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## The Evaluation of Science Module Implementation of Teaching for Change Community Project

**ABSTRACT:** This community development project was carried out at a Primary School located at Kota Belud, Sabah, Malaysia. The aim is to construct and implement these modules for Year 1 to Year 6 students to master the skills in English, Mathematics, and Science. The purpose of the process evaluation is to identify and monitor continuously various elements of project operation. The CIPP (Context, Input, Process, and Product) Model of D.L. Stufflebeam (1985) was used to evaluate the implementation of the project. This study focuses on the process evaluation of the Science module implementation. A qualitative study was conducted. A purposive sample of twelve informants participated in the study. Data was garnered using a focus group discussion interview. Several themes were identified from the final findings of this study. Emerging themes were development and enhancement of the teaching and learning skills. Development and enhancement of teaching focuses on module construction and application, creativity application, SCL (Student Centered Learning) strategy, multimedia approach, class control skill, confidence level, peers learning, teacher responsibility, time organization, lesson plan preparation, and evaluation focused on the design illuminating the procedures and strengths weaknesses. Overall, the module for Science has shown positive outcomes.

**KEY WORD:** Process evaluation, CIPP model, science module, community development project, and positive outcomes.

**RESUME:** "Penilaian Pelaksanaan Modul Sains dalam Projek Komuniti Mengajar untuk Perubahan". Projek pembangunan masyarakat ini telah dijalankan di sebuah Sekolah Rendah yang terletak di Kota Belud, Sabah, Malaysia. Tujuannya adalah untuk membina dan melaksanakan modul untuk pelajar Tahun 1 hingga Tahun 6 bagi menguasai kemahiran dalam Bahasa Inggeris, Matematik, dan Sains. Tujuan penilaian proses ini adalah untuk mengenal pasti dan memantau secara berterusan pelbagai elemen operasi projek. Model KIPP (Konteks, Input, Proses, dan Produk) daripada D.L. Stufflebeam (1985) telah digunakan untuk menilai pelaksanaan projek. Kajian ini memberi tumpuan kepada penilaian proses bagi pelaksanaan modul Sains. Kajian telah dilaksanakan dengan menggunakan kaedah kualitatif. Persampelan bertujuan digunakan ke atas dua belas peserta yang telah mengambil bahagian dalam kajian ini. Data diperolehi dengan menggunakan perbincangan temubual kumpulan berfokus. Beberapa tema dikenal pasti daripada dapatan kajian. Tema utama ialah pembangunan dan peningkatan kemahiran pengajaran dan pembelajaran. Pembangunan dan peningkatan pengajaran memberi tumpuan kepada pembinaan modul dan aplikasi, aplikasi kreativiti, strategi PBP (Pembelajaran Berpusatkan Pelajar), pendekatan multimedia, kemahiran mengawal kelas, tahap keyakinan, pembelajaran sesama rakan, tanggungjawab guru, organisasi masa, penyediaan rancangan pengajaran, dan penilaian yang memberi tumpuan kepada kekuatan dan kelemahan pembangunan modul. Secara keseluruhan, modul Sains telah menunjukkan hasil yang positif.

**KATA KUNCI:** Proses penilaian, model CIPP, modul sains, projek pembangunan masyarakat, dan hasil yang positif.

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## INTRODUCTION

The success of “English Literacy Development for Ubian” at Mantanani Island of Kota Belud, Sabah, Malaysia, which is a driven community development project of UMS (Malaysia University of Sabah) and CIMB (Commerce International Merchant Bankers) *Berhad* as a main grant, has spurred the project members to roll out similar projects at Kampung Song Song, Kota Belud, Sabah, Malaysia. As a consequence, the project “Teaching for Change” modelled after “English Literacy Development for Ubian” project was implemented at SK (*Sekolah Kebangsaan* or Public National School) Suang Punggur at Kota Belud, Sabah. The project costing MYR 279,450 (two hundred seventy nine thousand and four hundred fifty Ringgit Malaysia) was funded by the YS (*Yayasan Sejahtera* or Prosperous Foundation) grant.

It is a one year project which involved 70 trainees from the English Language Education Program; and Science and Mathematics Program of School of Education and Social Development of UMS. Module for English, Science, and Mathematics will be constructed by the trainees under series of screening process. The trainees participated in the project are open to the three programmes, and volunteer trainees are immediately qualified. All the trainees are well equipped with pre-requisite knowledge of teaching, which they’ve passed the course of teaching method one, teaching method two, advanced teaching method and pedagogy in education during their four years training in the university.

Meanwhile, to further engage the community, to enhance the impact of the “Teaching for Change” project, and to help improve the passing percentage of UPSR (*Ujian Penilaian Sekolah Rendah* or Primary School Assessment Test) in Malaysia, a motivational series one to series three and English, Science, and Mathematics modules were constructed and implemented. The planning, implementation, and evaluation of the project were carried out based on the CIPP (Context Input Process and Product) Model from D.L. Stufflebeam (2003).

With the incorporation of the

conventional objective model as well as goal-free model and ethnographic model, the CIPP model was developed in the late 1960s to provide comprehensive evaluation which combines formative and summative evaluation. Though the four dimensions of CIPP evaluation are designed for the improvement-oriented approach; nevertheless, D.L. Stufflebeam (1984) states that the context, input, process, and product evaluations can be conducted individually and as a series of continuous processes. Thus, the emphasis in this research is the process evaluation.

The purpose of the process evaluation is to identify and monitor continuously various elements of project operation. Hence, the discussion of the implementation and evaluation process of the project will be discussed in detailed. The comparison between the intended and actual process of the project will also be stated. The most important discussion, such as the findings garnered from the focus group interview of the trainees regarding the process of the overall program, will also be elaborated. The strengths and weaknesses of the implementation process of the project are also identified and presented. Finally, the suggestion on how to improve the project from the process evaluation obtained by the respondents will be highlighted and discussed in this research.

## BACKGROUND OF THE STUDY

The project aimed to fulfill the following objectives: to complete training and assessment modules for primary school students to master skills in English, Mathematics, and Science; to deliver training and motivational according to the training modules; and to supervise and provide advisory services to course participants upon completion of training. The project targeted primary students from Kampung Song Song, from Year 1 to Year 6. The breakdown of the students is as follows: Year 1 (35 students), Year 2 (39 students), Year 3 (35 students), Year 4 (32 students), Year 5 (32 students), and Year 6 (34 students). There were 207 total number of students participated in the “Teaching for Change” project.

The project was conducted in SK (*Sekolah Kebangsaan* or Public National School) Suang Punggor, a school nearby Song Song village. The school was located about 70 kilometres from the state capital, Kota Kinabalu. It was located in a rural village, Kampung Suang Punggor. This school had a population of 207 students, and over 30 teaching staff. Majority the population in the school belonged to the Bajau ethnic group. The main occupations in this village were fishermen and farmers. The school was selected for the "Teaching for Change" project by YS (*Yayasan Sejahtera* or Prosperous Foundation) as the main grant under the development of education plan of Song Song village.

**Process Evaluation.** Process evaluation aims to provide feedback during the implementation of the program. It provides feedback to the managers and staff about the extent to which the project activities are being carried out as planned, and the available resources are used in an efficient manner. It also provides guidance for modification of the plan, to assess the extent to which the project participants accept, and are able to carry out their roles. Additionally, it provides a record of the project that was actually implemented, how it compared with what was intended, and how observers and participants judged the quality of the effort (Stufflebeam, 1984; and Stufflebeam, 1985).

P.E. Griffin (1994) states that process evaluation can be used to detect defects in the design during the developmental stage, to guide programming decisions, to maintain a record of procedures, and to suggest ways in which the program can be implemented. Similar interpretations are also made by C. Lane (1996); P.H. Rossi, H.E. Freeman & M.W. Lipsey (1999); and R.C. Martella, R. Nelson & N.E. Marchand-Martella (1999).

Process evaluation studies the implementation of project activities and monitors the project implementation. T. Ohara & K. Pickard (1985) state that process evaluation monitors and records the daily activities of a project, watches the efficacy of the implemented project, and detects invalidities in strategies. Throughout the process, the evaluator is expected to provide

feedback to the program staff on the extent of implementation of the program (Ohara & Pickard, 1985).

D.L. Stufflebeam (1984) argues that process evaluation needs to answer the questions: "to what extent was the project plan implemented and how and for what reasons did it have to be modified?" (Stufflebeam, 1984:15). D.L. Stufflebeam further suggests that the evaluator should describe the deviations from the plan and "make special notes of variation within the program concerning how different persons and subgroups are carrying out the plan" (Stufflebeam, 1984:24).

In the evaluation of the Science Module Implementation of "Teaching for Change" process, focus was made on how the project transactions were carried out. The implemented project was compared with the intended implementation plan. Feedback regarding the implemented plan is also discussed. The strength and weaknesses of the implementation process were also identified. Apart from that the suggestion from the participants regarding the implemented plan will also be identified. To clarify the intentions and the actual transactions of the project activities, focus group discussion interview with the trainees as the module implementer were conducted during the project.

**The Science Module Implementation.** The Science Module of Year 1 to Year 6 was constructed by the 3<sup>rd</sup> year trainees of Science and Mathematics Program of SESD UMS (School of Education and Social Development, Malaysia University of Sabah). Diagnostic test was administered to the students at a selected school to determine the cognitive level of the students. Cognitive level identification is to be considered in the process of constructing the module. Thirty trainees voluntarily construct the module. They were distributed in groups to construct the module. Resources such as primary science curriculum specification, primary science text book, reference books and online resources were used to assist the trainee for the module construction.

It took two months for them to construct

the module. They've gone through screening, such as peers checking and presentation session with their science lecturers as their supervisor. Feedback, such as comments and suggestion, were taken seriously for the enhancement of the module. In module/structure-based teaching, the units are divided into several topics and each topic focuses on different aspects of the unit. In one way, this attracts the concentration of students; and in other way, it allows the teacher to teach the student in a focused but comprehensive way (Alam, 2014). Final checking from their supervisor was also considered before proceed with the printing.

A one day workshop was held for the trainees and lecturers. In the workshop, trainees are expected to present their teaching in group based on their lesson plan preparation. All the groups including the English, Mathematics and Science trainees presented their teaching in one room, where they were all gathered. After presenting their teaching, peers and lecturers gave their comments and suggestion for the teaching and learning enhancement. This session was followed up with sharing experience from the trainees, which they've experience similar project elsewhere. Lecturers also shared their teaching experience with the trainees. The teaching time table for the module implementation was also prepared during the workshop.

YS (*Yayasan Sejahtera* or Prosperous Foundation), the main grant funding of the project, has prepared four laptops, one LCD (Liquid Crystal Display), three wire extensions, two set of speakers, stationary, and materials such as A4 paper, colour paper, manila cards, and sticker to be used during the project implementation. Transportation and meals for trainees and students were also funded by YS throughout the one year project.

Packages consist of module and complete stationary were given to each students, which were kept at the school store. The teaching and learning using module was conducted starting on the first of the second months of the year. Each class will be taught

by two trainees, who involve in the module construction but the distribution of the class was not according to the module which they've constructed.

The teaching and learning will only started with module distribution and class administration at 8:30 AM (*Ante Meridiem*) due to distance inconvenience. The teaching process will start from 9:00 AM to 10:30 AM focusing on one topic of the Science Module. Trainees taught the students based on their lesson plan, which they've prepared beforehand. They used the module for activity and drilling exercises in the class with the help of multimedia approach. The teaching process stopped at 10:30 AM to 11:00 AM to give way for the students to have their recess time. The teaching and learning of Science will continue from 11:30 AM till 12:30 noon.

The trainees are expected to do formative assessment for every teaching and learning. They need to monitor the students' progress continuously and evaluate themselves, whether the students have fully achieved the objective of the lesson. The following weekend another group of trainees will conducted the same procedures for Mathematics. The time table is made alternatively for each weekend based on the three subjects: English, Science, and Mathematics. Therefore, students will be meeting different group of trainees for each of the subjects.

However, there was a change during the semester break until end of the year, and the time table was reset due to lacked of trainees, lacked of commitment during holidays, and no motivation. This problem was settled when the YS agreed with the incentive of MYR 30 (thirty Ringgit Malaysia) each trainee per trip. There were three session of motivational talks entitled: (1) *Taka'aruf* and Children Potential, the Role of Parents, How to Educate Children at Home?; (2) Ways of Assisting Children to be Successful at School; and (3) Inspirational Words of Wisdom.

Many parents turned up to participate, and the response was very positive and beyond expectation. Lecturers were involved

actively as speakers and facilitators for the motivational talks. The parents took part actively in discussion and presentation. Souvenirs in the form of stationary were sponsored by YS to each of the parents to be given for their children. Assessment form prepared by YS was distributed to the participants to rate the motivational talks. Finally, towards the end of the year, summative test was administered two times, and the closing ceremony was held to mark the end of the project.

## **METHOD**

This study employed a qualitative, case study approach to obtain the process for the evaluation of the Science Module Implementation "Teaching for Change" by using semi-structured focus group discussions interview. Qualitative inquiries study how people and groups construct meaning (Patton, 2015). Basically, this methodology is employed to generate a holistic, rich, and thick description of the case. A qualitative case study methodology meets the descriptive nature of the research problems and gives the best scenario of the studied in a bounded system (Merriam, 1998).

R. Yin (1994) contended that a case study is an empirical inquiry that "investigates a contemporary within its real-life context, especially when the boundaries between phenomenon and content are not clearly evident" (Yin, 1994:13). Qualitative analysis involves interpreting interviews and documents to find substantively meaningful patterns and themes (Patton, 2015). According to R.K. Stake (2010), interpretation is an act of composition. Thus, the study examined and analyzed the feedback regarding the process implementation and evaluation from the beginning towards the end of the project.

Thematic analysis approach was used to code the data from in-depth interviews focus group discussion was employed to discover commonalities and differences, and the consistency of the findings. According to A.M. Huberman & M.B. Miles (1998), qualitative data analysis processes take place throughout the research. Data analysis

was based on the following categories: intended and actual activity, the feedback of the project, the effectiveness of the project implementation, the strengths and weaknesses of the project, and the suggestion for improvement.

A purposive sampling comprising 12 trainees as participants was garnered to obtain specific and relevant data. The theoretical framework of this study was based on the process dimension in the CIPP (Context Input Process and Product) evaluation model by D.L. Stufflebeam (2003).

The study, which aims to investigate the implementation and evaluation of the "Teaching for Change" project, conforms to the notion of evaluation as something "not to prove, but to improve" (Stufflebeam, 2000:283). The objectives of evaluating the programme based on the process evaluation component, in the D.L. Stufflebeam (2003)'s CIPP models, are: to identify the process of the intended and actual activity; to investigate the finding of the evaluation process regarding the science module implementation throughout the project; to ascertain the effectiveness of the project; to identify the strengths and weaknesses of the project implementation; and to provide suggestions of improving the program (Stufflebeam, 2003).

## **FINDINGS AND DISCUSSIONS**

The following discussion explained the comparison of the intended and with the actual process of the project implementation, feedback regarding the implementation, its effectiveness, the strength and weaknesses, and the suggestion to improve the Science Module implementation.

*The Comparison of the Intended and with the Actual Process.* The comparison between the intended and actual process for each activity throughout the implementation and evaluation of the Science Module of the "Teaching for Change" project are stated in table 1.

Based on table 1, the comparison of intended and actual activities of the Science Module implementation showed that all the intended activities were carried

**Table 1:**  
The Comparison between the Intended and Actual Activity of the Project Implementation

Activity/Issue	Intended Activity	Actual Activity
Volunteer participant for Science Module construction.	35 participants of Year 3 Science trainee teacher.	18 participants of Year 3 Science trainee teacher.
School and community visit.	Visited SK ( <i>Sekolah Kebangsaan</i> or Public National School) Suang Punggur and Kampung Song Song community with the hope to meet and discuss with the headmaster and community.	Visited SK Suang Punggur and Kampung Song Song community was conducted as planned.
Science diagnostic test.	Science diagnostic test was conducted in January from Year 1 to Year 6 to identify the level of achievement.	Science diagnostic test was conducted as planned.
Science module construction.	Trainee teacher constructed the module within the group.	Trainee teacher constructed the module within the group was conducted as planned.
Presentation.	Trainee teacher presented the module under the supervision of science lecturer.	Trainee teacher presented the module under the supervision of science lecturer was conducted as planned.
Workshop.	Teaching and learning presentation and discussion among peers and supervisor for module finalization.	Teaching and learning presentation and discussion among peers and supervisor for module finalization was conducted as planned.
Module distribution.	Module was distributed to the school.	Module was distributed to the school as planned.
Team distribution.	Identification and confirmation of team distribution for the implementation of teaching and learning science using the constructed module.	Identification and confirmation of team distribution for the implementation of teaching and learning science using the constructed module was conducted as planned.
Teaching and learning time table.	The implementation of teaching and learning science based on the time table.	The implementation of teaching and learning science was conducted as planned.
Reflection.	Report of reflection of the teaching and learning session from the trainee.	Report of reflection of the teaching and learning session from the trainee was conducted as planned.
Supervision.	Lecturer supervision on the teaching and learning according to their area of expertise.	Lecturer supervision on the teaching and learning according to their area of expertise was not conducted as planned.
Formative assessment.	The implementation of formative assessment during every session of the teaching and learning.	The implementation of formative assessment was not conducted as planned.
Summative assessment.	The implementation of summative assessment towards the end of the project.	The implementation of summative assessment was conducted as planned.

out as planned. However, the formative assessment was not conducted as plan, due to negligence and lacked of emphasize during the implementation. Apart from that, not every trainee hand in their report of reflection which they were supposed to do so.

**The Development and Enhancement in the Implementation of Teaching and Learning.** The emerging themes extracted

from the data analysis, which related with the development and enhancement in the implementation of teaching and learning, are obtained and discussed based on the following sub themes extracted from the data analysis.

**First, Module Construction and Application.** The Science Module application was used as a teaching tool in

the project. Trainees stated the application of activity in the module helps them to realize that students need to be drilled on what they've studied. Collectively, they agreed that their understanding on how to construct and implement the module becomes better since this was their first-hand experience. Thus, constructing and implementing the science module provide such meaning full opportunity and experience in developing and enhancing their skills in the teaching and learning.

**Second, Creativity Application.** Apart from fully utilized the module, the trainees strongly stated that they have applied their own creativity in the planning of the teaching and learning science in the classroom. They believed that creative learning instruction will be more lively and realistic to gain better understanding of the science phenomenon and catastrophic. Thus, discussion among their peers regarding the learning instructions boosts up their ideas and the level of creativity in the planning of their teaching. They also realized classroom situation demanded them to merge the module implementation with creativity added into it. Hence, they need to generate ideas on how to make the teaching and learning more creative and effective.

According to J.F. Feldhusen & D.J. Treffinger (1980) and F. Daniel Jr. (2000-2001), drilling by answering questions support critical and creative thinking skills. F. Daniel Jr. stated also that such thinking skills are vast and different (Daniel Jr., 2000-2001). M.B. Karnes *et al.* (1961) and F. Daniel Jr. (2000-2001) confirmed that there is a significance relationship between creativity and academic performance.

**Third, SCL (Student Centered Learning) Strategy.** Trainees applied the students learning strategy in the teaching and learning of science. Activities, such as mini experiment, hands on and outdoor activities, games and puzzles, were implemented during the project. Collectively, they stated that students love to do experiments, because they seldom do experiment in school. They also observed through this SCL the students attitude towards science

learning change from passive to active mode. They strongly believed that SCL will be more effective whenever they made it as competition among the students. Students work as a team and they will make sure that their peers seriously contribute in winning the competition.

The found out students become more competitive when material reward is applied. B. Miri, B.C. David & Z. Uri (2007) stated that among the strategies used by teachers in the classroom to generate high levels of student thinking is to encourage students to relate what is to be learned in the classroom to real-world problems as the introduction of teaching and encourage class discussion using the types of open ended questions form (Miri, David & Uri, 2007).

**Fourth, Multimedia Approach.** The multimedia approach applied during the project was songs, power point presentation, movie presentation, animation, and video showing. Collectively, they agreed that students were very attentive in their lesson through this multimedia application. Students gained better understanding of the science concept, especially matters that involve movement and process. Singing strengthened their memory of the science concept, when they were drilled to sing the song. Power point presentation made the science concept became more visualize and clear. They stated that movie presentation enhances students understanding, such as the narrative of the planets location. Hence, trainees develop and enhance their knowledge in ICT (Information and Communication Technology), which is effective and applicable in the teaching and learning process.

**Fifth, Class Controlled.** Trainees realized that class control skill is not as easy as they expected. It is an important skill during the implementation of the learning instruction in order to maintain conducive classroom situation. Trainees were able to try out various techniques for an effective class control. They mentioned that task oriented is the best way to control the class. Additional task has to be prepared earlier in case the good leaner accomplish their task earlier,

whereas the slow learner needed extra attention from the teacher. Hence, trial and error of various techniques lead them to be matured in controlling the class. This will help them in their teaching practical for the following semester.

*Sixth, High Confidence Level.* Confidence level is not easy to achieve, especially for first-hand teaching experience. Collectively, trainees agreed that they were shaking and lack of confidence on the first day of teaching. They were afraid that they might did mistake, such as wrong concept of teaching, what they should do, and how to act in front of the students. Their confidence level becomes high continuously as they were actively involved in the process of teaching. They stated that they were very fortunate to be involved in the project. Thus, they were very much ready to go for their practical teaching and looking forward for another teaching adventurous.

*Seventh, Peers Learning.* Trainees implement their teaching and learning in pairs. They assisted and worked well with their pair. They stated that they learnt a lot from their pair in terms of teaching styles, approaches, and strategy. They admitted that it is not easy to be a teacher; and teaching practice during this project gives them the opportunity to learn better from their peers. Hence, they are able to assess their own potential compared with their peers. They admitted that they experience failure in their teaching implementation, but this did not stop them from teaching in fact alerted them to reflect and evaluate what went wrong. Thus, peers supervision play as vital role as buddy support in team teaching.

*Eighth, Teacher Responsibility.* It was a shocked for the trainees to realize that they have much responsibility during their teaching. They found out that they need to control the class, give attention to the weak students, monitoring, and discipline the students apart from the teaching and learning. It was difficult at first to accomplish all the responsibilities in one time. However, trainees agreed that they finally managed to fulfill this heavy responsibility after gone through the drilling

in the teaching and learning process every weekend.

*Ninth, Time Organization.* It is difficult for inexperience trainees to achieve the time allocation for each stage of teaching instruction. Thus, through the implementation of the science module in the teaching and learning, trainees slowly learnt to achieve the time allocation of each stage. Adaption to the time allocation for each stage is not easy to master as they expected. However, practice has made them able to manage effectively their time as required in the instruction of the planning. Hence, they also manage to fulfill the gap of time occurrence wisely with their impromptu creativity.

*Tenth, Lesson Plan Preparation.* Teaching will be more organize with the preparation of lesson plan. It guides the teacher to stay focus on the objective of the lesson. Trainees stated that they learnt on how to prepare lesson plan, which is crucial in the implementation of the teaching and learning. They mentioned that it was difficult for them to write a lesson plan before the project. They spent a lot of time in preparing lesson plan. Now, they know how to write a lesson plan without spending a lot of time compared to the previous experience. They summarized whatever written in the lesson plan must support and fulfill the objectives of the lesson.

Pertaining to the context, Kamdi Kamil (1999) stated on Russell view regarding learning is a modular package of learning about a concept in a unit of study. It is a technique that allows the student to follow step by step to enable students to master a lesson accordingly to the unit (Kamil, 1999).

*The Effectiveness of the Science Module Implementation.* The emerging themes extracted from the data analysis, which related to the development and enhancement towards the students education, are obtained and discussed based on the following sub themes extracted from the data analysis.

*First, Additional Knowledge.* There was no doubt that the students at the SK (*Sekolah Kebangsaan* or Public National School) Suang

Punggor obtained additional knowledge during the Science Module implementation. Trainees stated that the students have obtained additional knowledge, such as on how to memorize Science concept through mnemonic application, role play, simple experiment, and outdoor activity conducted around the school.

Trainee has also used the environment of the school to provide live specimen and space as teaching and learning ground. Related to this context, M.D. Lia *et al.* (2007) have shown that students use different learning strategies produce distinct achievement (Lia *et al.*, 2007).

**Second, Task Oriented.** Task oriented application by the trainee has assisted both teacher and students during the process of implementation. Trainees were able to control the class during the teaching and learning; and the students were assigned to complete a task based on the requirement of each chapter. In addition, in the tutorials, students were also divided into smaller groups which facilitated higher interactions among teachers and students (Jackson *et al.*, 2011).

**Third, Awareness towards Learning.** Collectively, trainees mentioned that awareness towards learning among the students was gradually improved throughout the year. At the beginning of the project, students did not exhibit these values. This may be due to their tiredness of studying five days in a week, and they have to come every Saturday to study in the school when this project was implemented. The only difference was the teachers and the time table compared to their normal lesson. Students studied long hours for a single subject under this project.

Thus, more time for them to explore deeply on a particular lesson. Trainees also mentioned that they realized the students awareness towards learning gradually exhibit throughout the year, and this made them easier to conduct the teaching and learning during the Science Module implementation of the project.

**Fourth, Motivated in Participating.** The effectiveness of the Science Module implementation can be seen on the students'

motivation in their participation. The Science Module was conducted using multimedia approach, hands on activity, games, role play, outdoor activity, and simple experiment have motivated the students to participate actively in the lesson. Trainees stated that all the students were eager to participate, especially when dealing with movement. The students stated to their teacher and parents that every week, they couldn't wait for Saturday class to be conducted. Parents also confirmed this statement.

**Fifth, Excitement in Learning.** There were various and interesting activities implemented during the Science Module implementation. The student's excitement can be seen as they participated in the activities according to the trainees. This excitement has attracted the students to be present at school every Saturday. Students used to neglect their study every weekend, because they preferred to rest after studying for five days in school.

However, they came to the school and participated actively in the activities conducted during the project implementation. They came very early, even before the lesson start, because of the excitement in learning. In this context, Normala Othman & Maimunah Abdul Kadir (2004) and Roslita binti Ab Rahman (2008) stated that activity, such as games, is a complete and fun learning strategy, because mostly students are kinesthetic learners (Othman & Kadir, 2004; and Rahman, 2008). Also according to F. Alam (2014), learning satisfaction can be further improved by introducing assessments on each topic.

**Sixth, Cooperation in Learning.** During the teaching and learning, trainees have observed the students help each other to accomplish the task given to them. Their cooperation became better when the activities required them to compete among their friends. Trainees stated that high achiever students help their low achiever friends in their learning. The rest of the students also joined in the group to listen to the trainee, whenever he or she did some explanation regarding the science concept

which they were studying. Trainees have also observed that some students assisted the trainees to explain to their friends using their mother tongue language.

**The Strength of the Implementation.** The process evaluation of the Science Module implementation, regarding its strength of implementation extracted from the data analysis, emerges the themes related to the development and enhancement in the implementation of teaching and learning are discussed based on the following sub themes.

**First, Educating Children.** The strength of the implementation of the project can be seen in terms of how the education process has been channeled to educate the community. Trainees reported that this project is good and should be continued. They proposed the trainee's juniors should be given opportunity to improve their teaching skills by educating the children.

According to the trainees, the students are always looking forward to go to the class every weekend. Hence, the students also realized the project is good for them. The strength can be seen as an opportunity for the trainees to educate children, and from the commitment of the students to be present at school. In this context, R. Taraban *et al.* (2007) stated that learning is a process that can be used to promote the improvement of knowledge.

**Second, Presentation Skill.** Trainees mentioned that they can improve their presentation skill by participated in the project. They learnt a lot from their peers' teaching presentation. Trainees also learnt to improve their lesson plan and teaching presentation skill by listening to the comments and suggestion from their lecturers and peers by attended the workshop.

Teaching involves teaching activities carried out by the teacher during the lesson delivers content on the day (Salleh, 2005). The sharing of teaching experiences in the workshop has given them ideas on the implementation of the module. They stated that their communication skills of delivering lesson become better, as they practice during

the project implementation. They felt that they've gone out for teaching training under this project, and this is a good preparation for them for their practical teaching in the following semester. Nevertheless, access to the school under this project is considered as a golden opportunity for them.

**Third, Knowledge Sharing.** The feedback from lecturers and peers create a better way of knowledge sharing. Trainees witnessed the teaching presentation from various groups. They gain and share new experiences and ideas, learn different types of classroom activities, and comparing their teaching style with others. Hence, this will improve their planning of the module implementation through their teaching and learning process.

They also realized that they need to consider a lot of things before the implementation, such as teaching aids, pedagogical skills, and back up lesson. Discussion on teaching experiences every time after the teaching implementation with their peers made them realized that teaching is challenging in reality. They also shared how they solve problems occurred in the classroom with their peers.

**Fourth, Teaching Improvement.** Many graduate students, especially those who have just begun the training, feel unprepared to teach (Ad, Egan & Thompson, 2015). Teaching can be improved through practices. Trainees stated that they improve their teaching whenever they went to teach at the school. They learnt new things through teaching experiences under the project. They mentioned that they learnt teaching theories at university, and they realize not all the theories are applicable.

Every problem in teaching has different ways of solution. This has made their teaching improve form time to time, as they have to seek different ways of solving the problems. They have the opportunity of applying new teaching style, which is different from their norms. For example, outdoor activity made the students excited and stays focus in their lesson rather than studying indoor. This trial of activity is extremely worthy for teaching improvement.

Research done by D. Caroline & M. Claudette (2005) has proved that there is a relationship between learning strategy and performance.

***The Weaknesses of the Implementation.***

The process evaluation of the Science Module implementation regarding the weaknesses of implementation extracted from the data analysis emerges the themes related to the administration and management of the project activities are discussed based on the following sub themes;

***First, Workshop Duration is Short.***

Trainees stated that the duration of workshop is short. This made them to present their teaching in a very limited time. They would rather prefer the presentation time for each group go accordingly to the area of expertise at a different room. Thus, presentation will be more focused and systematically administered. This helps to avoid time wasted just for waiting the other group to accomplish their teaching. Presentations with different groups of expertise cramp in one room were not conducive at all. They also stated that less quality time of presentation has hindered them to accept proper guidance.

***Second, Unequal Time of Presentation.***

Time distribution is not equal within group during workshop. Presentation time is short and unorganized. The group combination from different area of expertise affects the time management for the presentation. This could be avoided if trainees split according to their option into three different rooms. Some of the group has more time to present compared the other group.

***Third, Short of Supervisor.*** There is not enough supervisor or mentor to observe and supervise the group presentation. Too many group presentations hinder trainees to ask more questions for clarification. If they do it into three different groups and the lecturers supervise according to area of expertise, it will achieve the purpose of doing workshop successfully. The same thing goes to the implementation of teaching and learning process, when it is short of lecturers to supervise and monitor.

***Fourth, Less Activity during the Workshop.*** Trainees stated that there should be more activity held during the workshop and should not focus on teaching presentation only. They mentioned that workshop become more interesting and excited with various kind of activity plan during the period of workshop. They suggested talks of item construction, teaching sharing from experience teachers of the school, and discussion on the planning of their teaching should boost up their motivation and confidence to be all out in their teaching and presentation.

***Fifth, No Teachers' Involvement in the Workshop and Module Construction.***

There was no teachers' involvement in the workshop and module construction. Collectively, trainees agreed that they can learn a lot and they can identify the students' level accurately with the involvement from experience teachers. They believed that the Science Module will be much different if the teachers at the particular school are actively involved.

***The Suggestion to Enhance the Implementation of Science Module.*** The following discussion is the suggestion from the trainees for future improvement and enhancement of the project. Most of the suggestion emerges the themes related to the planning of administration and management of the project activities.

***First, School Teacher Involvement.***

Trainees suggested that collaboration with the teachers at the school in constructing the module would be much better since the teacher knew very well of their own students and school. Discussion between trainees and the teachers regarding curriculum content and pedagogical knowledge will help to identify and determine the students' cognitive level and previous knowledge. This synergy will assist the trainees in their item construction too.

Suggestion and comments from the teachers will be benefited and resourceful, if they are involved directly in the observation of the teaching and learning presentation during the workshop. Moreover, their participation as supervisor during the

implementation of the module will be more practical and helps them to improve the teaching skills progressively. Thus, this suggestion should be seriously considered for enhancement purpose.

**Second, Pre-Observation on the Teachers' Teaching.** The trainees also suggested that pre-observation should be implemented before module construction and before the application of the teaching and learning process. Collectively, they believe that this is a suitable approach to identify what approach they use to control the class, to gain experience through professional teaching observation, to understand the real teaching process in the primary school, and to develop relationship with the teachers. They hope that pre-observation followed up open discussion with the teachers should be able them to have better view of the students' expectation. The truth about pre-observation should be made is to minimize the gap between the trainees and students' expectation.

**Third, Pilot Study.** Trainees also suggested pilot study of SWOT (Strength, Weaknesses, Opportunity, and Threat) analysis should be made to drawn better conclusion of the school. They believed that data collected from pilot study will help them in the module construction and its implementation. Identification of weaknesses and threat of the project will alerted the UMS (Malaysia University of Sabah) and the school to discuss of its possible and wise solution; whereas identification of opportunity and strength helps will help them to maximize its implementation to fully support the project.

**Fourth, Exercise Based on the Level of Difficulty.** One of the trainees suggested that exercise in the module should be based on the level of difficulty. This will help to identify the students' cognitive level as they proceed. Identification of students' level will help the trainees to plan suitable activities and realistic lesson plan to suit; and, at the same time, to enhance their cognitive level to keep on improving. By doing this, both students be it high and low achievers will be able to answer the exercises given to them

since it's cater for both levels. Good task oriented will hinder the students to make noises and disciplinary problem.

**Fifth, Group Division Based on Area of Expertise.** English, Mathematics, and Science group should be separated during the workshop implementation. It will be more systematic if the group presentation is according to their area of expertise under the supervision of each particular supervisor. Discussion on the area is focus and trainees will develop and enhance based on their area of expertise. Furthermore, the involvement of the teacher, which is according to their area of expertise and experience, will contribute a lot in the development and enhancement of the trainees teaching skills.

**Sixth, Teaching Task Distribution Accordingly to the Person Who Construct the Module.** Trainee suggested that teaching task distribution should be assigned accordingly to the person who constructed the module. For example, if trainee A and B constructed Year 1 Science module, the teaching task might as well be given to trainee A and B. At the same time, avoiding constant change of the teacher will be much preferred.

This is better for the implementation of the module since the trainee, who constructed the module itself, knows and understands better on how to apply effectively. Nevertheless, one of the trainees apposed this motion, due to her opinion that she can utilize her problem solving skills when the class distribution for the trainee does not follow accordingly to the module they've constructed.

**Seventh, ICT Facilities.** Main facilities, such as LCD (Liquid Crystal Display), should be made enough. Trainees encountered facilities defect and insufficient during the one year project. This hindered them to apply some of the multimedia approach in their teaching and learning activity. The school should be aware, more sensitive, and made easy access upon request for the ICT (Information and Communication Technology) facilities.

Electric source, such as socket for each class, should be ensured fully functioning

by the school authority. Apart from that device such as laptop, speaker, and wire extension are not enough to accommodate the necessity of each class, due to the main grant approval of ICT facilities. The issue was solved with the trainee ended up using their own devices.

#### *Eighth, Discussion with Peers.*

Peers discussion is suggested to ensure continuation of the lesson. Trainees encountered problem to identify the previous lesson before carried out the following lesson which they are supposed to continue from it. Collectively, they agreed that discussions with peers are very important to make sure lesson continuation is fulfilled effectively.

## CONCLUSION

Generally, the intended activities have been implemented successfully. The emergent themes from the finding showed on the development and enhancement of the teaching and learning process. The strength and weaknesses highlighted some important issues to be considered during the process of Science Module implementation. The suggestion for enhancement highlighted the planning of administration and management of the project activities that need to be wisely considered.

Overall, the trainees gained from module construction and application, creativity application, SCL (Student-Centered Learning) strategy, multimedia approach, class control skill, confidence level, peers teaching, time organization, teachers' responsibility, and lesson plan organization. The community members acknowledged the commitment of the trainees in the module implementation for the success of their children. The increment of 11% students passed their Science examination in UPSR (*Ujian Penilaian Sekolah Rendah* or Primary School Assessment Test) in Malaysia showed the success of the project. They have high hope for their children to be successful in education.

Researchers suggested the headmaster, village head, parents, and the community should play their responsibility actively and

effectively to support their children learning. Motivational talks should be done frequently to sustain awareness and motivation for parents and their children. Continuous support to the school from the community is hoped to sustain the education for future generation.<sup>1</sup>

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