Improving Learning Experience and Participation through Motivational Expressions in Problem Based Learning

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This paper describes a two-cycle action research being carried out to improve students' learning experiences and participation, particularly for Natural Science subjects. At the implementation (act) stage in the action research, cycle 2 applies motivational support to students, which was not done in cycle 1. In the existing scenario, conventional teaching delivery, which is teacher-centred was not able to promote students' active learning. Hence, participation levels were low, leading to a less positive learning experience. Therefore, the teacher applied problem-based learning techniques, and observed the students in-classroom learning experiences and participation. In the study, both cycles utilized problem-based learning, in which the latter was added with motivational expressions by the teacher. Results from the observation revealed that the motivational expressions were able to invoke a more positive learning experience and participation for students.

Key words: *Classroom learning, Problem Based Learning, Action Research, learning experience, classroom participation.*

Introduction

Learning is a complex activity (Human-Vogel & Bouwer, 2005) that involves various related elements such objectives, subject matter, facilities and infrastructure, learning situations or conditions, instructional media, and learning models and evaluation,s which greatly affect the success of the learning process in order to develop the potential and the meaningful. In a learning platform, teachers should be able to attract the students' attention on how to solve problems in learning (Siti Akmar & Siti Mariam, 2010). In solving a problem, students must

be engaged and think critically. The way teachers teach also influences the way students learn. If teachers use variations in teaching, then the way students learn will also vary, which eventually affects the learning experience.

Learning experience refers to the change of behaviour through the process of interaction with the environment. As a result, a student will produce a change in attitude, knowledge and skills. According to Slameto (2010), as a result of learning, the changes occurring within a person are dynamic and not static in nature. One change will cause the next change and will be useful for the next stage of the learning process. From a study by Sanjaya (2008), it has been suggested that there are five types of learning outcomes. Firstly, acquiring intellectual proficiency. There are three types of intellectual learning, mainly learning to differentiate or discriminate, learning concepts, and learning the rules. Secondly, learning verbal information, which is learning to absorb or acquire, store and communicate information from multiple sources. Thirdly, learning organizing intellectual activities which is learning to organize intellectual activities to solve problems by utilizing the concepts and rules. Next, is learning about attitude. Attitude is the readiness and willingness of a person to accept or reject an object based on the assessment of the object, whether it means or not for himself. Finally, learning about motor skills. Learning motor skills relates to the ability of a person in using movement, so as to have a sequence of movement that is regular, flexible, precise, fast, and smooth. Further, the results of teaching and learning activities are reflected in behavioural changes, both material-substantial, structural, structural and behavioural (Blazar & Kraft, 2017; Ross, 2018). Based on the above explanation, it can be concluded that the results of learning is the final assessment of changes that occur in a person. This happens in an ongoing basis, which includes intellectual skills, motor skills, and attitudes or behaviour.

Thus, an activity has to be planned to run well and to be organized systematically. Likewise, with the model of learning, it helps students to achieve their learning objectives. According to Trianto (2009) and Joyce and Weil (2009), the purpose of the learning treatment is to describe a systematic procedure in organizing learning experiences to achieve certain learning goals and serves as a guide for teachers in executing the learning activities.

In current practice, teaching Natural Science is carried out using conventional way of learning, which is teacher-centred. The teacher makes a plan for the teaching delivery, strategizes the classroom learning systematically, and prepares the teaching materials appropriately. However, the scenario in the classroom was still not a positive one. Students did not show enthusiasm, did not participate in class activities when asked, and just absorbed the contents from the teacher. When asked questions, only a few similar students would answer with minimal interaction. The students normally responded to closed-ended questions, but open-ended questions would hardly receive response from the students. In such situation, we are sure that teachers are doing their jobs teaching the students. However, we are not sure whether student's

are learning the material that is taught by the teachers. Regarding this, this study doubts, until student learning is proven through active participation (sharing of idea and argument) in the classroom activities.

Most students are good at memorizing facts. However, the facts retained by the students after memorizing are often not used in generating new knowledge. For this study, it is not quite healthy because it does not exploit student's potentials. This study believes, in the 21st century, students must actively participate in the learning process. They should experience the learning process positively, which is interpreted through their facial expression and body language. The gap between and among peers as well as with the teachers should be bridged, and that they should learn not only from teachers, but also from their peers. This acknowledges their own knowledge, and an opportunity for them to demonstrate their knowledge and abilities.

Therefore, teachers are required to choose a model of learning that can stimulate the spirit of each student to help them to actively participate in the learning experience. In overcoming the problem, it would be useful to offer an alternative model of learning that allows the development of knowledge and understanding of students in the face of problems. It could be achieved among others through the problem-based learning (Slameto, 2010) technique. This technique emphasizes on the learning activity that requires students to find their own information on lessons that are learned through the existing materials (Siti Akmar & Siti Mariam, 2010) and through generating new knowledge (Hmelo-Silver, 2004). It also involves students in solving a problem by using scientific methods so that knowledge related to the problem can be learned at once. It is based on the constructivist theories of learning which stress that learners' need to investigate their environment and constructs personally for meaningful knowledge (Arends, 2004). Additionally, Savin-Maden and Mayor (2004), Fogarty (1997) and Sanjaya (2006), state that problem-based learning requires learners to be confronted with practical problems; ill-structured, or open ended problems through stimulus in learning (Ge, Law, & Huang, 2016).

In solving problems in the real world, it has to be realized that the entire cognitive and mental processes are involved in solving problems. This process also happens in a learning process where students are often impacted by various problems, so it takes away the ability on how to make students solve the problems properly. Therefore, starting from the problem of learning, experts suggest the use of the constructivist learning paradigm in teaching and learning activities in the classroom.

Method

This is a two-cycle action research. It took place in the classroom of a fifth-grade state elementary school in Medan, between February and April 2015 involving 33 students. A

written consent declaration from the school was obtained first, from the headmaster. On top of that, all study subjects also expressed their agreement to be involved in the study through a signed consent form. Through the consent form, all subjects agreed to be involved in the study voluntarily, and were allowed to disengage from the study at any time if necessary. The consent form also guaranteed their anonymity. The content being focused on is the subject of Natural Sciences, in which students' learning experiences and participation were invoked through the problem-based learning technique. Natural Science is a subject that involves learning about the relationship between living things and the natural surroundings.

As an action research, this study has gone through the typical state of execution; planning for the classroom learning, implementation of action, observation and evaluation, and reflection; as illustrated in Figure 1. Such technique has been executed in many works including those by Antinyan, Staron, Sandberg, and Hansson (2016), Carr and Kemmis (1986), and García-Valcárcel and Basilotta (2013). The process in every state of both cycles was generally similar (as outlined by McNiff and Whitehead (2005)) as explained in the following paragraphs. Meanwhile, actions by teachers at the implementation (act) stage differ because it contained the treatment that promotes students' learning behaviour. Briefly, in cycle 1, the teacher did not apply any motivational support, but in cycle 2, the teacher applied motivational support.

Figure 1: The process in every cycle

Based on the stages in Figure 1, the activities in every cycle of the execution are detailed to achieve its respective goal. Particularly, the goal for cycle 1 was to observe the students' learning experience and participation without motivational support from their teachers, while the goal of cycle 2 was to observe the students' learning experience and participation with motivational support from their teacher. It was basically adapted from the general framework by Elliot (1991) and Susman and Evered (1978). Accordingly, each stage of every cycle contained dedicated activities, in which the reflection stage of cycle 1 was very important in giving input for the execution of cycle 2, as previously been applied by Hayes (2011).

Cycle 1

In the *planning* stage of cycle 1, the teacher: 1) determined the actions to be taken to overcome the problem of student learning difficulties, 2) developed the lesson plan with the appropriate teaching materials, and 3) prepared an observation sheet to record students' behaviour during the learning sessions. It was accompanied with video recording. The appropriate lesson plan includes identifying the topics for discussion. It was decided that for the purpose of this study, 'medium aircraft' was selected. Hence, the appropriate pictures were prepared for distribution in the classroom. The driving question for the purpose of problem-based learning was also identified, which is "what is the most comfortable medium aircraft type for flying from Medan to Ambon?". With regards to the topic, materials, and driving questions, it was expected that students were to learn on their own and participate in learning enthusiastically.

In the *implementation of action* stage, the students were grouped into groups of five for the purpose of collaborative learning (Fung, TO & Leung, 2016). Within the groups, students were distributed with the pictures of medium-sized aircraft and the driving question. Teachers described the topic and the driving questions, as well as the students' roles. Nevertheless, the students were also demonstrated with the techniques to search for information on the Internet (as done by Dwyer (2016)). Throughout the session, they discussed and debated their knowledge and ideas within groups. The teachers were involved in the process as a moderator who ran to every group to assist the discussion when asked, without intervening for any different purposes. Eventually, the students were required to present their findings. In their presentations, students of other groups were allowed to ask questions.

Meanwhile, the teacher recorded the process on the provided sheet, and the session was recorded on camera for the purpose of *observation and evaluation*. The observation was focused on affective and psychomotor aspects. For this study, the affective aspect notes were taken on the ability of students to ask questions and responding to arguments, being active in the learning process, and working together in solving problems. The psychomotor is concerned on the ability of individual students to solve the given tasks, their level of understanding, skills in presenting ideas, responding to other people's works, and making conclusions.

Data from the observation was used for *reflecting* the learning session in the cycle, as inputs for the next cycle. Detailed results of the reflection are discussed in the next section.

Cycle 2

In cycle 2, the *planning* was made based on the reflection in cycle 1. Briefly, the observation in cycle 1 revealed that students did not participate well, and their learning experience was not lively. Hence, in the lesson plan, the teacher injected with motivational elements. It was

hypothesized that the motivational aspect could make students learn more enthusiastically and participate better. Another set of pictures related to the medium aircraft were prepared, as well as upgrading the driving question, into "what are factors impacting the performance of medium aircraft?"

In the *implementation of action* stage, similar procedures in which students worked in groups of five were commenced. With the materials distributed, the teacher began the session by explaining their roles, as well as explaining the driving questions, the session was commenced with some powerful motivational quotes. Additionally, throughout the session, the teacher not only answered to students when asked, but also teacher went beyond that by expressing motivational speeches to support the students learning enthusiasm. The motivational supports also included people the students know and their success stories after going through a hard time. As a result, the students played their roles more actively, especially with the materials they discovered on their own (Wijnia, Loyens, Derous, & Schmidt, 2015).

Similarly, the session was *observed* and noted on the observation sheet and recorded on camera for evaluation purposes. Then, the *reflection* was made using the observation facts.

Results

As an action research, the results of every cycle are very important. They were extracted through the reflection stage, and clearly understood to plan for the next cycle. Hence, this paper reports the results of the cycle-base. Particularly, this paper has no intention to discuss their knowledge acquisition, but rather on the learning experience and participation of the students, as indicated in the beginning of this paper.

In cycle 1, the students were observed to be able to perform their tasks in the groups respectively. They searched for information well on the Internet, as well as preparing materials for the presentation. Basically, they were able to respond appropriately to the driving questions. However, throughout the session, the atmosphere in the classroom was not much different than the ordinary teacher-centred techniques.

It was observed that more than half of the class did not actively participate in the learning process, many students tend to be passive group members and wait for their peers to instruct them to do something. Obviously, they did not communicate well within the group, with the teacher, the learning resources and the other fellow students including during group presentations. Among the reasons perhaps they do not understand what they were learning, they were uninterested in the learning materials, so there is no incentive to perform well in the learning activities, and perhaps they are not used to critical thinking, have a fear of asking questions or they do not study at home. Hence, there is the possibility that this can also be

caused by the teacher's factors for being solely a person who provides answers only when asked. In such situation, when students do not have knowledge, and do not have strong questions to ask, they do not ask, and this does not invoke learning experience and participation.

In cycle 2, when the teacher does more than just answering questions, by expressing motivational support through words and actions, the situation was observed as being different. Among the students, besides being able to search for materials, arguing within groups, communicate well, preparing materials for the presentation, and debating during the presentations, they were seen to be enjoying the learning session very much. The groups were dynamic, and full of fun through both words and actions.

Generally, it was observed that throughout the session the students were able to develop their character, by playing an active role in learning, as emphasized by Paris and Winograd (1999). Particularly, they fostered motivation from meaningful purpose, process and involvement in learning, found a meaningful problem, formulated the problem with the consideration of modifying and varying the situation with new information that was deemed most likely to achieve the goal, collected facts to gain meaning and knowledge in the application to create problem solving, asking questions and solving problems, and participating in the development and use of assessments to evaluate their own progress. This was invoked by the motivational expressions by the teacher, which is considered as the extrinsic motivation (Deci, Koestner, & Ryan, 2001).

Discussion and Conclusion

This study ensures that students performed various activities in the problem-based learning technique in cycles 1 and 2, as recommended by Sanjaya (2006). The activities included listening, recording, memorizing, actively thinking, communicating, searching and processing data, and making conclusions. Through the problem-based learning technique, the students put the driving questions and the problem as the keyword of the learning process (as implemented by Mercer and Fisher (1992)). Those were done through a scientific thinking approach. Obviously, it involved deductive and inductive thinking, which requires both systematic and empirical analysis. Doing both ways accordingly requires students to combine thinking through certain stages and clear data and facts. It was clearly seen in the second cycle, which was deeply invoked by the spiritual support by the teacher.

Also in cycle 2, having supported spiritually, through motivational expressions, students were seen to be actively debating and asking questions or solving problems (like demonstrated in Belland, Glazewski, and Richardson (2011)), combining their knowledge of different disciplines, performing authentic investigation, preparing materials and showing them off, and

collaborating within and between groups. This ensures the success of the learning experience, as indicated by Arends (2004). Eventually, they participated well throughout the learning process, making the classroom a more positive environment. From this regard, the motivational expressions in the problem-based learning is believed to affect students motivation (Wijnen, Loyens, Wijnia, Smeets, Kroeze, Van der Molen, 2018).

For this study, the purpose of using problem-based learning in the learning session is to assist students in developing affective and psychomotor skills. It is possible because in problem-based learning, students are able to deal with the real world problems and it helps them to be creative and independent (Trianto, 2009). Accordingly, this study ensured that the learning process can move students towards independence and lifelong learning. In cycle 2, it was observed that the right learning environment has motivated students in performing reflective thinking, evaluating crisis, and generating powerful thinking. Referring to Rusman (2012), the motivational expressions by teachers are parts of preparing students with thinking tools. It is a technique in changing students' ways of thinking, into collaborative inquiry and learning.

According to Sagala (2009), learning is a two-way communication process, in which teaching is done by the teacher as an educator or a facilitator, while the learning is done by students, not made for the students (Isjoni, 2013). It is basically a teacher's effort to help students take part in learning activities. Additionally, Rusman (2012) emphasizes that learning is a process of interaction among learners, teachers, learning resources, and the environment. The learning process needs to be planned, implemented, assessed, and supervised to be effective and efficient. In conjunction to that, this study designed the learning process in the described treatment so that the students do the learning themselves with the facilitation of their teachers. In such procedure, the provision of learning resources and learning environment were emphasized, so as to make students learn actively, hence learning can be done effectively and efficiently. Eventually, it has been proven that the inclusion of problem-based learning techniques support the learning process (as discovered by Nuswowati, Susilaningsih, and Nofiyanti (2018) and Anazifa and Djukri (2017)). Furthermore, when the teacher enhances the learning process with motivational expressions, it accelerates the learning experience and participation exponentially.

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