter 5 in the textbook of the Department of Education and has been validated, both in content and reliability. Self-Learning kit (SLK) was constructed by the researcher considering the culture, tradition, and ethnicity of each tribe. It provides the students the opportunities to enhance their skills in reasoning, thinking, computing, and accuracy in tackling real life situations. It also develops their personality and intellectual ability, which in turn lays the foundation to develop positive self-confidence. This SLK also serves as the main instrument in conveying the concepts in Geometry, specifically on the topic triangle similarity. The following subtopics are included in SLK: triangle similarity with (1) Ratio and Proportion; (2) Similarity Between Triangles; (3) Scales and Map Problems; (4) Proportionality Theorems; (5) Basic Proportionality Theorems; (6) Similarities in Right Triangles; (7) Problems Involving Similar Triangles and Special Right Triangles; (8) Relationships Between Perimeters and Between Areas of Similar Triangles. Different activities were introduced in each subtopic and emphasizing with the value of cooperative learning. The Kit was pilot tested to the respective tribes which are not the respondents in the study for content, readability and reliability validation. According to Robert (2012), the readability of writings describes how well the text matches the reading abilities of the audience. In this study, the Fry Graph Readability Formula was used to minimize or to eliminate the difficulty of the respondents in understanding the SLK. The Fry Graph Readability Formula was developed by Edward Fry. He was a Fulbright Scholar in Uganda, where he helped the teachers in teaching English Second Language (ESL). Fry constructed readability test based on a graph.

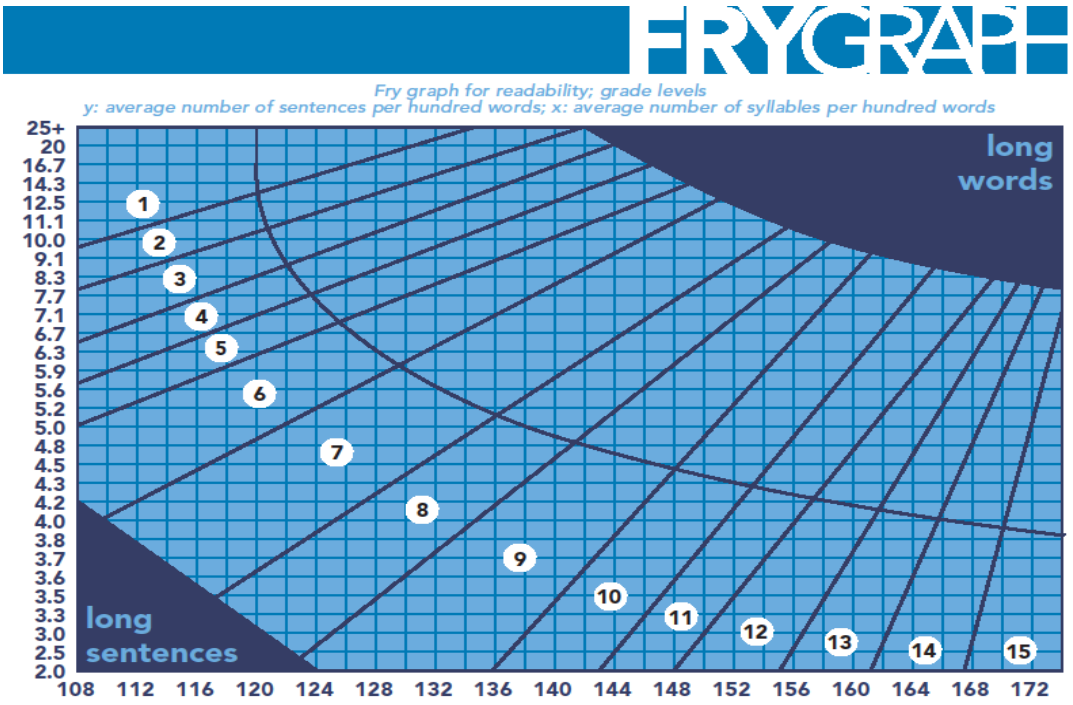

Figure 1: Fry Graph Readability Test

Journal Writing is another tool where the students expressed their perceptions, thinking and feelings in using the self-learning kit. This was done regularly on a daily or weekly basis so that the observation was properly documented. This tool can also validate the response of the respondents of the other instrument of this study. Evaluation Checklist was used to evaluate the effectiveness of the Self-Learning Kit (SLK) considering its objectives. It evaluates the following parts of the SLK, namely: Cover Page, Overview, Jumpstart, Lesson Proper, Layout, Overall Content, Writing Mechanism, Self-Assessment Questions, and Citations. The response scoring has the following scale and equivalent description 1.0 – 1.74 – Poor, 1.75 – 2.49 – Good, 2.50 – 3.24 – Very Good, and 3.25 – 4.00 – Excellent. Teacher's Observation Checklist was used in monitoring the performance of the teachers in the implementation of the SLK. The classroom instructional observation are answerable by YES/NO or Not at All (NA). The researcher also does some observations on the performance of the teachers for improvement of their teaching skills.

Table 2
Chart of Class Observation and Interview Schedules

Date	Observation Schedules			Interview Schedules		
	Subanen	Meranao	Visayan	Subanen	Meranao	Visayan
2/2/2012 2/3/2012						
2/6/2012 2/7/2012						
2/9/2012 2/10/2012						
2/13/2012 2/16/2012						
2/20/2012 2/21/2012						
2/23/2012						
2/27/2012						
2/28/2012						
3/1/2012 3/2/2012						
3/5/2012 3/6/2012						
3/7/2012 3/8/2012						

Note: The highlighted sections are the schedule or respective dates where the researcher observed and interviewed the respective respondents

Statistical Tools and Data Analysis Procedure

For quantitative data frequency and percentage distribution were used to establish the profile of the respondents as to the demographic profile and performance in the achievement test. To test the significance of the differences in the achievement test of the three tribal groups of students, t- test of difference was computed. To test for the variance, the Analysis of Variance of the Achievement Scores of the experimental and control group was used and to test the multiple comparisons of the three tribes both the experimental and control groups was used, Tukey's Test was used.

For qualitative data analysis, the researcher used coding system, to maintain the confidentiality of the ideas or opinions of the informants. For the respective Mathematics teachers of the respondents they were coded with the used of their name initials. Since there were only three teachers involved, they are coded as Teacher F in Lapuyan, Teacher R, in Pantao Ragat, and Teacher I in

Commonwealth. The opinions and ideas of respondents during their interviews and their journal writing were analyzed through descriptions and comparisons. Comparisons were used by the researcher in presenting contradicting ideas or opinions of the respondents. The student-respondents were coded as Subanen student/s, Meranao student/s, and Visayan student/s.

Summary of Findings

This research study on, "Development of Teacher-Designed Self-Learning Kit in Geometry, for the Subanen, Meranao and Visayan" was aims to evaluate the SLK and help students learn Geometry in an enjoyable and interesting way particularly on triangle similarity through hands – on and interactive learning. Specifically the study sought to answer on the following questions:

1. How was the Self-Learning Kit in Geometry developed?
2. What is the demographic profile of the respondents?
3. What are the previous grades in Mathematics of the respondents namely: Subanen, Meranao, and Visayan?
4. What are the mean achievement scores of the third year students of the three respondents' tribes in terms of experimental and control groups?
5. Is there a significant mean difference in the achievement scores of the experimental and control groups of the three respondent tribes?
6. Is there a mean difference in the achievement test scores of the control group in the three respondent tribes?
7. Is there a mean difference in the achievement test scores of the experimental group in the three respondent tribes?
8. What are the insights and perceptions of the teachers derived in using the self-learning kit?
9. What are the insights and perceptions of students on the self-learning kit in triangle similarity with regards to their critical thinking, creativity, interest, and motivation?
10. How effective is the SLK in terms of teaching and learning?
11. What implications are drawn from the study?

Based on the data gathered the following findings emerged:

1. Most of the Meranao and Visayan tribe respondents are female for while in the Subanen tribe male and female respondents are almost equal.
2. Majority of the respondent's age in the two groups of Subanen tribe and Meranao tribe falls within sixteen (16) years of age while in the Visayan tribe both experimental and control groups are fifteen (15) years of age. Only few of the respondents belong to eighteen years and above.
3. Majority of the Subanen tribe are Alliance and Baptist while Meranao tribe is one hundred percent Islam. The majority of the Visayan tribe, both experimental and control groups are Roman Catholic
4. The parents' educational attainment of the Subanen respondents in the experimental group is at elementary level while the control group, secondary level. Some of the parents for Meranao tribe in experimental group are college graduates and elementary graduates, while in the control group are college level and secondary graduates. For Visayan tribe, majority of their parents are secondary graduates.

5. The parent's income of the respondents of the three tribes is below poverty line.
6. Farming is the primary occupation of the parents of the three respondent tribes for both experimental and control groups. Very few are professionals in the Subanen and Visayan tribes while there are more professionals among the parents of the Meranao tribe.
7. The previous grades of the respondents in the three tribes mostly fall within 80 – 84 ranges. Only one student in the Meranao tribe control group has a grade ranging from 95 – 99, while few respondents from the three tribes have a grade ranging from 90 – 94.
8. Among the control group, Visayan tribe has the highest mean of 21.60 followed by the Meranao tribe with a mean of 21.59, and the lowest mean is the Subanen tribe with 9.81. In the experimental group; the highest mean is still in the Visayan tribe with a mean of 34.05, followed by Meranao tribe with a mean of 33.83 and the lowest mean of 19.63 is obtained by the Subanen tribe. Therefore, the Visayan tribe in both the experimental and control groups have the highest mean, followed by the Meranao, and then Subanen tribe. It also shows that the experimental groups of the three tribes have a higher mean as compared to the control group. It signifies that the students in the experimental group perform better than the control group.
9. The Self-Learning Kit (SLK) is effective as a tool in teaching triangle similarity, since mean achievement scores between experimental and control groups vary significantly at 0.05 level of significance among the three groups of respondents.
10. The mean achievement scores of the three tribes in the control group vary significantly. It implies that the traditional method of teaching differ significantly among the three tribes since the teacher-respondents have different teaching strategies.
11. The Visayan and Meranao tribes in the control group have higher mean scores as compared to the Subanen tribe. It means that the unexpected peace and order incident that happened in Lapuyan, Zamboanga del Sur affected so much the performance of the Subanen respondents in the achievement test of both experimental and control groups.
12. The p-value is less than the level of significance at 0.05. Therefore, the H_0 is rejected. This means that the mean scores of the Subanen tribe differ significantly from the mean scores of Meranao and Vesayan tribes.
13. In the evaluation of Self-Learning Kit (SLK), all respondents rated it "excellent".
14. The teacher and student-respondents showed positive insights and perceptions on the use of SLK in their teaching-learning process.

Conclusion

Only one hypothesis was tested in the study. From the results of data analysis, the results showed that there is significant difference in their post-test result among Meranao and Visayan tribes. Therefore, the null hypothesis is rejected at 0.05 level of significance. All the teacher and student-respondents favor and appreciate the SLK, and find it effective in the teaching-learning processes in

their respective classes. The student respondents showed positive insights and perceptions in using SLK in their learning process. It enhances their critical thinking; promote their creativity, and interests. Moreover, they become more motivated to learn the concepts and enjoy their interactive learning especially that the different activities and problems posted in the SLK were based on real-life situations reflecting the culture, tradition, and ethnicity of the Subanen, Meranao, Visayan tribes. Since the teacher and student respondents rated the SLK "excellent" then the SLK passed the evaluation with flying colors.

Implications to Education

The SLK was found to be effective in promoting learning when used in teaching Geometry as shown by the results of the study. The experimental group had higher achievement scores, both teacher and student-respondents greatly favored the use of SLK in teaching -learning Geometry; it developed a higher order and creative thinking skills, problem solving skills were enhanced and positive attitude and interest among teacher and student were deepened.This implies that the researcher developed SLK reflecting the culture, tradition, ethnicity of the Subanen, Meranao, and Visayan, has adequately shown to have the potentials to bring about effective and efficient teaching and learning of math among the IPs and the Meranaos.

There is relatively little information and analysis available on participation, completion and performance in education that is specifically disaggregated for Indigenous and Muslim children. The quality of analysis and its application into policy and programs is generally weak particularly in the context of Indigenous People and Muslim population (PRIME Program 2011). The questions about the relationship between demographic diversity and mathematics achievement were never addressed directly (Grouws, 1993). This study tries to respond to this need as expressed by Grouws. Results of this study showed proof that achievement is a function of social demographic characteristics but there were woefully few impact studies that did likewise. Grouws further said that if we are to believe what demographic tell us, the mainstream has become diverse and that curriculum and instruction should first be effective with these students, and then applied to other populations. Finally, the notion of disadvantaged and compensatory education that are linked to these populations should be replaced by notions that acknowledge their competence, as shown in this study

Education is based on the principle that all children can and have a right to learn. Diversity may be age, gender, religion; ethnicity, culture, language or disability is expected and valued in any population. To fairly and equitably meet the needs of the diversity of learners, the learning environments and processes and educational structures and systems need to be adaptable and context to better able meet the needs of all learners (PRIME Programs, 2011). Hence this study is a timely response to this program Philippines' Response to Indigenous Peoples' and Muslim Education (PRIME) of the Department of Education (DepEd). The study developed SLK catered to the IPs namely: Subanen, Meranao, and Visayan, reflecting their cultures and traditions.

Shaping classroom techniques to the cultural needs of students is nothing new. However, some teachers face dilemma on designing instructional materials that makes the learning environment interactive. This Self-Learning Kit (SLK) tried to design mathematics instructional materials showing Subanen and Meranao cultural heritage in an interactive manners. Classroom is not the only place where cultures merge, however, the teacher in the classroom should provide ample time among students' interaction having different multicultural prospective. Urging to adopt a multicultural perspective in the classroom is to help develop a greater understanding and appreciation of students (Elliot, et.al. 2000). Results of this study affirm that the Indigenous peoples are the holders of unique languages, knowledge systems and beliefs and possess invaluable knowledge of practices for the sustainable management of natural resources (http://www.un.org/esa/socdev/unpfii/documents/5session factsheet1.pdf, 1/24/2013). As such designing and raising materials such as this SLK would promote tribal identity as shown in this research study.

The aim of the development of the (SLK) is to address the gap existing in the inequity and flexibility of education among the Indigenous People and the Meranao students. Grouws (1993) said enhancing the mathematics achievement for diverse population and closing the achievement gaps between those populations is anchored on the theory of **Cognitive Guided Instruction (CGI)**. The **CGI** has been found to enhance first grade students' achievement on basic skills, problem solving, and confidence. It does not prescribe teaching behaviors. Rather, the program is based on four interlocking principles: (1) teacher knowledge of how mathematical content is learned by their students. The SLK provide lessons that lessen the teachers' burden in preparation of the lesson and equip them with different activities that suit the ethnicity, locality and culture of their students. (2) Problem solving as the focus of instruction, the SLK instructions are brief and clearly stated that every students were inspired to do the activities even without the presence of the teachers. (3) Problems reflecting their culture inspired students to solve them. (4) Teacher decision-making based on teacher knows how their students are thinking (Grouws, 1993). However, this study has not included the metacognitive aspects of learning that would give teachers opportunity for them to access students' thinking, more so, with principle number (4).

Cooperative learning is another teaching strategy that produces greater student achievement than traditional learning methodologies (Slavin 1984) as cited by (Dahley, 1994). Grouws (1993) also stated that the creation of small groups is an organizational feature of instruction that is intended to make classes more manageable and to allow teachers to fine tune their instruction to better meet the diverse abilities and needs of their students. Experiential Learning Theory (ELT) provides a holistic model of the learning process and a multi-linear model of adult development, both of which are consistent with what we know about how people learn, grow, and develop. The theory is called "Experiential learning" to emphasize the central role that experience plays in the learning process, an emphasis that distinguishes ELT from other learning theories. The term "experiential" is used therefore to differentiate ELT both from cognitive learning

theories, which tend to emphasize cognition over affect, and behavioral learning theories that deny any role for subjective experience in the learning process (Kolb et.al, 1999). To effectively use SLK, experiential activities were generously provided that interlink to the lesson. Self-Learning Kit (SLK) was designed in such a way that learners were thoroughly engaged in the activities reflective of their cultural heritage. It clearly demonstrated the hands on minds on principle of practical works. These were deeply appreciated because the learners were familiar with the materials and concepts in their culture. Place based, contextual and hands on learning are all examples of experiential learning. Learning by doing is a powerful way to activate multiple senses through direct experiences. Learning takes place in the natural world provides students a change of scenery, stimuli and way to complement didactic learning (www.sd38.bc.ca/-djubinville/EA/Indigenous_Knowledge, 12/20/2012). These were all demonstrated in the SLK.

This Self-Learning Kit study has also an implication on the internationally recognized features of inclusive education that have provided the basis to guide the priorities for inclusions. The following features of inclusive education state (a) ***A constantly evolving process of change and improvement*** within the school and wider education more welcoming learner friendly and beneficial to a wide range of people. The content of SLK gives information of the learners to explore more since there are topics which was already done or invented long time ago and still useful today just like the theory of Thales, the trivia presented on the computation of the circumference of the earth and many more. Another is (b) ***Restructuring of education cultures, policies and practices*** so they can respond better to the diversity of learners. SLK is very much appropriate to restructuring of education for it is bounded with ethnicity, locality and culture sensitive. (c) ***Changing the education system*** so it can be flexible enough to accommodate the needs to different learners, for it is said that the world is full of changes same as the educational system also changed. SLK accommodate the needs of the learners with regards to their tribal identity where the examples introduce to them are local and an application to the real life situation. (d) ***Identifying and removing barriers*** that exclude learners in different context and prevent equitable presence, participation and achievement, SLK is a student centered activity where cooperative learning is encouraged, this way student have the courage to do the activities and create camaraderie among the members of the groups that helps remove the barriers of learning in mathematics. (e) ***Curriculum and learning materials*** that may not be accessible to the range of the learners and their needs, beliefs and their abilities. SLK is an instructional material that fit to the needs of the learners based on the results of the readability test to both Indigenous Peoples and Meranao students. (f) ***Inadequate resources*** to promote and support inclusive learning through assessment, quality teachers, learning materials, facilities, infrastructure, training and capacity development. The Department of Education provides textbooks and other learning materials which are not familiar to some places just like in the Indigenous Peoples and Meranao. In this way students may not be interested to study for there is no connectivity between the lesson and the real life situation.

SLK is learning materials that provide adequate resources that fit to their own tribal identity.

With these implications, the Department of Education is commendable in the creation of the Philippines' Response to Indigenous Peoples' and Muslim Education (PRIME) Program and the scholarship grants for the cultural education. This study may have helped provide materials that will be used in the classroom of the IPs and Meranao students. Moreover, teachers also will be guided in the creation of the learning materials in their field of specialization to use in the teaching-learning process. This SLK study is anchored on the Cognitively Guided Instruction, experiential learning, and cooperative learning. It also reflects the uniqueness of the IPs and Meranaos on their culture and traditions that contribute the success and acceptance of the SLK and makes it very effective.

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