ENSURING STUDENT-CENTERED, CONSTRUCTIVIST AND PROJECT-BASED EXPERIENTIAL LEARNING APPLYING THE EXPLORATION, RESEARCH, INTERACTION AND CREATION (ERIC) LEARNING MODEL

Research Article

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Abstract

Experiential learning literally is making meaning from direct experience. It plays vital role in facilitating the process of creating knowledge, sense-making and knowledge transfer in teaching, training and development. This study assessed the effectiveness of Exploration, Research, Interaction and Creation (ERIC) Learning Model which is a framework adopted from various theories and philosophies such those of student-centered, constructivist-based, project-based, experiential, multisensory, reflective, participatory, interactive, cooperative, collaborative and active learning. Mixed method was used employing pre-experimental design and narrative analysis of learning experiences. Pre-test and posttest, survey, interview, observation and focus group discussions were made. There were 32 college students in the Tourism Management Program enrolled in NAS 106 (Environmental Science) and 28 enrolled in BST 323 (Ecotourism) for Academic Year 2018 - 2019 at Columban College, Inc. and were used as subjects. Quantitative data were treated using Mean, Weighted Mean and t-Test for Dependent Samples. Student's engagement and involvement were maximized by exploration, research, interaction and creation and they adapted the skills and strategies for them to become responsible learners and lifelong learners. There was a significant increase in the performance of students as well as develops more positive attitude towards the topics.

Keywords: student-centered, constructivism, project-based, experiential learning, ERIC Learning Model

1. Introduction

Experiential learning literally is making meaning from direct experience. It plays vital role in facilitating the process of creating knowledge, sense-making and knowledge transfer in teaching, training and development. It was first conceived by John Dewey in the mid 1930's, experiential education has been used various disciplines due to its interdisciplinary nature.

The theory of experiential learning by David Kolb (1984) has greatly contributed to the increasing philosophy of experiential education concepts and models. He defined experiential learning as the process of creating knowledge. His work on experiential learning in which learning takes place in a cyclical way acts as a point of reference for experiential education especially in higher education (Mughal, 2011). The theory proposes the assumptions that learning is a process and not as an outcome, driven by experience in a more holistic and integrative manner. Furthermore, learning requires the learner to resolve conflicts through dialect and requires the individual to interact with its environment, thus creating knowledge.

Rogers (1969) asserted that learning occurs on a continuum from meaningless to significant, experiential learning. He proposed that five elements are present in experiential learning:

1) direct, personal involvement, 2) learner initiation, 3) pervasiveness, 4) learner evaluation, and 5) the essence is meaning

Dewey (1938) introduced the term "reflective thought" to describe the process by which an individual learned from observations of their experiences using five distinct steps: "(1) a felt or perceived problem; (2) its area and difficulty; (3) suggestion of possible explanation and answer; (4) logical development of the bearings of the suggestion; and (5) further observation and experiment resulting to its acceptance or rejection.

Learning should take place in a real-life, real-world context so students will find more meaning on the theories and concepts taught to them in school. The timeless educational principle by Dewey says, "we learn best when we do what we learn." (Manatad & Torres, n.d)

Experiential learning activities has three components as stressed by Kristian (2015):

1. Alignment of learning goals, activity, product and assessment 2. Understanding students and their motivations; and 3. Create the right learning conditions based on competence, relatedness and autonomy.

Learning by doing is one of the most important aspects of experiential and student-centered learning (Laguador & Dizon, 2013). It is the teaching that engages the students in the actual situation. It motivates and empowers learners by giving them some control and direction over learning process and activities. It is the teaching that encourages collaboration and cooperation among learners, acknowledging the classroom (be it virtual or real) as a community where everyone shares the knowledge and skills. It promotes students' reflection about what they are learning and how they are learning it.

The ones who benefit most with this type of learning are those mature learners who have been long removed from the traditional classroom and need the motivation of contextual learning to get them back into the swing of academia; learners who need to personally experience the value of a topic in order to be motivated to learn; learners who have trouble learning within the formal classroom, and need an alternative learning method in order to succeed, and learners who can benefit from having hands-on examples to reinforce their traditional learning (Schwartz, 2012).

The literatures reviewed highlight the importance of coming up with various relevant models of ensuring student-centered, constructivist-based, project-based, experiential, multisensory, reflective, participatory, interactive, cooperative, collaborative and active learning.

2. Conceptual Framework

The study is anchored on the idea that experiential and authentic learning is a result of learner-centered, constructivist-based and project-based method or activities used in teaching.

Teaching, method is a series of related and progressive actions performed by the teacher and the learners to accomplish the general and specific aims of the lesson. It is a procedure or series of steps that must followed strictly to achieve the learning goal (Salandanan, 2007)

Every individual has his own perspective in learning, one factor of such is the methods of teaching used which are classified into Instructor/Teacher Centered Method, Content – Focused Method, Learner – Centered Method and Interactive/Participative Method. Learner-centered method focuses on students' learning in the lessons but is also about teachers' learning from and within the process where they refine how they teach particular lessons to students (Abanador, Buesa, & Manibo, 2014).

ERIC Model is a framework adopted from various theories and philosophies such those of student-centered, constructivist-based, project-based, experiential, multisensory, reflective, participatory, interactive, cooperative, collaborative and active learning.

Students are encouraged to acquire and apply knowledge, skills and feelings in an immediate and relevant setting – whether real or simulated. In this type of learning, the teacher tends to create learning environment with which students encounter directly to interpret a phenomenon rather than thinking about it. Experiential learning, from an epistemological perspective aligns with constructivism, which posits that learners construct meaning from their experiences.

Experiential learning in a constructivist and project-based perspective emphasizes learning through reflection on experience, considers individuals to gain and construct knowledge by interacting with their environment through a set of perceived experiences and/or perceived problem. It is, according to Jacobs (1999), a process through which a learner constructs knowledge, skills, and value from direct experiences. Works of Dewey, Piaget (1966), Kolb, and Wells (1995) have significantly contributed to the constructivist view of experiential learning as well as on problem-solving as one mechanism to experiential learning. Constructivism as a theory, as a philosophy and as an approach to teaching implies that the learners or the individuals are constructors of their own knowledge which is generated by interacting with their socio-cultural environment as viewed by Vygotsky (1978). Kolb (1984) described in his book "Experiential Learning", that this type of learning focuses more on individual development through reflection on its past experiences as part of constructivism. Kolb's model describes that learning happens when knowledge is created through the transformation of experience. However, issues of cognition with respect to environment interaction as pointed out by Vygotsky tend to lack from his theoretical model and that children tend to imitate the actions of based on their perception.

Kolb asserted that the learning process can begin at any stage. For discussion purposes, "Concrete Experience" (Do) will serve as the starting point. At this stage, the learner has direct interaction with the phenomenon being studied and learners grasp information through apprehension using the senses to see, hear, smell, feel, or taste the phenomenon. Following the model, the next stage is "Reflective Observation," (Observe) where learners reflect on what they experienced in which information is transformed through intention. Kolb describes intention as a cognitive process in which the learner mentally breaks apart the experience and internalizes the information. During the "Abstract Conceptualization" (Think) stage, learners grasp the information through comprehension by forming rules, generalizations, or hypotheses about the phenomenon being studied. The final stage is "Active Experimentation," (Plan) which is characterized by the learner testing the rules, generalizations, or hypotheses formed in the previous stage. Kolb asserts that during this stage information is transformed by extension, which again involves direct interaction with the phenomenon.

Roberts (2006) interpreted experiential learning process into four stages: (1) initial experience, (2) reflection, (3) generalization and (4) experimentation.

The conception of experiential learning is an established approach in the tradition of adult education theory. (Miettinen, 2010)

Rogers posited that problem-solving, inquiry-based learning, simulation, programmed instruction, and basic encounter groups are all congruent with experiential learning. Phipps and Osborne (1988) looked at problem-solving approach as process of experience provocative situation, explore references/sources, arrive at a group solution, attempt a trial solution and evaluate the effects. Trowbridge and Bybee (1996) viewed inquiry-based learning involving 5 E's: Engagement, Exploration, Explanation, Elaboration and Evaluation.

In Dale's Cone of Experience, it illustrates that experiences occur at different levels, ranging from direct, purposeful experiences to experiences with verbal symbols. The base of the cone is described by more concrete experiences, such as direct experiences (real-life experiences), contrived experiences (interactive models), and dramatic participation (role plays). Learners are "doing" and actively learning at this level. The peak of the cone is the most abstract where the experiences are represented non-realistically by symbols, either visual or verbal. The learners are "passive" using only their ears and eyes. The middle of the cone is slightly more abstract and is characterized by learners realistically "observing" the experience. These levels are differentiated from the lower levels of the cone because students are passive with the phenomenon. Levels in this section of the cone include fieldtrips, demonstrations, role play, exhibits, motion pictures, and audio recordings or still pictures.

Joplin (1981) conceived that the scope or duration can occur on a continuum from "mini" to "maxi". At the "mini" level, experiential learning can occur as a "flash of insight"; while at the "maxi" level, the entire curricula of a school can be orchestrated through experiential learning.

Learning is a continuous process and experts must understand that the experiential diaphragm of individuals is filled with information starting from their childhood and lasts throughout life. Individuals tend to draw on their experiences of their interaction with people, places, situations and environments throughout their lifetime.

Furthermore, some learner-centered teaching principles emphasizes that the nature of the learning process is most effective when it is an intentional process of constructing meaning from information and experience and that construction of knowledge wherein the successful learner can link new information with existing knowledge in meaningful ways. (McCombs, 2000)

The ERIC Learning Model which is a synthesis of all the theories and philosophies stated, illustrates that significant experiential learning of students can be attained through constructivist- and project-based activities in the classroom and in the field through exploration, research, interaction and creation. Experiential learning is continuous, cyclical and lifelong. The benefits of this model make learning more engaging and practical rather than merely transferring of information.
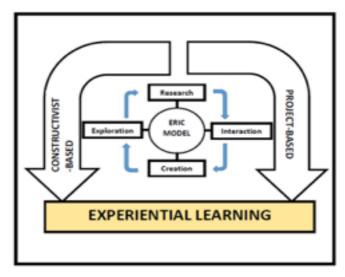

Figure 1. The ERIC Learning Model

3. Objective of the Study

The study determined the effectiveness of using the Exploration, Research, Involvement and Creation (ERIC) Learning Model in constructivist-based and project-based experiential learning in Environmental Science and Ecotourism among Tourism Management students of Columban College, Inc. It aimed to:

1. Determine the performance of the students in Environmental Science and Ecotourism courses before and after using ERIC Learning Model;

2. Test the effectiveness of using the ERIC Learning Model in increasing performance in the course;

3. Describe significant learning experience of the students in the different stages of ERIC Learning Model;

4. Assess the attitude of students towards learning topics in Environmental Science and Ecotourism courses as a result of using ERIC Learning Model

4. Methodology

The study uses mixed method of qualitative and quantitative approaches. Pre-experimental (One-Group Pre-test and Posttest Study) design was used to compare the pre-test and posttest performance of a single group as well as their level of interest before and after the use of the ERIC Learning Model. A benefit of this design is the inclusion of a pre-test to determine baseline scores. Pre-experimental designs follow basic experimental steps but fail to include a control group. In other words, a single group is often studied but no comparison between an equivalent non-treatment groups is made. A single case is observed at two time points, one before the treatment and one after the treatment. Changes in the outcome of interest are presumed to be the result of the intervention or treatment. No control or comparison group is employed

Forbes (2013) stressed that the advantage is that it can compare scores after a treatment to scores on the same measure in the same participants before the treatment. The disadvantage, however is that it does not include a no-treatment control group or a business-as-usual comparison group which makes it still prone to many threats to internal validity, including those related with observing the same subjects over time.

Quantitative data were gathered using 30 item-teacher-made tests (pre-test and posttest) in selected topics covered (Ecological Relationships, Ecological Succession, Pollution, Socio-cultural Aspects of Ecotourism, World's Coastlines and Geological Heritage, and Wildlife Tourism) and questionnaire-checklist was used to measure the attitude of students in the two courses after exposing to the ERIC Learning Model.

Qualitative case analysis of the learning experience of the students was also done as reference to the evaluation of effectiveness of the ERIC Learning Model. Focus Group Discussion, observation and in-depth analysis were used in this part. Experiences were narrated as documented.

There were 32 college students in the Tourism Management Program enrolled in NAS 106 (Environmental Science) and 28 enrolled in BST 323 (Ecotourism) for Academic Year 2018 - 2019 at Columban College, Inc. and were used as subjects. Data were treated using Mean, Weighted Mean and t-Test for Dependent Samples.

5. Results and Discussions

5.1 Performance of College Students Before and After Using the ERIC Learning Model

The mean scores of the respondents before instruction of the topics Ecological Relationships, Ecological Succession and Pollution were 12.35, 7.93 and 13.05, respectively with a verbal interpretation of "Did not Meet Expectation." However, the mean scores increased to 25.68, 24.15 and 26.34, respectively using the ERIC Model as instructional strategy.

Similarly, the mean scores of the respondents before instruction of the topics Socio-cultural Aspects of Ecotourism, World's Coastlines and Geological Heritage, and Wildlife Tourism were 9.34, 7.42 and 6.37, respectively with a verbal interpretation of "Did not Meet Expectation." However, the mean scores also increased to 23.25, 24.67 and 22.69, respectively using the ERIC Model as instructional strategy.

Experiential learning involves a direct encounter with the phenomena being studied and explored rather than merely thinking about the encounter, or only considering the possibility of doing something about it. This simply means that students can learn effectively through their own experiences (Dolotallas & Nagtalon, 2015).

Table 1. Performance of Students Before and After Using the ERIC Learning Model

Environmental Science Topics	Mean Score (N = 32)		t-Value and P-Value	Decision (using α at 5%)
	Before	After		
Ecological Relationship	12.35	25.68	4.23 0.031	Reject Ho
Ecological Succession	7.93	24.15	6.22 0.000	Reject Ho
Pollution	13.05	26.34	4.19 0.037	Reject Ho
Ecotourism Topics	Mean Score (N = 28)		t-Value and P-Value	Decision (using α at 5%)
	Before	After		
Socio-cultural Aspects of Ecotourism	9.34	23.25	4.37 0.026	Reject Ho
World's Coastlines and Geological Heritage	7.42	24.67	7.44 0.000	Reject Ho

Wildlife Tourism	6.37	22.69	6.17 *0.000*	Reject Ho

Ho: There is no significant difference between the performance of the college students before and after using the ERIC Model in teaching selected topics in Environmental Science and Ecotourism courses.

5.2 Test of Difference between the Performance of College Students Before and After Using the ERIC Learning Model

The null hypothesis: "There is no significant difference between the performance of the college students before and after using the ERIC Model in teaching selected topics in Environmental Science and Ecotourism courses" was rejected at 5% level of significance. The computed t-values after comparing the pre-test and posttest scores in Ecological Relationships, Ecological Succession and Pollution were 4.23, 6.22 and 4.19, which are all significant. Moreover, the computed t-values after comparing the pre-test and posttest scores in Socio-cultural Aspects of Ecotourism, World's Coastlines and Geological Heritage, and Wildlife Tourism were 4.37, 7.44 and 6.17, which are all significant.

The search for knowledge and deeper understanding begins with experience and that no learning takes place unless the student is both involved and engaged in and transformed by the learning process.

5.3 Learning Experiences of Students during the Different Phases

Experiential Learning, Problem-Based Learning, or Cooperative Learning can be evaluated as a brain-compatible because they respect learners as a unique individual with their socio-cultural perspective; build trust, safe, confirmative, non-threatening, but challenging atmosphere for learners, create an enriched complex learning situation, provide meaningful, significant and realistic experiences, offer choices in activities, give learner time and possible opportunities to process and reflect on what they are experiencing and learning, etc.

5.3.1 Exploration

One of the students narrated that "observing things in their natural habitat is different than just watching them in television. It made me more curious about how things happen as they are." Another student said that the activity in the exploration phase are more multisensory in nature and "exploring with other learners as a group was fun, exciting and memorable." The observation and learning guide given by the professor at the start of the exploration, as mentioned by one of the participants "helped us focus our learning but there are instances where we went beyond the limit because of curiosity and inquisitiveness."

Collaboratively, the learners look at the phenomenon and according to some learners, "made them see the relationship of things, understand why they happen, and reason out for cause-effect cases."

Dano-hinosolango and Vedua-dinagsao (2014) cited that students become responsible on their own learning if they will be given the chance to explore the phenomena, interact and be engaged in their own learning process. For experiential learning, students have the chance to become active participants in the learning process by providing them with authentic activities to become responsible learners. Much of the works on experiential learning is actually about learning from primary experience that is learning through multisensory experiences.

According to the empiricist theory of science, true knowledge is based on perceptions. With his senses an unprejudiced observer can make unbiased perceptions of reality. These can be presented in the form of elementary observation statements; sometimes called "protocol" statements. These statements form a foundation for true knowledge. Following the rules of formal logic, it is possible to develop laws and theories from these statements (induction). From these laws and theories, in turn, one can infer new propositions and forecasts concerning reality (deduction) that can be tested empirically, that is, to show their correspondence with unbiased observations as mentioned by Miettinen.

This initial phase helps the learners to see the big picture perspective: Experiential activities must allow the students to make connections between the learning they are doing and the world by observation and exploration. It builds in students the ability to see relationships in complex systems and finds a way to work within them.

5.3.2 Research

The Research phase involves cooperative learning, information-seeking activity, and evidenced-based learning. Though research involves exploration, this process requires complex pattern of thinking to explain things scientifically. It links man's perception to reality, solves problems in scientific manner, establishes theory, explains phenomenon with empirical evidence and analyzes topics critically and analytically.

One participant said that the interesting in this phase is when they were allowed to further gather evidences and information about the topics. "Together we went to the library to read about the topic assigned, we brainstormed and we interviewed experts to gather pertinent data."

This phase of the model promotes further experiential learning by providing students with opportunities to critically engage in learning – that is, providing them with a deeper and more meaningful understanding of theoretical knowledge within and beyond the textbook. A participant stressed that researching also need mentoring and guided navigation of the realities of the phenomena.

The phase also allows reflective practice. As cited by Roland (2017), experiential learning is for the development of a thoughtful, personal commitment to professionalism through reflective practice – intrinsically, through reflective practice, students become agents of their own learning characterized by a meta-cognitive awareness of their development as novice professionals. One responsibility of educators is to recognize that experience should lead to growth, not only to be mindful of the general principle of the shaping of actual experience (Gross & Rutland, 2017).

5.3.3 Interaction

As observed, research result was presented and involving them to talk about what they have known or experienced. This prompts avenues for students to talk more about their prior

knowledge and new discoveries. In this phase, teacher may integrate more cooperative learning activities for students to share with their peers. Even if they are not called in the class, there will still be an opportunity to express oneself through small group sharing. It has been shown also that giving enough time for the group learning in the classroom gives more effective outcomes. As viewed by one participant, sharing knowledge and perspectives with other learners is a key element of developing collaborative practice.

Learners should be able to reflect on their personal learning, bringing the "theory to practice" and gaining understanding into themselves and their interactions with the world.

Constructivist theory explains how students construct meaning by linking existing knowledge with new information. Active interaction among the learners themselves and between the learners and the teacher as well as with other members of the community is highly encouraged to enhance construction of meaning or learning. There is a good exchange of information and learning experiences allowing the students to discover, explore and experience skills and strategies in learning.

This phase emphasizes a variety of different activities that shifts the role of the instructors from providers of information to facilitating student learning. It includes specific strategies like cooperative learning strategies, brainstorming, reflective learning, active discussion, etc. When a classroom operates with learner-centered instruction, students and instructor share the focus and interest. Instead of listening to the teacher solely, students and teacher interact actively. Group work is encouraged, and learners collaborate and communicate with one another. It creates a safe space for learners to work through their own process of self-discovery and absence of excessive judgment.

5.3.4 Creation

Some participants revealed that their learning retention becomes more concrete and significant as they move from one phase or experiential learning mode to another throughout the learning model until creation phase.

Viewed from an experiential learning lens, developing and enhancing learner engagement involves exploring ideas and reflecting on this learning, as well as learning from others' experience and shifting points of view to synthesize and create new knowledge and understanding (2014).

At this phase, it is important that students know how to learn. The focus of project-based learning environment is that teachers serve as the facilitators of learning. With this, students apply their knowledge and skills in varied contexts and situations that includes making use of the resources available for them. The creation phase is just apt for students to make them learn by doing by simply working on a project. It is here where students are engaged and involved in their learning process so that they can adapt or apply the skills and strategies they have learned. Laguador and Camello (2013) said that the learners must take part on many challenging roles of designing plans and implementing the programs that would give them the sense of leadership and ownership of their achievements.

Creation is engagement in purposeful endeavors. It highlights that the learner is the self-teacher, therefore there must be "meaning for the student in the learning." The learning activities must be personally relevant and significant to the student (Chapman, McPhee, & Proudman, 1995).

Learning is enhanced when students are given the opportunity to function outside of their own perceived comfort zones both to physical and social environment, and being accountable for one's actions and owning the consequences.

Table 2. Sample Performance Tasks of Students in the Different Phases

ERIC Learning MODEL	Environmental Science	Ecotourism
	Ecological Relationship	Wildlife Tourism
Exploration (Observation and multisensory learning)	Visit the garden, pond or river bank. Observe how organisms interact/relate to one another.	Tour the Zoobic Zafari. Observe the behavior of caged animals (tigers, birds, reptiles, etc)
Research (Cooperative and collaborative learning, Information-seeking, Evidence-based learning, Reflective Practice)	Each group will write a research paper on a specific relationship observed (example, interaction of butterfly and flowers, fish with another fish, etc.). Watch video clips for additional information.	Each group will be assigned to write a research paper on the behavior of one particular animal in its natural environment and compared it to what they have observed. They could go back to the place to interview caretakers, authorities on wildlife animals.
Interaction (Cooperative Learning, Brainstorming, Reflective Learning)	Report the results to class. Discuss with other groups. Write individual reflections. Sharing of reflections. Synthesis of the topics follows.	Report the results to class. Discuss with other groups. Write individual reflections. Sharing of reflections. Synthesis of the topics follows.
Creation (Project-Based, Engagement, Evaluation)	Teacher will assign project. (Example, construction of terrarium/ aquarium, fishpond, school guidelines on garden management, etc.)	Teacher will assign project to each group. (Example, training young kids on wildlife behavior, training module on animal handling for caretakers and tourists, conservation of wildlife animals, comic strips on wildlife behavior, etc.)

6. Attitude of Students towards Learning Environmental Science and Ecotourism

The survey result showed that students enrolled in Environmental Science strongly agreed that because of using the ERIC Learning Model as strategy in learning, the lessons became easy for them in which they learn concepts without fear or anxiety; their self-confidence in working and learning with others was boosted; and their motivation, interest and enjoyment in learning the course was developed. They only agreed that the Model helped them learn the concepts and topics easily and that the course is important in everyday life.

On the other hand, students enrolled in Ecotourism course strongly agreed that because of the Model as strategy in learning, the lessons became easy for them; their self-confidence in working and learning with others was boosted; they felt comfortable and confident in answering questions and problem-based activities; and their motivation, interest, satisfaction and enjoyment in learning the course was developed. They agreed that it helped them develop

the mind and taught them to think as well as it helped them realize that the course is a very worthwhile and necessary subject.

Overall, they developed a positive attitude towards their courses.

Table 3. Attitude of Students towards Learning Environmental Science and Ecotourism as a Result of Using the ERIC Learning Model

Attitude	Environmental Science		Ecotourism	
The strategy used (ERIC Learning Model):	Mean	VD	Mean	VD
Makes me realize that the course is a very worthwhile and necessary subject.	3.76	A	3.83	A
Helps me to develop the mind and teaches me to think.	3.54	A	3.96	A
Makes me realize that the course is important in everyday life.	3.92	A	3.76	A
Makes me feel a great deal of satisfaction out of studying the course.	3.84	A	4.27	SA
Develops my enjoyment in studying the course	4.26	SA	4.36	SA
Makes me really like the course.	3.66	A	4.03	A
Makes me happier in the class than in any other class.	3.46	A	4.11	A
Develops my motivation and interest in learning the course.	4.27	SA	4.32	SA
Makes me comfortable and confident in answering questions and problem-based activities.	3.58	A	4.21	SA
Makes the lessons easy for me.	4.32	SA	4.36	SA
Boosts my self-confidence in working and learning with others in the course.	4.28	SA	4.22	SA
Helps me learn concepts and topics without fear or anxiety.	3.95	A	4.28	SA
OVERALL	3.90	A	4.14	A

Legend for Verbal Description (VD)
A = Agree   SA = Strongly Agree

The use of the model enhances student engagement and thus results to more authentic learning, enjoyment, interest, motivation and confidence. It provides opportunities to learn the skills as well as values necessary to effectively navigate the realities of the topic or phenomena; it provides opportunities for students to develop a personal commitment to self-and group learning with reflective practice; and it emphasizes on the importance of theory and ideas, as well as emphasis on the importance of experience and reflection in development of values and positive attitude.

7. Conclusions and Recommendations

The way or how teachers teach creates impact on the progress of child's learning and well-being. The teacher is encouraged to become more learner-centered in his or her teaching employing experiential learning strategies embedded with constructivist- and project-based activities. The use of ERIC Learning Model ensures that the students master their learning skills and strategies because teachers can provide more opportunities for the enhancement of

the learning skills and strategies to make them learn by doing. It ensures student-centered, constructivist-based, project-based, experiential, multisensory, reflective, participatory, interactive, cooperative, collaborative and active learning. It is very important that students are engaged and involved by exploration, research, interaction and creation so that they can adapt the skills and strategies for them to become responsible learners and lifelong learners. There was a significant increase in the performance of students as well as develops more positive attitude towards the topics.

Further use of the model in other field of specialization or topics for validation is necessary. Teachers could be trained in adopting and testing the model.

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