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Co-Construction Online Learning Models in Early Childhood Education Management Courses

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ABSTRAK

Tantangan pembelajaran online pada perguruan tinggi sering terjadi kurang fokusnya mahasiswa dalam mengikuti perkuliahan, hal ini yang menyebabkan terjadinya loss learning*. Penelitian ini bertujuan untuk menganalisis kelayakan dan efektifitas model pembelajaran online* co-construction *pada matakuliah manajemen PAUD. Metode penelitian menggunakan pendekatan* research and development *dengan model ADDIE. Pengumpulan data dilakukan dengan wawancara, angket, dan observasi pada 88 mahasiswa yang menempuh matakuliah manajemen PAUD. Pengujian kelayakan produk dilakukan dari analisis data angket pada 10 item pernyataan dengan menggunakan* rating scale *4, sementara itu observasi dan wawancara digunakan untuk menganalisis keefektifan penerapan model pembelajaran online* co-construction*. Analisis data menggunakan teknik analisis data deskriptif kualitatif dan analisis kuantitatif untuk menganalisis kelayakan dan keefektifan pada penerapan model pembelajaran online* co-construction*. Hasil penelitian dalam uji kelayakan* electornic-*bahan ajar matakuliah mencapai skor 71,4% yang berarti layak dan tidak perlu revisi. Sementara pada uji keefektifan dilakukan sebanyak dua kali dengan rentang waktu yang berbeda, pada pengambilan data pertama terdapat 73% mahasiswa aktif, lalu meningkat pada pengambilan data kedua dengan 88% mahasiswa aktif. Peningkatan yang terjadi ini sesuai dengan teori* Skinner *tentang pembelajaran* operant conditioning*, dimana perilaku individu dipengaruhi oleh pengulangan tindakan yang diterima.*

ABSTRACT

The challenge of online learning in higher education is that there is often a lack of focus on students taking part in lectures, which causes a loss of learning. This study aims to analyze the feasibility and effectiveness of the co-construction online learning model in early childhood education management courses. The research method uses a research and development approach with the ADDIE model. Data collection was carried out by interviews, questionnaires, and observations on 88 students taking early childhood education management courses. Product feasibility testing was carried out from questionnaire data analysis on 10 statement items using a four-rating scale, while observations and interviews were used to analyze the effectiveness of implementing the co-construction online learning model. Data analysis used qualitative descriptive and quantitative techniques to analyze the feasibility and effectiveness of implementing the co-construction online learning model. The results of the study in the electronic feasibility test for teaching materials achieved a score of 71.4%, which means it is feasible and does not need revision. While the effectiveness test was carried out twice with different timeframes, in the first data collection there were 73% of active students, then it increased in the second data collection with 88% of active students. This increase is to Skinner's theory of operant conditioning learning, where individual behavior is influenced by the repetition of actions received.

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1. INTRODUCTION

Co-construction is a theoretical framework for creating a learning environment that describes interaction and collaboration between Lev Vygotsky and Jean Piaget (Alkhudiry, 2022; Jun-Young et al., 2020; Karabon, 2019). Vygotksy's concept is based on the ideology that "...cognitive development comes from the social interaction of guided learning within the zone of proximal development as children construct knowledge collaboratively". Vygotsky believed in an ideology known as co-construction, or building an environment where children interact with each other on multiple levels and learn through interaction (Hyun et al., 2020; Topçiu & Myftiu, 2015). In the context of this research, co-construction is defined as an effort to create an atmosphere of quality interaction, where students need to be prepared for collaborative and interactive learning situations. Co-construction learning allows students to have social interaction in the classroom and makes learning more creative.

Co-construction uses a special approach that emphasizes collaboration between students. The implementation of the co-construction learning model emphasizes a more interactional process such as cooperation and creativity (Kilgour et al., 2020; Tarchi & Pinto, 2016). The concept of co-construction can be used by students to help in learning from other students and expanding knowledge. The co-construction learning process consists of three areas, the individual, the physical-social environment, and the educator. These areas assist to build students' knowledge and understanding contextually. The learning process that prioritizes the co-construction model emphasizes building knowledge with other individuals. It is considered more effective than the construction or reception model. There are several relevant studies to describe the effectiveness of the co-construction model when implemented in online learning. Previous research showed that collaborative activities in online learning can foster high interactivity (Hattinger & Eriksson, 2018). Meanwhile, other research shows that in the online learning model, co-construction can improve students' understanding of collaborative working and how to build understanding, negotiate common understanding, and support each other in the process of distance learning (Littleton & Whitelock, 2005). Then research on 'bridging the gap: from instruction to co-construction in higher education' indicates that in the management of business schools after going through the covid-19 pandemic, it is important to adapt online learning that can encourage interaction and collaboration (Probst & Zizka, 2022). The three aspects that influence co-construction learning are classroom atmosphere, learning attitude, and learning effect (Han et al., 2022; Ryve et al., 2013).

Meanwhile, on a practical level, the co-construction online learning model is a challenge for educational practitioners. Interaction and collaboration in groups are often an obstacle in the learning process. This obstacle will be more serious when learning is conducted in remote areas with limited supporting facilities (Ferri et al., 2020; Gillett-Swan, 2017). In general, students often feel isolated in online learning and lack social interaction which can reduce their motivation and interfere with their mental well-being (Hau et al., 2020; Lister et al., 2021). Research data from previous study in examining eight reputable articles, found that seven articles from various countries provided evidence of loss of learning experiences for students during online learning during the Covid-19 pandemic which was caused by inappropriate learning models (Donnelly & Patrinos, 2021). This has a major impact on the achievement of learning outcomes, including learning capacity and academic performance as well as weak competence in solving mathematical problems and reading comprehension (Gregory & Lodge, 2015; Todd & Romine, 2018). This challenge is interesting for teachers in tertiary institutions to present learning models that provide challenges to students so that students are interested in paying attention to the material even though learning is done online.

Based on the research gap above, the co-construction online learning model can encourage student interaction and collaboration, so that they can feel more connected with each other, get support from peers, and overcome loneliness that may occur. To encourage interaction and collaboration between students in online learning, several steps can be taken (Bleiler-Baxter et al., 2023; Chai & Kong, 2017). First, the online learning platform should support features such as discussion rooms, forums, or communication platforms that allow students to interact and collaborate. Learning designs are also created in the form of group assignments, collaborative projects, or case studies that require students to work together to achieve certain goals. In an online context, techniques such as breakout rooms in video conferencing or online discussions can help facilitate collaboration between students.

Likewise with the Education Management undergraduate study program at the State University of Surabaya. One of the e-learning courses developed with the co-construction learning model is an early childhood education management course. Early childhood education management courses include competencies that cover understanding the concept of early childhood education management, being able to make decisions about the management of early childhood education institutions, and being able to work in groups related to the management of early childhood education. The learning method to achieve learning outcomes uses a co-construction learning model. The principles of co-construction learning are applied in

this course, the purpose of the study to determine and analyze the effectiveness of co-construction online learning models in early childhood education management courses can be achieved.

The theoretical contribution of the research is to strengthen the study of online learning by emphasizing the co-construction model that focuses on collaboration and social interaction between students which has rarely been studied by previous researchers. This gap above is an advantage and novelty in research compared to previous studies. Methodologically, this research is development research using electronic course teaching materials as learning media. While practically, this research is useful for educational practitioners in implementing the online learning process without reducing the meaning of the learning process itself. From the description above, it is clear that the purpose of this study is to analyze the implementation of the co-construction online learning model, especially in tertiary institutions. The implementation of online learning models in tertiary institutions continues to be implemented even though the co-19 pandemic has passed.

2. METHOD

This study used the research and development approach (Richey & Klein, 2014). The learning development model used in this research is ADDIE (Analysis, Design, Development, Implementation, and Evaluation) model (Branch, 2010; Widyastuti, 2019). The data collection was through interviews, questionnaires, and observations with a total of 88 students taking the subject of early childhood education management. The purpose of data collection is to analyze the effectiveness of the application of the co-construction online learning model in early childhood education management courses. Data analysis uses qualitative descriptive techniques and quantitative analysis. Qualitative data analysis consisting of data condensation, data presentation, and conclusion (Miles et al., 2014). Meanwhile, quantitative data analysis is to analyze student responses to the use of electronic course teaching materials. There are 10 statement items used to measure the feasibility of electronic course teaching materials using four rating scales (strongly disagree 1, and strongly agree 4). Instrument grids for assessing the quality of design, content, and ease of access to electronic course teaching materials.

Instrument validation was carried out by two experts, namely media experts to assess the quality of the design and ease of access and material experts to assess the content according to the context of the scope of the material and the competencies to be achieved by students (Arikunto, 2010). Quantitative data analysis to analyze the effectiveness of the co-construction learning model on the use of learning features in the learning management system. Data were taken twice in mid-semester and end-of-semester learning. This is to observe the difference in the effectiveness of the implementation of the co-construction online learning model with different time triangulation. The results of the analysis can be classified according to Table 2.

Table 2. Achievement and Qualification Levels

No.	Achievement Level (%)	Qualification	Information
1	81 - 100%	Very Good	Very Decent, no Need to Revise
2	61 - 80%	Good	Decent, no Need to Revise
3	41 - 60%	Good Enough	Inadequate, Need to be Revised
4	21 - 40%	Not Good	Not Feasible, Needs Revision
5	<20%	Very not Good	Very unfit, Needs Revision

3. RESULT AND DISCUSSION

Result

Based on the developed model, the first stage in this research is analysis. At this stage, activities align needs with the characteristics of the product produced. The practical gap from the analysis found the need to apply an appropriate learning model in carrying out online learning. It is predicted that the implementation of online learning in tertiary institutions will continue even though the co-19 pandemic is over. The current condition is that there is a learning loss for students when attending lectures because the online learning model has not activated many students, and collaborative activities tend to be limited. For this reason, at the analysis stage, it was concluded that it was necessary to make a product in the form of electronic course teaching materials for the early childhood education management course which was equipped with a co-construction learning model design. The second stage is namely design. The design of electronic course teaching materials is adjusted to the educational objective and program learning outcomes that have been determined by the study program through the outcome-based education curriculum. There are three learning objective programs in the early childhood education management

course, namely: (1) special competence, namely being able to practice the field of education management competence to solve problems in the field of education management based on the results of information and data analysis; (2) general competence, namely being able to communicate both in writing and orally by academic values, norms, and ethics; and (3) attitude and social, namely being able to show a responsible and collaborative attitude by professional norms and ethics. The entire learning objective program is translated into lesson plans and electronic course teaching materials for early childhood education management courses.

The third stage of development. This section measures the feasibility of the product developed through the data analysis that has been carried out. The early stage of analysis was to generate the data from the questionnaire to assess the attractiveness and readability of electronic course teaching materials. The result of the instrument assessment is show in Figure 1.

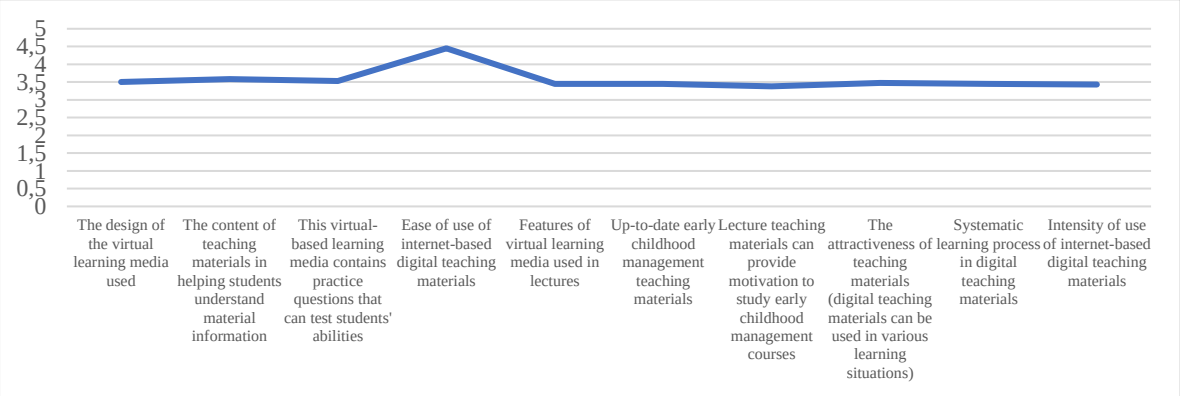

Figure 1. Assessment of Electronic Instruments-Course Teaching Materials

Base on Figure 1, there are 10 statement items used as data. From the data that has been analyzed, it is obtained that the overall average value of each item on the instrument gets an assessment of 3.57, while for the total number of items on the instrument, a score of 35.7. To assess the level of achievement and qualification, then it is compared with the number of ideal scores that have been obtained with the number of ideal scores set in the validation questionnaire. The result is 71.4%, which means that the qualifications of electronic teaching materials for students are in a good category and they are appropriate and do not need to be revised. This means that every element in the electronic teaching materials for early childhood education management courses can be accommodated and run well. These various learning elements include the design of the virtual learning media, the content of teaching materials in assisting students in understanding material information, as well as the ease of access, visibility, and systematics of digital teaching materials. Electronic media-student teaching materials also include practice questions that can test students' comprehension in understanding early childhood education management material

The fourth stage is implementation. The phase of implementation is to determine the effectiveness of the co-construction learning model in early childhood education management courses. In this phase, the co-construction learning model is applied by implementing all features designed in online lectures to maximize the role of students in interaction and collaboration. To determine the level of effectiveness and increased significance in the implementation of the co-construction learning model, data were collected at meetings 7 and 15. Where in the lecture plan meeting 7 is the middle of the meeting in one semester of lectures. While meeting 15 is the final meeting of the semester. The pie chart shows the results of student interaction and collaboration is show in Figure 2.

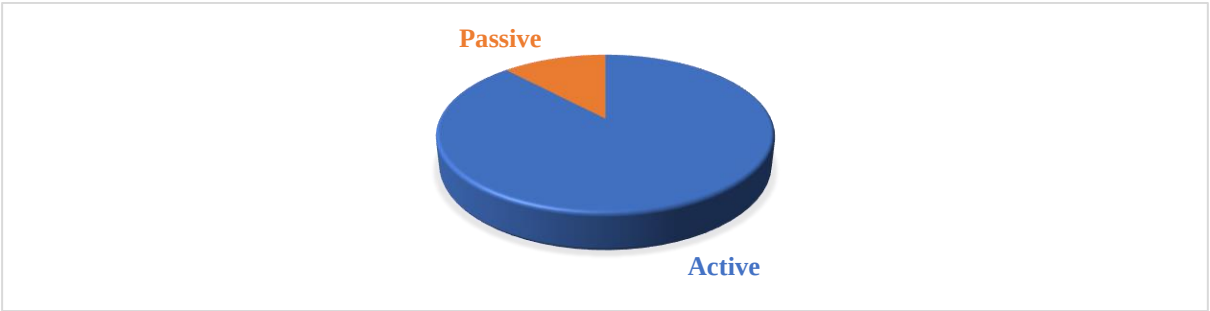

Figure 2. Student Interaction and Collaboration at the Seventh Meeting

Figure 2 show the results of data analysis at meeting 7 in applying the co-construction learning model with the implementation of electronic teaching materials for early childhood education management courses showed that 73% of students were active and 27% were passive in interacting and collaborating through various lecture features. The pie chart shows the results of student interaction and collaboration at meeting 15 is show in Figure 3.

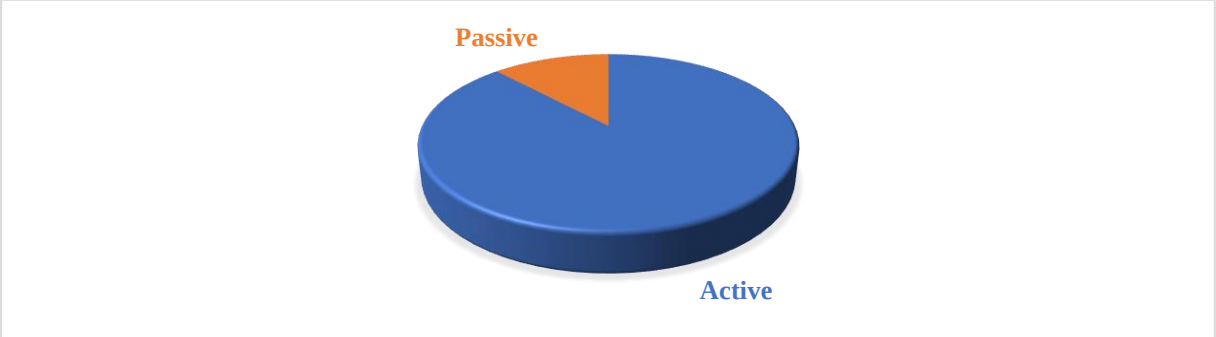

Figure 3. Student Interaction and Collaboration at the Fifteenth Meeting

In this study, data collection related to interaction and collaboration was also taken at the 15th meeting. Base on Figure 3 there was no different treatment at meetings 7 and 15, in addition to the duration of the student's participation in the course with the co-construction model. At the 15th meeting, there was an increase in the percentage of active students, which was 88% and the passive ones were 12%.

The fifth stage is evaluation. From the description above, it can be concluded that there is an increase in student activeness and collaboration by 15% in the implementation of full-semester meetings by applying the co-construction online learning model in early childhood education management courses. It can be seen that the habituation of students to participate in online lectures by maximizing features that activate students to interact and collaborate is concluded to be effective. This process shows the effectiveness of implementing electronic course teaching materials for early childhood education management courses by applying the online co-construction learning model.

Discussion

The background of this research study is students taking early childhood education management courses in the education management study program. In the learning process carried out, there were obstacles in implementing the learning of early childhood education management courses. Obstacles in early childhood education management lectures were identified at the analysis stage in this study. It was concluded that it is necessary to make changes to the learning model by further increasing the active participation of students in lectures. Previous study state that in online learning it is necessary to emphasize activities that focus on community-based activities and the active involvement of students (Greenhow et al., 2022). This is following the solution presented in this study, wherein early childhood education management lectures are carried out by applying the co-construction online learning model. Where co-construction learning can increase student collaboration, participation in learning, and creativity through assignments given (Jawas, 2019; Nungu et al., 2023; Ryve et al., 2013).

In this study, the first point by conducting a feasibility test through a series of development stages and found the results in the feasible category and did not need revision with a score of 71.4%. This means that the electronic teaching materials for this course can be used in the learning process. Electronic teaching materials for early childhood education management courses are a guide in implementing learning for one semester. Course learning design is one of the important parts contained in teaching materials in addition to the sub-material which is the topic of discussion at each meeting. The design of electronic teaching materials describes the format of student activities that reflect behavior in encouraging intensive interaction and fostering collaboration in online learning (Fonda & Sumargiyani, 2018; Holden, 2023). The existence of electronic course teaching materials makes it easier for lecturers to organize learning materials through systematic planning. Semester learning plans can be prepared by mapping learning objectives, the scope of competence, the scope of material, choosing learning strategies, to learning evaluation (Iqbal et al., 2021; Milkova, 2012). Therefore, both lecturers and students recognize learning activities in one semester, furthermore, the learning process runs effectively with the strategies that have been designed.

The second point is to measure the effectiveness of the implementation of the co-construction learning model in early childhood education management courses. Indicators of success refer to the rubric of achievement and the level of qualification determined (Altun, 2019; Arikunto, 2010). In this study, data

were taken twice with significant time differences. This is to see differences in student behavior based on the intensity of the actions taken. In the first data collection, 73% of students were active, then increased in the second data collection with 88% of active students. The form of increasing student activeness with repeated actions supports operant conditioning learning theory (Leeder, 2022; Skinner, 2019). In this theory, it is explained that behavior is influenced by the repetition of actions accepted. In its implementation, the actions taken are in the form of involving students in various activities by maximizing the features developed in the learning management system. The features developed are related to student discussion rooms and forums, interactive quizzes using software or applications, as well as independent and group assignments in viewing cases according to the assigned topics. The whole communication platform allows students to interact and collaborate.

The description of the learning process illustrates the process of implementing the co-construction online learning model in early childhood education management courses. There are several advantages of implementing this co-construction learning model, in this online learning focuses activities on students as the subject so that it illustrates a learning process that can foster collaboration, creativity, problem-solving, and communication (Ahn & Class, 2011; Hara & Sanfilippo, 2016). It is the main competency of students in realizing 21st-century skills. Weaknesses in the application of the co-construction online learning model need to require more effort to be able to activate students, especially when implemented online. In addition, the time needed is getting longer due to building a shared understanding in discussion, reflection, and collaboration between lecturers and students (Obonyo, 2022; Toheri et al., 2019).

Such is the case with student activities in early childhood education management lectures, students implement learning in building knowledge by studying each material at the meeting with active involvement of students in group activities and discussions. In applying the co-construction learning model, social skills are needed and they can lead to positive social behavior in students (Dyson et al., 2021; Zhao, 2022). The social interaction process is designed based on the semester learning plan, where students determine the topic of discussion based on the scope of early childhood education management material. In groups, students then make simple papers accompanied by relevant cases and virtual observations through videos of early childhood education management that already exist on digital platforms. This learning process is supported by features developed in the learning management system which consists of various interactive learning features. The description of learning activities shows that active student involvement is needed and illustrates the activities in the co-constructions learning model (Alkhudiry, 2022; Zhao, 2022). This is the answer to increasing students' focus on implementing online learning. Considering the challenges in online learning, many students are not focused which results in loos learning. By applying the co-construction learning model, it can minimize the lack of student focus in attending lectures.

The implementation of the co-construction online learning model emphasizes the creation of learning, interpreting materials, actions, and collaborative activities, identification, skills, and emotions in learning in a meaningful reality (Mehan et al., 2010; Nungu et al., 2023). In the context of this research, students are encouraged to understand each material in the early childhood education management course by looking at the real reality even though all activities are carried out online (Beal & Hontvedt, 2023; Cubukcu et al., 2020). The form of co-construction learning emphasizes social interaction between students by observing cases and good experiences in early childhood education management from news or videos obtained from digital platforms. In various studies, it is mentioned that the co-construction learning model is an implementation of the concept of cooperative learning. Where cooperative learning emphasizes student activeness in participating in lecture activities. The emphasis in the co-construction learning model is more on building shared knowledge in learning that activates students (Bleiler-Baxter et al., 2023; Holden, 2023; Palmer et al., 2023).

This study implies that the implementation of online co-construction learning can increase student participation in the lecture process. Thus, the study program curriculum can be directed at building shared awareness that focuses on mutually empowering activities through collaboration and communication. From this process, the social and emotional skills of students are increasing along with the increasing intensity of interactions in online early childhood education management classes. Considering that the context of this research is applied to online learning, it has implications for students in using learning technology with various interactive learning platforms that are applied. Students' skills in using various learning media are increasingly familiar and honed. Recommendations from the results of this study are that the co-construction learning model in various literature shows a good impact on increasing student participation and collaboration. For this reason, for education practitioners, both teachers and lecturers, this research can be used as a reference in developing learning models in the classroom. As for future researchers, this research analysis can be developed in different contexts according to the development of existing information and technology.

4. CONCLUSION

The effectiveness of the co-construction online learning model can improve student interaction and collaboration in early childhood education management courses. This development research model examines the feasibility and effectiveness of developing electronic teaching materials in early childhood education management courses using the co-construction learning model. The feasibility of electronic teaching materials for courses reached a score of 71.4% which means feasible and does not need revision. While the effectiveness test was conducted twice with different time ranges, in the first data collection there were 73% active students, then increased in the second data collection with 88% active students. This increase is in line with Skinner's theory of operant conditioning learning, where individual behavior is influenced by the repetition of actions accepted. This means that student behavior in interacting and collaborating through the implementation of the online co-construction learning model will be increasingly formed with the intensity of actions accepted by students.

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