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Development and Validation of Learning Tools of GITTW Strategy to Empower Self-Regulation Skill

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Abstract. Lecturing on Anatomy and Physiology of Human Body in Biology Education Study Programme, Faculty of Teacher Training & Education UMSurabaya, mostly it still prioritizes on the mastery of concepts that has not sought the empowerment of self-regulation skill. However this have implications on the cognitive abilities of students who tend to be low. In addition, in the process of learning encouragement and active participation of students is very lacking that is reflected in asking questions and expressing opinions on the problems, both against him and the others. It takes constructive learning strategies more effectively to overcome these problems. Strategies that are considered appropriate to apply GITTW (Group Investigation combined Think Talk Write) strategy. The learning tool of GITTW strategy was developed through development procedures following the instructional design phase of 4-D Thiagarajan. The learning tools are developed include Semester Study Plans, Lecture Schedule Unit, Student Worksheets, and evaluation instruments including self-regulation skills tests and self-regulation skills rubric, self-regulation inventory and practicality learning strategies. The result of validation of expert learning showed that the Semester Study Plans was 3.49, Lecture Schedule Unit was 3,45 and Student Worksheets was 3.38 mean valid. The instrument test that is validated are expert and empirical validation. The expert validation covered content and construct validation, result validation was value 3.31 meaning that the test was valid. The empirical validation covered validity item test, a reliability item test. The result empirical validation showed that essay questions test for self-regulation test was in the range of 0.48-0.83 meaning that the test was valid and reliability test was 0.84 meaning that test had good quality. The test results of practicality showed the learning tool that positive responses 88.25% and negative responses 11.75%, meaning that learning tools GITTW strategy had a high level of practicality.

Keywords: Learning Tool of GITTW (Group Investigation Integrated Think Talk Write), Self-Regulation Skill.

INTRODUCTION

A good learning process is a learning process that enables learners to actively involve themselves in the whole process both mentally and physically. In the active learning of the lecturers act as facilitators, resource persons and class managers trying to create a situation so that students are skilled in managing themselves in learning. According to Zaini (2002), when students learn actively that dominate the learning activities. The students are actively thinking of finding the underlying idea of course material, solving problems, or applying what they have just learned into one real-life problem. La Nani (2012), the active participation of students in the learning process as a boost of self-regulatory skill that can be reflected through their participation in asking questions and expressing their opinions on the problems they face, whether to themselves or to others.

Lecturing of Anatomy and Physiology of Human Body aims to form the ability of reasoning in students which is reflected through the ability to think critically, logically, systematically and has the nature of objective, honest, disciplined and have the motivation, scientific attitude and self-regulation skills. According to Latipah (2010), one of the objectives in the learning activity is to free the students from their needs towards the teacher, so that they can continue to study independently throughout their lives and become self-regulated learner. During this time, the lecture on Anatomy and Physiology of Human Body in Biology Education of Study Programme Faculty of University of Muhammadiyah Surabaya that still tends to focus on cognitive learning outcomes and has not yet attempted to empower students self-regulation skills.

Based on the results of observations of researchers to the lecturer and learning process of Anatomy dan Physiology of Human Body, lecturers have not tried to empower self-regulation skill in lecturing through the implementation of learning strategies. This is seen during the active participation of the student's learning is still very less, for example in asking questions, opinions, and discussion of members in the group to solve the problem assigned. New students actively ask or argue after being told by lecturers. The reality shows low self-regulation skills. This low self-regulation will have implications on students' cognitive abilities that tend to be low because they have not been trained to be independent learners

Self-regulation skills of students who are metacognitive, motivational and behavioral in the learning process is an effort to achieve learning success. Self-regulation in learning is also the ability of a metacognitive active individual

who has a drive to learn and actively participate in the learning process (Zimmerman, 1989). Zimmerman (2002) explains that self-regulation in learning is an effort by individuals to achieve learning goals by activating and maintaining thoughts, behaviors and emotions. According to Zimmerman (1998), self-regulatory skills, related to time management, goal setting, effort and perseverance in accomplishing difficult tasks, and the performance of one's self-monitoring are not only important for academic success but also a key component in the life of the author Successful professionals, athletes, artists, and scientists. Therefore it is very necessary and important to empower self regulation skills in the learning process so that trained students manage and monitor their own learning and become independent learners.

Based on the problems that have been disclosed, required a learning strategy that is able to empower self regulation skills. Several studies have shown that the application of learning strategies has an effect on self regulation skills. Research by Nur Aeni et al., (2015) showed that students' self regulation ability increased after the implementation of Problem Base Instruction strategy. Research by Listiana et al, (2016) reported that GITTW's strategy influences metacognitive skills, creative thinking skill and student learning outcomes. Murtianto & Harun (2014) stated that there is a development relationship of learning strategy by using metacognitive approach with self-regulation of students. Tanriseven (2014) revealed that learning tools with mind map have a positive effect on self- regulation of teachers.

A learning strategy that is considered appropriate to empower students' self-regulation skill is the GITTW (Group Investigation combined Think Talk Write) strategy. This new strategy is a combination of GI strategies with the TTW strategy, in which the TTW strategy stages are integrated into each of the GI syntax stages. With all the weaknesses and advantages both become complementary. Research by Listiana et al, (2016) reported that GITTW learning strategy had the biggest effect on the metacognitive skills empowerment. Listiana et al, (2015) revealed that the contribution of metacognitive skill to cognitive learning outcomes through the implementation of the GITTW strategy. This new strategy, hereinafter abbreviated as GITTW that is packaged in cooperative learning, which teaches students how to organize and monitor learning as well as completion of tasks.

Some research results on GI and TTW strategies that reveal many advantages. Danial (2010), reported that GI strategies can improve metacognitive skills and conceptual understanding. Nasrudin and Azizah (2010) revealed that implementation of GI type cooperative model can improve students' thinking and scientific attitude. This is in the opinion of Santyasa (2008) cooperative model type GI involves high-level thinking skill in the completion of tasks. The results of research on TTW Ansari (2004) and Yuanari (2011) strategies in the study of mathematics, Fatmawati (2010) on biology learning, Zulkarnaini (2011) on learning Indonesian, reported that TTW strategy can improve understanding and mathematical communication, problem solving ability, Learning activities, writing skills and critical thinking.

Based on the above background then the formulation of the problem is determined 1) How to develop GITTW strategy learning tools to empower self-regulation skills ?, 2) How is the feasibility and practicality learning tool of GITTW strategy to empower self-regulation skills?. The purpose of this study is to describe the development of learning tools using GITTW strategies that can empower self-regulation skills, 2) to describe the results of feasibility test and practicality test of GITTW strategy learning tool that can empower self-regulation skills.

Overcome the problem as described above, then necessary learning tools using GITTW strategy. The development learning tools of GITTW strategy includes the development of Semester Learning Plan, Lecture Schedule Unit, Student Worksheet, and evaluation instruments including self regulation test sheets and self regulation skills rubric, and practicality questionnaire of learning strategy. The learning tools devices that will be used first validated and tested its practicality. The expected benefit of this research is the realization of the learning tools of Anatomy and Physiology of Human Body which is feasible and can be used as an alternative for lecturers to be applied in other subjects. In addition, learning tools of GITTW strategy is expected to empower self-regulation skills of students at once can improve learning motivation and cognitive abilities.

METODOLOGY OF RESEARCH

This type of research is a development, which is developing learning tools by using GITTW strategy in the subject Anatomy and Physiology of Human Body. This development study refers to the 4-D model (four-D Models) put forward by Thiagarajan. This 4-D model consists of 4 stages of Define, Design, Development, and Disseminate. The objective of this study is the learning tools of Anatomy and Physiology of Human Body in semester 6 academic year 2017/2018. Learning tools developed include Semester Learning Plan, Lecture Schedule Unit, and Student Worksheet and evaluation sheets. Evaluation sheets include essay test and self- regulation skills test column. All validated learning tools are expert and empirical validation. Expert validation consists of content validity and construct validity, and empirical validation to determine the value of validity and reliability.

The self regulation skills test is essay-shaped and developed according to Bloom's updated taxonomy level by Anderson & Krathwohl (2001). This test is used to measure student self regulation skills. The self-regulation skills rubric uses the rubric of metacognitive skills, because metacognitive skills are one of the indicators of self-regulation. Rubric is used to determine self-regulation skill score integrated with essay test of concept understanding of Anatomy and Physiology of Human Body. The metacognitive skill rubric consists of seven scales (0-7) as a reference for examining each item's answer, the rubric adapted from Corebima (2008). Components in the rubrics provide metacognitive skills scores to the answers of the subject, (1) the answer in the sentence itself, (2) the sequence of exposure to the coherent, systematic, and logical responses, (3) grammar or language, (4) reason (analysis / evaluation / Creations), (5) right answer / less / not true / empty).

The instruments used in this research are validation sheet and student response questionnaire consisting of self-regulation skill inventory, and questionnaire of real learning strategy. Methods of data collection conducted in this research are questionnaire method of study, validation questionnaire method, and student response questionnaire method. Data analysis method used is expert validation analysis and essay test analysis.

RESULT AND DISCUSSION

The results of research were obtained from the study and validation activities of the learning subjects of Anatomy and Physiology of Human Body for the students in the form of Semester Learning Plan, Lecture Schedule Unit, Student Worksheet, and evaluation sheet. In addition, it is also limited trial on learning tools using GITTW strategy on 21 students semester 6 academic year 2016/2017 Biology Education Study Programme Faculty of Teacher Training and Education in University of Muhammadiyah Surabaya.

Semester Study Plan

The semester learning plan developed in accordance with the Higher Education Curriculum refers to the Indonesian National Qualification Framework. The semester learning plan is structured with patterned GITTW strategy which is student-centered learning (SCL), consisting of 16 meetings including midterm and semester exam. The Semester Study Plan comprises the following elements: 1) the name of the study program, the name and subject of the course, the semester, the credit, the name of the lecturer; 2) learning achievements of graduates charged to the course; 3) final ability to be achieved at each stage of learning; 4) study materials or learning materials related to the ability to be achieved; 5) learning method; 6) the time provided to achieve the ability at each learning stage; 7) student learning experience; 8) criteria, indicators and assessment weightings; And 9) reference list.

Lecture Schedule Unit

The lecture unit developed in accordance with the Higher Education Curriculum refers to the Indonesian National Qualifiers Framework. The lecture unit is defined by integrating the GITTW strategy at every stage of the activity. The lecture unit comprised of components 1) the name of course, course / course code. Force / semester, course topic, time allocation; 2) achievement of graduate learning; 3) learning achievements charged to the course; 4) final planned capability; 5) final indicator / sub capability; 6) learning materials; 7) lecture method includes approach, model and method of learning; 8) lecture steps covering Initial Activities, core Activities and closing activities; 9) learning resources and media; 10) assessment of learning.

The GITTW strategy is a new strategy, a synthesis of GI syntax with TTW syntax, where the TTW syntax of thinking, talking, and writing are integrated into each GI syntax. The GITTW strategy syntax is 1) Identify topics, organize groups and specify subtopics (Think, Write); 2) Plan the task to be learned and compile the discussion (Think, Talk, Write); 3) Investigate, observe, collect and write information (Think, Write); 4) Analyze, discuss and synthesize information (Think, Talk, Write); 5) Presenting final results and conducting class discussions (Think, Talk); And 6) Evaluate, reflect and conclude (Think, Talk, Write).

Student Worksheet

The student worksheet is the width of the Activity containing material or problems or experimen procedures that are worked on or discussed in groups during the lesson. The developed student worksheets are patterned on the GITTW learning strategy. Preparation of student worksheet based on indicators in order to achieve final planned capabilities. Each student worksheet contains the title, purpose or indicator of learning, learning materials, activity procedures, and discussion of experimental results. In details the activities are outlined in accordance with GITTW strategy syntax.

Review

The study was conducted by expert lecturers of Faculty of Teacher Training & Education, UMSurabaya, which is in the field of education; biology and practitioner in this case are the lecturers of Anatomy and Physiology course subjects. The results obtained are criticisms and suggestions that are then revised / improved so that obtained a draft 2 which was then validated by the three experts. Then tested is limited to students of 6th semester academic year 2016/2017 Educational Program Biology Faculty of Teacher Training and Education in University of Muhammadiyah Surabaya amounted to 21 students.

Validation

Validation is done by an expert lecturer of the Faculty of Teacher Training and Education in University of Muhammadiyah Surabaya and an expert lecturer to assess the learning tools of Anatomy and Physiology of Human Body developed. Validation result of learning tools that is obtained Semester Learning Plan 3.49 means valid, The Lecture Schedule Unit 3.45 and Student Worksheet obtained 3.38 means valid. The instrument test that is validated are expert and empirical validation. The expert validation covered content and construct validation, result validation was value 3.31 meaning that the test was valid. Based on the validation result, the learning tools of Anatomy and Physiology of Human Body developed can be used in a limited trial with valid category and feasible to be used. From this validation result, it can be seen the feasibility of learning tools by using GITTW strategy developed.

Limited Trial

When conducting a limited trial using the GITTW strategy learning tools in Anatomy and Physiology of Human body developed, the students felt enthusiastic during the learning process. As for the result of limited experimental test of learning that is empirical validation of essay test for self of regulation skill test shows value between 0.48-0.83 means that the test is valid, and test reliability equal to 0,84 means test has good quality. The results of practicality test strategy obtained positive responses 88.25% and negative responses 11.75%, means that learning tools GITTW strategy has a high level of practicality.

CONCLUSION

Based on the formulation of the problem then concluded 1) The learning tools GITTW strategy developed to empower Self-regulation skills according to Higher Education Curriculum. The tools developed include Semester Study Plan, Lecture Schedule Unit, Student Worksheet and evaluation sheets. 2) Semester Learning Plan is feasible to be used and obtained a score of 3.49 with valid criteria, the Course Schedule is eligible to be used and earned a score of 3.45 with valid criteria, Student Worksheet is eligible to use and obtains a value of 3.38 with valid criteria. Result validation of test instrument was value 3.31 meaning that the test was valid. Appraisal sheets are eligible to use with a little revision and a validity score of 0.48-0.83 means that the test is valid, and the test reliability of 0.84 means the test is of good quality. The results of practicality test strategy obtained positive responses 88.25% and negative responses 11.75%, means that learning tools GITTW strategy has a high level of practicality.

Suggested: GITTW strategy learning tool can be used as an alternative for lecturers to be applied to other subjects that can empower self regulatory skills of students while also improving learning motivation and cognitive ability.

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