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Self regulated learning through project base learning on the prospective math teacher

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Abstract. Development of planning, strategy, and learning activities is strongly influenced by metacognition ability, knowledge of learning strategy, and understanding of context is the most important thing to be mastered by a prospective teacher. Self-regulation owned by the individual can control behavior, and manipulate a behavior by using the ability of his mind so that individuals can react to their environment. Self-regulation is the basis of the socialization process as it relates to the entire domain of physical, cognitive, social, and emotional development. This research is a qualitative research with research subject of the fourth-semester student of class A, at one of a university in Cirebon City, West Java. In this research, the lecture material discussed is The Development of Teaching Materials, which is the subject matter that must be mastered by prospective teachers, especially teachers of mathematics education. The instrument used is the questionnaire. The results showed that through project based learning, can grow student’s self-regulated learning especially the prospective math teacher, and can be used as an alternative to the delivery of lecture materials.

1. Introduction

For a prospective teacher, the ability to make an innovation in the manufacture of teaching materials is needed. Teaching materials are expected to help students to more easily understand a concept of teaching materials delivered by the teacher, either in the classroom or outside the classroom. Through the course of development of teaching materials, students are required to be more creative in the manufacture of cheap media teaching but can be a media information relevant to students. The tasks assigned in the manufacture of teaching materials include the making of a syllabus that is adapted to the applicable curriculum, the lesson plans (RPP), text books, power point slides, Student Worksheets (LKS), and learning media which are packaged in one material.

It is important for a prospective math teacher to master the skills in making teaching materials to become a professional teacher. Teaching materials is a very important component in teaching and learning activities when the preparation of teaching a teacher is mature its hope when teaching materials in accordance with the expected learning objectives.

Development of strategic planning and learning activities is strongly influenced by metacognition skills, knowledge of learning strategies, and an understanding of the context in which he will learn. The more effective the student in developing personal management strategy (personal), behavior, and environment hence the higher level of self-regulation of a student. Learning through assignment can be expected by students to distinguish a set of cases on important aspects. As for behavior, the display is in the form of real action in the lecture.

As a prospective teacher should be able to design effective learning and attention to the characteristics of learning materials that are taught. Things teachers need to consider in designing
learning by choosing approaches, strategies, methods, and learning techniques. Whole unity between approach, strategy, method, and learning technique will form a learning model. The learning model is basically a form the lessons illustrated from beginning to end are typically presented by the teacher. In other words, the learning model is a frame of application of approaches, methods, and learning techniques.

Looking at the learning reform efforts developed at Indonesia, teachers are now being offered with a variety of model choices learning, as required in the national curriculum. If the teacher has understood the characteristics of teaching materials and students, selection of learning models is expected to realize the intended learning objectives achieved. The formulation of the problem in this activity is how self-regulated learning ability in the prospective math teachers through the lecture by using project based learning model? The purpose of this study to determine the ability of self-regulated learning in the prospective math teachers through lectures by using project based learning model.

1.1 Self-regulation
In general self-regulated is one's task to change the responses, such as controlling behavioral impulses (drive behavior), restraining desire, controlling the mind and changing emotions. So in other words, self-regulation is ability possessed by individuals in controlling behavior, and manipulates a behavior by using the ability of his mind so that individuals can react to the environment.

Regulated learning through observing the process of modeling oral descriptions and social guidance, as well as feedback [1]. Regulated learning in the form of development of self-regulating skills arises when complex situations, regulated learning systematically adjust the strategy and change personal and contextual situations. Mathematical problems require high self-regulated levels [2] students who have difficulty only have the metacognitive competence and low self-regulated findings. Self-regulation emerges in response, strategy students become responsible for their own learning, students self-regulating their learning is academically more successful and some teaching experiments and self-regulating [3].

Based on several definitions that have been described, it can be concluded that self-regulation is the ability to control, organize, plan, direct, and monitor behavior to achieve a certain goal by using certain strategies and involving physical, cognitive, motivational, emotional, and social elements. Formulated a self-regulation of seven steps receiving or receive relevant information. Evaluating or evaluate, triggering or make a change, searching for finding a solution, formulating or designing a plan. Implementing or implement the plan, and assessing or measure the effectiveness of the plans that have been made.

Based on the results of the above description, it can be concluded that the self-regulation process (self-regulation) consists of receiving or receive, evaluating or evaluate, triggering or making a change, searching or finding solutions, formulating or designing a plan, implementing or implementing a plan, assessing or measure the effectiveness of the plans that have been made.

Self-regulation is fundamental in the process of socialization and involves physical, cognitive, and emotional development. Self-regulated in this study covers include three aspects, namely metacognition, motivation, and behaviour.

1.2 Project based learning
In general, Project Based Learning is defined as a project-based learning. The task of getting students to move from lessons to better shows activity and experience is very important for the learning process [4]. From a sociocultural perspective, this definition is very important in building student understanding. Teacher assignments, tools and materials, and very representations. Project based learning consists of a project-based methodology whereby students must independently solve technical problems successfully applied in some areas, problems faced with regard to their lives [5].

Project-based learning will work if students are responsible for the learning process by setting goals, monitoring, reflection, and maintaining their motivation from the beginning of the project to the end [6]. This process does not occur naturally or easily. Therefore, learning environment and teaching practices in PBL should be designed with the aim of supporting self-regulated learning.

Project-based learning has a relatively more significant effect on increasing the level of students' metacognitive awareness than traditional teaching methods [7]. Project-based learning has a relatively
more significant effect on increasing the level of students' metacognitive awareness than traditional teaching methods [8].

The activity of transferring knowledge is more interesting, much research on project-based learning investigates the effectiveness of transferring learned knowledge. The project is done to motivate the performance of student activities in preparing a product, in this case, is a medium of learning on mathematics material. The compiled product takes time for lab work and data search. Thus, this learning model emphasizes students to create projects and produce products/work and then learn from the process of making projects and products, so that the material presented by the teacher is easy to understand.

2. Methods
This research was conducted in Mathematics Education Study Program of Unswagati Cirebon. Research subjects include students Semester IV academic year 2016/2017. According research instrument on qualitative research is the researcher itself [9]. Qualitative researchers as a human instrument that plays a role in determining the focus of research, selecting informants as data sources, analyzing data, interpreting data and making conclusions on their findings. Case study research is not a methodological choice, but an option to look for cases that need to be addressed [10].

To obtain the necessary data in this study, a research instrument is required. The instrument in this study is the questionnaire. The questionnaire used is an open questionnaire, meaning that respondents are welcome to write answers according to what the respondent experienced or felt.

3. Results and discussion
After learning activities using Project Based Learning Model, students are given a questionnaire, following the results of the questionnaire obtained:

From obtaining the result of the questionnaire in Table 1, can be described as follows when the task of learning media is difficult, students try to solve themselves asking for help from others, as much as 43.5 % strongly agree (SS) and 56.5 % agree (S). Demonstrate the seriousness of students to want to complete the task well in accordance with the expectations of lecturers. Most of the students at the time of learning media tasks are not assisted by other people as much as 65.2 %, showing the students try their own effort to complete the task independently. Students are to show the ability to present the use of learning media in front of the crowd as much as 73.9 %. In the student shows a high enough confidence for the performance that has been implemented. Students do not feel less convinced in doing the task of learning media if they do not ask others 52.2 %, it means that they feel confident in the ability that is in each of them. Amount 52.2 % of students believe in their own ability that they will succeed in making good learning media. This statement reinforces their ability to be independent.

After getting some tasks of making teaching materials as much as 60.9 % motivated students want to create and innovate in producing instructional media in accordance with teaching materials. Students as much as 52.2 % do the task of learning media with full seriousness. To assist students 47.8 % in learning, students tend to make material summaries.

In addition to the material obtained from the 78.3 % student lecturer trying to find reference lectures outside the media required by lecturers. With full of self-confidence 78.3 % students trying to determine their own way of designing the learning media with full sincerity. This statement supports the claim that self-regulation is fundamental in the process of socialization and involves physical, cognitive, and emotional development. Students are always looking for innovation with so much as 52.2 % they do not feel loss and lack of ideas in making teaching materials. The effort of students is high enough in producing teaching materials, they have a soul that never give up students as much as 78.3 % if there is a learning media that is not right, yet students can try to fix it.

Amount 69.6 % students create their own creations, they do not imitate the idea of other friends when the teaching media tasks given by the lecturer can not be completed. For each assignment given 52.2 % students have the achievement of the target value to be obtained. Through the achievement of the target score, students optimize their ability to make the best teaching materials possible. Each student's assignment 52.2 % tries not to procrastinate time in completing the tasks of making instructional media (Table 1).
Table 1. Self-regulated Learning

| No. | Statement                                                                 | SS | S  | TS | STS |
|-----|---------------------------------------------------------------------------|----|----|----|-----|
| 1   | If there is a difficult learning media task, I try to solve myself without asking help from others. | 43.5 | 56.5 | 0.0 | 0.0 |
| 2   | I do the work of learning media assisted by others.                        | 0.0 | 65.2 | 30.4 | 4.3 |
| 3   | I dare to show the ability to present the use of learning media in front of the crowd. | 21.7 | 73.9 | 4.3 | 0.0 |
| 4   | I feel less confident in doing the learning media tasks if I do not ask others. | 4.3 | 39.1 | 52.2 | 4.3 |
| 5   | I believe in my own ability that I will succeed in making good learning media. | 39.1 | 52.2 | 8.7 | 0.0 |
| 6   | I always wanted to create and innovate in producing instructional media in accordance with teaching materials. | 60.9 | 39.1 | 0.0 | 0.0 |
| 7   | I do the learning media task with full seriousness.                        | 52.2 | 47.8 | 0.0 | 0.0 |
| 8   | I always make a summary of material to make learning easier.               | 26.1 | 47.8 | 26.1 | 0.0 |
| 9   | I am looking for lecture learning media references outside that required by lecturers. | 8.7 | 78.3 | 13.0 | 0.0 |
| 10  | I define my own way of designing learning media with full seriousness.     | 17.4 | 78.3 | 4.3 | 0.0 |
| 11  | When I create a learning media I feel bored because I lost my idea.        | 0.0 | 43.5 | 52.2 | 4.3 |
| 12  | If there are a learning media that has not been right, I can not try to fix it. | 4.3 | 78.3 | 17.4 | 0.0 |
| 13  | I imitate the idea of another friend when the teaching media tasks given by the lecturer can not be completed. | 4.3 | 13.0 | 69.6 | 13.0 |
| 14  | I set myself the minimum target value obtained by each learning media task. | 13.0 | 52.2 | 30.4 | 4.3 |
| 15  | I always procrastinate time in completing the tasks of making learning media. | 0.0 | 52.2 | 26.1 | 21.7 |

The results of the questionnaire analyzed to meet the stages of self-regulated receiving or receive relevant information, evaluating or evaluate, triggering or making a change, searching or finding solutions, formulating or designing a plan, implementing or implement a plan, and assessing or measuring the effectiveness of the plan already made.

4. Conclusion
After being given lectures by using project based learning in teaching materials development courses, in general, students strive to complete the task with full well with creative ideas and innovation. Students meet the criteria based on self-regulated learning stages, students have the ability to receive, evaluating, triggering, searching, formulating, implementing, and assessing.

References
[1] Effeney G, Carroll A and Bahr N 2013 Aust. J. Educ. Dev. Psychol. 13 58
[2] Barbara O and Saskia K 2017 J. Learn. Individ. Differ. 55 75
[3] Abdullah M F, Ab Ghani S, Ahmad C N and Yahaya A 2015 Procedia-Soc. Behav. Sci. 191 2188
[4] Holt W P, Gemma F M and Jere C 2013 J. Math. Behav. 32 103
[5] Bartsch V, Ebers M and Maurer I 2013 Int. J. Proj. Manag. 31(2) 239
[6] English M C and Kitsantas A 2013 Interdiscip. J. Probl. Based Learn. 7(2) 6
[7] Tosun C and Senocak E 2013 Aust. J. Teach. Educ. 38(3) 4
[8] Yamin Y, Permanasari A, Redjeki S and Sopandi W 2017 J. Phys.: Conf. Ser. 895(1) 012153
[9] Sugiyono 2010 *Metode Penelitian Kuantitatif, Kualitatif, dan R&D* (Bandung: Alfabeta)
[10] John C W 2016 *Research Design Pendekatan Metode Kualitatif, Kuantitatif dan Campuran* (Yogyakarta: Pustaka Pelajar)
