

Design of Peer Collaborative Authentic Assessment Model Based on Group Project Based Learning to Train Higher Order Thinking Skills of Students

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Abstract: Instructional in 21st century emphasizes learning centered on students. This requires the management of the learning process which can involve the participation of students in the dominant finding, reviewing and seeking answers to all the problems they face. To change the conventional learning paradigm, educators and students must jointly improve the weaknesses of the learning process which is still dominated by the role of educators. One effort to improve the old paradigm is by changing the assessment model applied. Peer collaborative authentic assessment is one of the assessment models that encourages awareness of the quality of the learning process that is oriented towards improving learning outcomes. Improving the quality of the learning process becomes the focal point in learning evaluation. Evaluation of the learning process can be done by involving fellow students with a peer assessment approach (peer assessment). In its implementation, peer-authentic collaborative assessments provide opportunities for students to assess their learning progress. Thus the peer collaborative authentic assessment is deemed necessary and relevant to the evaluation characteristics of 21st century learning that is oriented towards improving higher order thinking skills as an effort to build student capabilities.

Keywords: peer collaborative, authentic assessment, group project learning, HOTS

I. INTRODUCTION

Learning in higher education aims to equip students to be able to prepare themselves to engage in community life, nation and state. In addition, learning in tertiary institutions strives to prepare professional human resources in their respective scientific fields according to their length. Learning in higher education is adult learning (andragogy). Andragogy is the art and science of helping adult learning (art and science related to ways to help adults to learn [1].

One of the characteristics of adult learning is that it is centered on students. Students as active subjects in constructing science through interaction with the learning environment. The underlying learning theory is constructivism learning theory. Luhrs and Salas [2] calls constructivism a common approach to educating in online learning. The main idea, educators do not play a role in transferring knowledge to students, but students who actively construct knowledge based on learning activities facilitated by educators.

According to Bates and Sangra [3] online learning experienced significant development [4] in recent years it was due to the convenience and flexibility offered to students. However, online learning has its own challenges in order to be

successful in learning in an online learning environment [3]. Some of the challenges faced include the level of online attrition, namely the level of online learning inconsistencies at all stages of learning, online collaboration, social cognition and the level of social presence online [3].

The application of constructivism in online learning is supported by the ability of computers to build a social constructivism environment [5]. Social interaction is an important component in the learning process [2]. Technology-assisted learning environments can also use peer collaborative approaches caused by individual learning occurring in a social context [6]. Guiding principles in the design and development of online learning environments including elements of independent reflection, authentic learning, active learning, and collaborative learning [2].

Based on the results of the observation and analysis of the author, several problems were found which involved obstacles in realizing the success of learning programs in universities. Some obstacles encountered include differences in the raw input characteristics of students in each department and study program [7]. This is due to the existence of

several alternative university entrance paths, such as the SNMPTN, SBMPTN and independent pathways.

Another indication is the students' high level of thinking ability. This can be seen from the involvement and activities of students in discussing, asking questions, responding, arguing, and issuing opinions, ideas and ideas and in interacting with fellow students and with campus lecturers and staff. Likewise when given the task of preparing and presenting papers, observations, book studies, journal studies and others.

Students who do not have good high-level thinking skills and tend to do simple tasks [8]. This is interesting to study in order to obtain information about the factors that influence the learning outcomes of students. The data is useful for finding learning assessment models that can improve the quality of the learning process and results of students characterized by high-level thinking skills.

II. METHODS

A. Study Aim

This study aims to: (1) produce a Peer Collaborative Authentic Assurance (PCAA) model that can be used to support a quality learning process; (2) find the Peer Collaborative Authentic Assessment (PCAA) model syntax; and (3) practice Higher Order Thinking Skills student in learning.

B. Development Methods and Procedures

The development method used in this study is the ADDIE development model. The selection of the ADDIE development model is based on the consideration of the simplicity of the development stage and the ease to be implemented according to the expected target. In addition, the ADDIE model provides a clear and measurable development process so that the development process is expected to be carried out effectively and the results are quality [9].

The design stages of the method of developing learning innovations in the form of Peer Collaborative Authentic Model Development (PCAA) include the following stages:

1. Stage 1: needs analysis of the PCAA model program using instruments to measure and analyze the characteristics of students in lectures.
2. Stage 2: design the model components to be developed. Model components include the syntax of evaluation models both in the learning process and learning outcomes in the form of program design products.
3. Stage 3a: development of the PCAA model using the ADDIE Model approach. The model development process is the activity of formulating the model framework and aspects and components and the typical syntax of the PCAA model for online use to support peer evaluation activities.
4. Stage 3b: program validation developed both model and application products. Validation is carried out by experts namely evaluation model experts and evaluation application experts. It

aims to produce a model and evaluation product that is suitable for use in learning.

5. Stage 4: application of product models and applications that have been validated by experts. The implementation of the model is carried out in learning from the beginning to the end of the lecture.
6. Stage 5: testing the program in targeting high-level thinking skills. Testing is done by distributing online questionnaires to students. Questionnaire contains items / statements that can measure the level of high thinking skills and creative thinking. Besides that, it is supported by products produced by students in learning.
7. Stage 6: dissemination of development results. This stage is carried out through several activities namely the submission of development reports, presented in scientific activities in the form of proceedings and published through scientific papers in journals.

C. Location and Research Samples

The location of the study was carried out at the Department of Educational Technology Faculty of Education State University of Malang. The research sample used Purposive Sampling Technic. The number of respondents in product development testing amounted to 70 respondents.

D. Development Instrument Design

The instruments used in this development include: (1) peer assessment instruments of group papers developed to assess the quality of papers compiled by valuable groups; (2) peer assessment instruments in the process of presenting papers and group discussions in lectures; and (3) peer assessment instruments to provide an assessment of lecture products.

III. RESULTS AND DISCUSSION

Learning assessment activities are one of the important activities. Assessment is one component of the learning system. A good assessment can produce good and valid results. Good assessment results are useful for developing learning improvement plans. In addition, a good assessment will be useful for taking appropriate conclusions. The assessment is a prerogatives right of educators. This is not very true when applied in the context of adult learning. Adult learning has advantages that can be optimized. The advantages referred to are that students have the ability to provide judgments. This can be used to involve students in the learning process [8].

Learning assessment models that can improve high-level thinking skills learners have a tendency to involve students dominantly in the learning process. Through the dominant participation activities, the ability of creative thinking of students is formed. This is because the process of brain activation as a component in the process of thinking is more active. The more active the nerve cells of the brain are used to think, solve problems, produce projects, will

improve higher-order thinking skills that can train students' critical and creative thinking processes [10].

One learning assessment model that has the ability to activate high-level thinking processes is the assessment method of Peer Collaborative Authentic Assessment (PCAA) learning. This model emphasizes the use of students' knowledge and experience as a basis for further developing their abilities by emphasizing independent learning. Self-learning (self-instruction) emphasizes individual autonomy and control which monitors, directs, and regulates actions towards the goal of mastering information, expanding understanding, skills and self-improvement [8]. This is appropriate because each student is a unique individual and has different learning styles [7].

Basically authentic learning including its assessment activities is influenced by the constructivism philosophy and the latest learning technology. Authentic learning activities require innovative learning methods and alternative approaches to developing comprehensive online learning. In addition to building authentic learning activities requires a good level of creativity and organization including the determination of educators and teaching designers who support the needs of students [11].

Some of the task characteristics in authentic collaborative learning include, among others, having a real and relevant world image, making it easier for students to define tasks and components of tasks and completing the activities provided, providing opportunities to work together, and providing opportunities to reflect and involve students in believing and assess [11]. Authentic peer assessments provide the opportunity for students to reflect on their own learning abilities and those of others. This process is useful to improve the quality of subsequent learning outcomes.

Through Authentic Peer Collaborative This learning assessment, students are expected to be able to realize their academic strengths and weaknesses, and have the right way to overcome the challenges of daily academic tasks [12]. Learners can make their success or failure to be a driving factor for better learning. Reflections and suggestions from their study friends can activate independent reflection to improve their learning performance. [13] describes the assessment strategy of online learning emphasizing the experience of learners in the form of learning comfort levels, the level of self-involvement in independent learning and collaboration, as well as the extent to which they believe that assessments made in learning will produce new knowledge products which can be useful in the future in professional practice.

Peer Collaborative Authentic Assessment essentially uses three assessment concepts implemented in an integrated teaching and learning process. The three concepts are; assessment of learning, assessment for learning and assessment of learning. One technique used in Peer Collaborative Authentic Assessment is self-assessment and peer assessment (collaborative assessment). Self-assessment aims to build student learning

personalization while peer assessment aims to build a culture of collaboration and collaboration in solving current problems as well as the future in the profession world [4]. Through this study, researchers want to learn how to design and develop Peer Collaborative Authentic models and applications and how they affect the improvement of higher order thinking skills and critical thinking of students.

Through the Peer Collaborative Authentic Learning evaluation model, the success of learning activities can be measured from the start. Authentic Peer Collaborative learning models have at least two main functions, namely diagnostic evaluation and formative evaluation. Diagnostic evaluation in order to analyze some of the weaknesses, shortcomings and learning difficulties of students in the dimensions of the learning process. While the formative evaluation function aims to measure student learning outcomes [8].

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The target output specifications of the research are as follows:

1. The intended product model is an authentic collaborative learning evaluation model developed using the ADDIE development model with five development design approaches namely Analysis, Design, Development, Implementation and Evaluation at each stage. The result is a Peer Collaborative Authentic Assessment (PCAA) model that contains the typical syntax of the model, aspects, indicators and measuring tools for PCAA typical learning.
2. The domain of targeted students' abilities is the ability to think high-level in assessing group papers and lecture products.
3. Although students have a role in determining the final grades of their peers, the maximum percentage is only 50%, while the remaining 50% is in the lecturers' assessment. Thus the results of PCAA can be used as a consideration for lecturers to provide final grades to students.
4. At the end of the development stage, students are asked to respond in the form of feedback on their perceptions and reflections on the learning innovations developed.

The Peer Collaborative Authentic Assessment (PCAA) design model framework is illustrated as follows (Figure 1). Explanation and Syntax of PCAA Model Design are: (1) big circle (group 1 - group 5) shows groups and small circles showing members of each group; (2) all group members collaborate pearly (Ryan, 2016) in an online learning environment to assess each other process and learning outcomes; (3)

the process of delivering feedback is done in two ways, namely directly in face-to-face learning and through online peer assessment forms; (4) peer assessment process aims to familiarize each other with the assessment of work processes and outcomes; and (5) peer assessment process as efforts to train high-level thinking skills and creative thinking in completing learning tasks.



Figure 1 Design of Peer Collaborative Authentic Assessment Model

IV. CONCLUSION

Instructional characteristic in 21st century is centered on students. Students are given the opportunity to construct their knowledge through learning experiences. In addition to focusing on students in the learning process, adult students can be involved in the learning assessment process. It aims to facilitate students to be able to measure and assess all objects that must be assessed. The process of involving students in assessing the work of fellow students is called peer collaborative authentic assessment. The model can be used to assess all products and tasks of students such as paper assignments, article resumes, and other products. The method is expected to increase the level of participation of students in learning and giving assessment. In addition, it can function to train high-level thinking skills in producing quality learning work.

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