HOW TO DEVELOP
COLALBORTIE LEARNING Q3
Hasdar
by M. Sukardjo
HOW TO DEVELOP COLLABORATIVE LEARNING MODELS FOR STUDENT AT ELECTRONICS ENGINEERING EDUCATION STUDY PROGRAM

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Abstract

This study aims to develop a collaborative learning model for students in the electrical engineering education study program. This research was designed with the "Research and Development" approach. This research was conducted through two stages of activity. The first stage is a preliminary study and formulation of a conceptual (theoretical) learning model. Preliminary studies are needed to explore and evaluate the data needed, explore the focus, themes, and initial data of the study by studying both empirically and theoretically. The results showed that the initial conditions of learning in the Informatics Engineering Study Program at Makassar State University were still conventional because they were dominated by lecturers, and students were less involved in learning. 2. Conceptual models of collaborative learning synergize and integrate various components: Raw Input, Environment Input, Instrumental Input, Output, and Outcome. In conclusion, the implementation of collaborative learning models can strengthen the concept of collaborative learning development, which includes: clarity of learning objectives, learning materials, methods, media, and learning evaluations that provide opportunities for citizens to be creative through collaboration between students and lecturers as facilitators whose results contribute to improvement learning system that is a foundation in developing collaborative learning models.

Keywords: Collaborative, electronics, learning model

Introduction

explanation of the concept of collaborative learning is one of a structured and systematic model, in which small groups work together to achieve shared goals. Cooper and Heinich (in Nur Asma, 2006: 12) explain that collaborative learning is an approach to learning that involves small groups of students working together to achieve shared goals and tasks, while working together to learn collaborative and social skills. Group members have the responsibility and are interdependent with each other to achieve common goals. Collaborative learning is based on the idea that everyone works together in group learning and at the same time each of them is responsible for the learning activities of their group members, so that all group members can master the learning material well. Collaborative learning emphasizes collaboration between participants in groups. This is based on the thought of each person more easily find / understand a concept if they discuss each other's problems together. Most of them in collaborative learning are formed heterogeneously by considering differences in academic abilities, gender and characteristics. Participants' activities in collaborative learning include actively following the lecturers' explanations, completing assignments in groups, giving explanations to group peers, encouraging group friends to actively participate, and discussing. For activities to run well and smoothly special skills are needed, called collaborative skills. Collaborative skills can be built by developing communication and division of tasks between group members. In collaborative learning, learning groups that achieve maximum learning outcomes are rewarded. The awarding is to stimulate the emergence and increase of motivation in learning. The problems faced in the context of improving the quality of non-formal education are influenced by several factors; among them are the quality factors of educators / tutors in this case relating to qualifications and competencies. One other alternative that can be pursued through the development of learning models that are consistent with the characteristics of students continuously, is considered strategic in an effort to accelerate the
increase in motivation and learning outcomes of learning citizens, namely through a collaborative learning model. Where the development of this model is expected to be useful to be implemented in the learning carried out and will have an impact on increasing the enthusiasm of learning, so of course it also has an impact on the learning outcomes of learning citizens also increase. The development of collaborative learning models can empower citizens to learn in increasing enthusiasm and learning outcomes, they should not be seen as objects but as subjects. But what happens in the field, according to researchers, generally tutors still use conventional learning models. This means that tutors in most learning still use the lecture method, which emphasizes the material, without giving sufficient time to students to reflect on the material presented, lecturer-centered learning, lack of interaction between students, no groups to work the same, especially the learning outcomes of other students in accordance with the study documents, the average score is lower to middle. So that conditions like this become an opportunity to be able to develop collaborative learning models. With collaborative learning can be established a learning activity in which citizens learn to engage in teamwork, work together in small groups to achieve a goal that is to improve learning outcomes together.

To improve the quality of learning outcomes lecturers are given the widest opportunity to follow the development of science and technology that is so fast in various fields and always innovate in learning, especially in developing learning models in terms of improving the process and learning outcomes. Low learning outcomes also determine the quality of learning is low, so that it also influences citizens in learning what it is directly or indirectly. This is in line with the opinion expressed by Natriello and Crooks (1987: 155-175) that the evaluation of learning outcomes has an effect on students both directly and indirectly, as in the case of: (1) encouraging students to learn more deeply, (2) increase learning motivation, (3) is effective feedback, (4) encourage them to practice it and use the skills and knowledge they have, and (5) pose challenges to citizens learning to work on tasks to achieve predetermined standard criteria.

The model is a pattern (for example, reference, variety, etc.) of something that will be made or produced (Ministry of Education and Culture. 1994: 662). The model is a description of objects, procedures, situations or thoughts for designing a learning program. The model means a pattern that can be used as an example or as a reference applied in the field. According Kusnadi et al. (2005: 289) the model is a procedure that is arranged in an orderly and logical manner as outlined in a plan of activities to achieve goals. According to Triunto (2010: 51) the learning model is a pattern that is used as a guide in planning learning in class or learning in a tutorial.

According to Sugianto (2007: 12) Learning is any systematic and deliberate effort by learners to create conditions so that citizens learn to do learning activities. Learning can be said as an activity that is designed in helping individuals to learn a certain knowledge, attitudes, and new skills. Learning has various meanings, depending on the point of view of learning objectives, so learning cannot be defined quickly because learning can be used in various ways. As stated by Djajudjaja Sudjana (2000: 8) that "learning can be given meaning as a systematic effort, deliberately done by educators in conditioning so that students can carry out learning activities". The meaning of learning contains three points of view, which include: aspects of the process, results and benefits. In terms of the process, learning is a deliberate effort carried out in order to adjust behavior. This is in line with the opinion expressed by Mappa (1994: 11) as a process to meet the needs to achieve goals. In terms of results, learning is seen as something that is obtained from interactions between tutors and learning citizens so that behavioral changes occur that involve cognitive, affective and psychomotor aspects. Meanwhile, from the benefits, learning is seen as a change that produces results, as an impact of the interaction between tutors and learning citizens and includes content (experience material). According to Rusman (2011: 134) learning is essentially a process of interaction between teacher and student, direct interaction as face-to-face or indirect activities, through various learning media.

Collaboration in English is called "collaborate" meaning cooperation, or "collaboration" which means cooperation. Collaboration contains values in order to foster cooperation, empower people to be willing to work together in one heart, one vision, and a spirit of togetherness to achieve future hopes. According to Edward in Sumidjo (1999: 8) that collaboration is: "It is a principle based process of working together, which produces, trusts, integrity, and breaks through results by building true consensus, ownership, and alignment in all aspects of the organization." This means that collaboration is the process based on the principle of cooperation, which results in trust, integrity and through achieving consensus,
ownership and integration in all aspects of the organization. So that the main meaning of collaboration is the existence of cooperation based on mutual trust, the existence of integrity and equality, the existence of consensus in the formulation of vision, sense of ownership, integration in aspects of the organization to achieve the organization's vision that has been set. Another opinion put forward by Frans & Bursuck, 1994: 76 (in Sugianto, 2007: 83) says that "collaboration is a professional style choosing to use is order to accomplish a goal they share". This opinion implies that collaboration is the method chosen for use by professionals in achieving a common goal. Therefore the collaborating parties have a common goal, so that of course they do the planning and implementation together.

Research Methodology

This research was designed with the "Research and Development" approach, as in the opinion of Borg & Gall (1979: 624) what is meant by the development research model is: "a process used develop and validate teaching and learning products". This understanding implies that research and development methods in the field of education, in principle, are processes for developing an educational product and subsequently validating the product. This means that research and development methods are applied to produce products and test the effectiveness of the product. Sukmadinata (2011: 164) in his book Educational Research Methods suggests that research and development (R&D) is a research strategy or method that is effective enough to improve practice. In the field of industry, electronics, communication, transportation, medicine are growing rapidly between 4-5% of the costs used to conduct research and development, for education and curriculum are still below 1%. Therefore, progress in the field of education is often lagging far behind in industry and other fields.

This research was conducted through two stages of activity. The first stage is a preliminary study and formulation of a conceptual (theoretical) learning model. Preliminary studies are needed to explore and explore the data needed, explore the focus, themes and initial data research by studying both empirically and theoretically. In addition, it will be socialized with learning citizens, and then jointly develop and formulate a conceptual (theoretical) model. The conceptual model that has been compiled is then validated by experts (expert judgment) in accordance with their field of expertise. The validation stage is done so that the conceptual model has a strong theoretical basis in accordance with scientific principles. This conceptual model must refer to the learning needs and development of the learning process of learning citizens.

The target of developing a collaborative learning model or the subject of this research is the students of the Electronic Engineering Study Program at Makassar State University as a response in implementing the learning model, which is divided into two groups. The experimental group (treatment) or the treatment of 14 people learning and 14 people learning as a control group.

Results and Discussion

The results of the preliminary study of the collaborative learning model that aims to gather various information that supports the development of these models in improving student learning outcomes in the Electronic Engineering Study Program at the State University of Makassar. This preliminary study deals with gathering information about: (1) some research results relating to the collaborative learning model developed, (2) theories that support the development of collaborative learning models, (3) analyzing the gap between the factual conditions of collaborative learning models in improving learning outcomes of citizens learning package C programs, (4) analyzing the knowledge and understanding of students of the Electronic Engineering Study Program at the State University of Makassar. A preliminary study was conducted using: (1) interviews. It aims to obtain information about student involvement in learning activities, especially in increasing the knowledge and understanding of learning citizens in improving learning outcomes, (2) interviews with students, as participants in following the learning process, with the aim of obtaining information about their knowledge and understanding of collaborative learning models, (3) interviews with package C programs tutors in the Gorontalo City SKB, with the aim of obtaining information about tutors' educational qualifications as implementing the learning process, and (4) making observations.
Based on the results of preliminary studies, the knowledge and understanding of citizens learning about the collaborative learning model, on average are still relatively low. Knowledge and understanding can be known from the answers and perceptions of learning citizens towards the questionnaire circulated as stated in the table above. The data can illustrate matters relating to: (1) the understanding of learning citizens towards the concept of collaborative learning models, (2) understanding the purpose and benefits of applying collaborative learning models, (3) understanding the steps in applying collaborative learning models in the learning process. For more details, it can be described as follows: 1) Understanding of the concept of collaborative learning models. The results of the questionnaire that has been circulated to learning citizens (respondents) indicate that respondents generally understanding of the concept of collaborative learning models is still relatively low around 50%. This condition can be predicted by various factors which cause, among others: (1) lack of citizen involvement in the learning process, (2) lack of application of collaborative learning models in the learning process so that citizens do not have the opportunity to work together to help each other improve their learning outcomes, (3) lack of participation from tutors or facilitators to involve citizens in the learning process to improve learning outcomes, (4) facilitators or tutors are less empowering citizens, so they do not involve themselves in learning activities, (5) the learning model applied lacks high motivation for residents to learn through lectures, the technique continues to hold, so that citizens feel bored and tired of learning. 2) Understanding the aims and benefits of collaborative learning models. The understanding of learning citizens towards the goals and benefits of applying collaborative learning models is still low around 47-50%. This low understanding of learning citizens also affects motivation and their learning outcomes will be low. If citizens learn to understand the goals and benefits of applying the collaborative learning model, it certainly has a contribution to the development and progress of citizens in terms of: (1) influencing their insight and reasoning power, (2) influencing the creativity and motivation of citizens to study harder, (3) learning citizens can interact positively with each other, cooperation in solving problems, helping each other in achieving goals. 3) Understanding the steps in applying the learning model. Knowledge and understanding of the citizens learning about the steps in applying the learning model is still relatively low. This both starts from the beginning of learning and at the end of learning their understanding is still quite low. Though mastery and understanding of the application of the model will have an impact on learning outcomes obtained. If students do not understand the various learning models applied, then of course the effort is wasted by the facilitator or students in implementing learning. Therefore, the understanding of learning citizens towards various learning models is very important to be improved. 4) Analysis of the Need for Developing Collaborative Learning Models. Based on information from the results of the preliminary study conducted through interviews with related elements, the results of the study of documents at the research location, there are various problems obtained as follows: (a) Orientation activities carried out to students and lecturers are still limited, according to the information received. The limitation of involving students and lecturers is due to the absence of a collaborative learning model training program and also related to the funds used in the activities carried out not yet available. (b) The application of learning models in the implementation of learning is still menoton and conventional, learning activities are still carried out through lectures, which are more unilateral delivery of material, do not involve citizens to interact with each other, so motivated to want to learn. From the results of interviews conducted with several learning citizens and tutors it was revealed that in general they were eager to improve cognitive abilities, affective and psychomotor, especially in the process and better learning outcomes. However, many factors influence it, including: the lack of involvement of tutors and learning citizens, from planning / preparation, implementation, to learning evaluation, they are less involved. (c) Lack of specific designs in learning activities to involve citizens in the learning process. The involvement of learning residents is related to efforts to improve their learning outcomes, because so far it is still considered low, and needs to be improved. Based on the analysis of the above problems, the most important thing is to increase students' knowledge and understanding of the collaborative learning model through orientation and training activities carried out in the learning model. Increasing student knowledge and understanding in order to achieve better results, it is necessary to do an alternative development of collaborative learning models in improving student learning outcomes. The results of the analysis of the actual conditions of the learning model carried out on students so far have been carried out, as well as the results of the analysis of the needs of developing learning models, and the ability of learning citizens to improve student learning outcomes, it is
necessary to design collaborative learning models that can improve learning outcomes. The development of collaborative learning models is expected to be carried out effectively and efficiently. The mechanism is to pay attention to Raw input, Environmental Input, Process, Other Raw input, Instrumental Input, Output, and Outcome.

Student responses After Following the Implementation of Collaborative Learning Models Responses ‘answers or responses of citizens learning other participating in the application of collaborative learning models in improving learning outcomes, can be seen in the table as follows:

Table 1. Collaborative learning models in improving learning outcomes

<table>
<thead>
<tr>
<th>No</th>
<th>Respondents’ Answers</th>
<th>%</th>
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<tbody>
<tr>
<td>1</td>
<td>Stages of learning preparation</td>
<td>65%</td>
</tr>
<tr>
<td></td>
<td>a. The answer was given a score of 3</td>
<td>32%</td>
</tr>
<tr>
<td></td>
<td>b. The answer is given a score of 2</td>
<td>3%</td>
</tr>
<tr>
<td></td>
<td>c. The answer is given a score of 1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Stages of Learning Material Deepening</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. The answer was given a score of 3</td>
<td>66.25%</td>
</tr>
<tr>
<td></td>
<td>b. The answer was given a score of 2</td>
<td>33%</td>
</tr>
<tr>
<td></td>
<td>c. The answer is given a score of 1</td>
<td>0.75%</td>
</tr>
<tr>
<td>3</td>
<td>Final Learning Stages</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. The answer was given a score of 3</td>
<td>59%</td>
</tr>
<tr>
<td></td>
<td>b. The answer was given a score of 2</td>
<td>41%</td>
</tr>
<tr>
<td></td>
<td>c. The answer is given a score of 1</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>Phase Learning Evaluation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1) Cognitive aspects</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. The answer was given a score of 3</td>
<td>54%</td>
</tr>
<tr>
<td></td>
<td>b. The answer is given a score of 2</td>
<td>40%</td>
</tr>
<tr>
<td></td>
<td>c. The answer is given a score of 1</td>
<td>6%</td>
</tr>
<tr>
<td></td>
<td>2) Affective Aspects</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. The answer was given a score of 3</td>
<td>54%</td>
</tr>
<tr>
<td></td>
<td>b. The answer was given a score of 2</td>
<td>40%</td>
</tr>
<tr>
<td></td>
<td>c. The answer is given a score of 1</td>
<td>6%</td>
</tr>
<tr>
<td></td>
<td>3) Psychomotor aspects</td>
<td></td>
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<tr>
<td></td>
<td>a. The answer is given a score of 3</td>
<td>59%</td>
</tr>
<tr>
<td></td>
<td>b. The answer was given a score of 2</td>
<td>37%</td>
</tr>
<tr>
<td></td>
<td>c. The answer is given a score of 1</td>
<td>4%</td>
</tr>
</tbody>
</table>

The table explains that the condition of students' knowledge and understanding after following the application of collaborative learning models shows a significant improvement. This can be seen from the answers of the majority of citizens learning to bend in the answer score of 2-3. For this reason, as a sign that the application of collaborative learning models is very influential in increasing the
knowledge and understanding of citizens in achieving optimal learning outcomes. Learning preparation activities undertaken after following the application of collaborative learning models, the responses of learning citizens seen in the table above states that tutors together entering into performance contracts with citizens learning to explain and convey learning objectives 72%. Learning situations like this affect the mindset and great opportunities for lecturers in discussing and formulating learning goals together with students.

From the research results also obtained that regarding the deepening of the material by applying the collaborative learning model 79% stated that lecturers discuss / study the material together with students, they are given the opportunity to analyze learning topics and provide opinions and contributions, which are stated by students 64%. Likewise, students' statements of 50% were given the opportunity together to find alternatives to solving problems.

Conclusion

The initial conditions of learning in the Informatics Engineering Study Program at Makassar State University are still conventional because they are dominated by lecturers, and students are less involved in learning. 2. Conceptual models of collaborative learning synergize and integrate various components: Raw Input, Environment Input, Intrumantal Input, Output, and Outcome. 3. Implementation of collaborative learning models can strengthen the concept of collaborative learning development, which includes: clarity of learning objectives, learning materials, methods, media, and evaluation of learning that provides opportunities for citizens to be creative through collaboration between students and lecturers as facilitators whose results contribute to improvement of learning systems that form the basis of developing collaborative learning models.

References

## Originality Report

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<th>Similarity Index</th>
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<th>Student Papers</th>
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<td>3%</td>
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### Primary Sources

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