DEVELOPMENT OF CONCEPT-BASED LEARNING METHODS THROUGH DIGITAL GAMES

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ABSTRACT

This research is based on the problem of students' low understanding of concepts in social studies subjects. The challenges of the digital era underlie updates in the technical teaching of concepts that utilize technology. The need for product development innovation to bridge the problem of low understanding of concepts and the demands of the digital era encourages development research to produce products through concept-based learning methods through digital games. This research aims to create a product in the form of a concept-based learning method designed through digital games in social studies subjects suitable for use. The research method used is research and development with the ADDIE (Analysis, Design, Development, Implementation & Evaluation) model. Data collection techniques use observation, interviews, and questionnaires. This research involves expert judgment for learning method experts and learning design. The data analysis technique uses quantitative descriptive. The research results show that the concept-based learning method through digital games is declared feasibility. Based on validation, learning method experts obtained a percentage of 82.5%, while learning design experts obtained 80%. The results of the limited trial obtained a percentage of 92% stating that the product was worthy of being tested at the next level and the results obtained were 93% of respondents stating that the product was considered feasible. Based on this, it can be concluded that the concept-based learning method through digital games in this research is declared to meet the feasibility. The research results show the novelty of product development in a syntax designed to be oriented towards concept development in digital game design with schemes of team sharing. The researcher recommends that future researchers develop more diverse concept learning in digital games.

Keywords: Concept-Based Learning, Digital Games, Social Studies

ABSTRAK

Penelitian ini dilatari permasalahan rendahnya pemahaman konsep peserta didik pada mata pelajaran IPS. Tantangan era digital mendasari adanya pembaharuan pada teknis pengajaran konsep yang memanfaatkan teknologi. Kebutuhan akan adanya inovasi pengembangan produk guna menjembatani masalah rendahnya pemahaman konsep dan tuntutan era digital mendorong dilakukannya penelitian pengembangan untuk menghasilkan produk berupa metode pembelajaran berbasis

konsep melalui permainan digital. Tujuan penelitian ini yaitu menghasilkan produk berupa rancangan metode pembelajaran berbasis konsep melalui permainan digital pada mata pelajaran IPS yang layak guna. Metode penelitian yang digunakan yaitu *research and development* dengan model ADDIE (Analysis, Design, Development, Implementation & Evaluation). Teknik pengumpul data menggunakan observasi, wawancara, kuesioner. Penelitian ini melibatkan *expert judgement* yakni validator ahli metode pembelajaran dan ahli desain pembelajaran. Adapun teknik analisis data menggunakan deskriptif kuantitatif. Hasil penelitian menunjukan bahwa metode pembelajaran berbasis konsep melalui permainan digital dinyatakan memenuhi kelayakan. Berdasarkan validasi ahli metode pembelajaran memperoleh persentase 82,5% sedangkan ahli desain pembelajaran 80%. Hasil uji coba terbatas memperoleh persentase 92% menyatakan produk layak diuji cobakan pada tingkat selanjutnya dan memperoleh hasil 93% responden menyatakan bahwa produk dinilai layak. Berdasarkan hal tersebut dapat disimpulkan bahwa metode pembelajaran berbasis konsep melalui permainan digital pada penelitian ini dinyatakan memenuhi kelayakan. Hasil penelitian menunjukan kebaruan pengembangan produk pada sintaks yang dirancang berorientasi pada pengembangan konsep dalam desain permainan digital dengan skema *team sharing*. Peneliti merekomendasikan peneliti selanjutnya untuk melakukan pengembangan pembelajaran konsep pada permainan digital yang lebih beragam.

Kata Kunci: Pembelajaran Berbasis Konsep, Permainan Digital, IPS

A. Introduction

A simple concept is a labeling of several attributes attached to an object. Concepts are used to identify classify and describe the connection between various facts (Effendy et al., 2023). The concept is often found in everyday life and is closely related to human life. Concepts themselves have a big role in problem-solving because a good understanding of basic concepts will encourage the problem-solving analysis process. Zulkarnain and Budiman (2019)stated that understanding concepts has a positive and significant effect on problem-solving abilities, especially in the learning process. Therefore, it is not surprising that understanding concepts is one of the abilities developed in the learning process. This is because understanding concepts is important in teaching and learning activities (Santrock, 2011), so basically students need the right understanding of concepts in every lesson both to solve problems and actualize themselves using the concepts they learn in everyday life (Bartell et al., 2013).

Examining the importance of the role of concepts, social studies

learning adopts various concepts from social science disciplines that are adapted to the characteristics of students. This is due to the object of social studies, namely the complex life of society, which encourages social studies to adopt various social science concepts that are close to students' lives (Latifah et al., 2018). The integration of these concepts supports the achievement of social studies learning objectives, namely making students become good, participatory citizens and contributing to the development of the social life of society through the implementation of the knowledge, skills, values , and attitudes they learn (Sari, 2024). Therefore, understanding concepts is important to master because it is the basis for expanding students' understanding by the social approach used in the social studies learning process.

Developing conceptual understanding in social studies learning is something that needs to be done because, without a correct understanding of concepts, students will have difficulty representing the concepts they learn in complex and dynamic real life. In addition, students' level of understanding of concepts will influence their ability to receive an understanding of social phenomena that occur around them (Adeliawati et al., 2020). Therefore, the ability to represent concepts is a benchmark for the achievement of a comprehensive social studies dimension, because the ability to represent concepts does not only reach the knowledge dimension but also the value and attitude dimension, the skill dimension, and the action dimension to solve social problems in life, criticize concepts and strengthen understanding social life through the concepts he learns.

In the current digital era, concept learning at the basic level is still monotonous and focused on definitions through lecture methods so that understanding of concepts and representation skills has not been achieved. Many teachers have not implemented innovative concept-based learning so social studies learning tends to be monotonous. In other words, learning procedures are still conventional and teacher-centered (Puji Lestari & Ristontowi, 2021). This condition explains that students' weaknesses in understanding concepts originate from the teacher's teaching techniques (Susanto, 2014). In fact, social studies

learning is rich in abstract concepts that are difficult to understand for elementary school students who are at the concrete cognitive development stage (Magdalena et al., 2023). Based on this assumption, understanding concepts that are not yet optimal will hinder the implementation of the results of learning the concept itself.

Currently, the demands on students' abilities are increasing rapidly along with increasing technological advances. Therefore, mastering concepts is the basic thing that will lead students to achieve the demands and challenges of today's digital era. Considering that teachers' teaching techniques are one of the factors causing students' low understanding of concepts, improvements related to teaching techniques are something that needs to be done, namely using learning methods that encourage the development of students' concepts. However, innovation in concept-based learning methods that are relevant to the current digital era is needed. In this regard, innovative steps are needed to produce the development of learning methods that can encourage the optimization of students' understanding of concepts in social studies learning (Farika et al., 2020). Implementing concept-based learning methods based on digital media is no longer an option, but has become a necessity amidst the onslaught of the industrial revolution 4.0 (Firmadani, 2020).

Based on this explanation, it is clear that there are main problems, namely concept learning which is still conventional and monotonous, and minimal digitalization of the learning process. This research aims to obtain a product in the form of a concept-based learning method through digital games whose suitability has been tested so that it can be used in the social studies learning process.

B. Methodology

The research method used is *research & development* with the ADDIE model (Analysis, Design, Development, Implementation, Evaluation). The product development stage in the ADDIE model is considered the most appropriate to use in developing learning methods concept-based through games in this research (Hidayat & Nizar, 2021). The result of this research is a product in the form of a concept-based learning method that contains innovation in its

syntax namely the use of digital games. The digital game application in this research uses the Wordwall application with labeled diagrams and hangman game types. The research was carried out at MI Al-Ikhlas with a population of 167 from low classes, namely class II A and B, and high classes, namely class V A and B. Researchers used purposive sampling for limited trials. The validity test in this research used expert judgment involving learning method expert validators and learning design expert validators. Data collection techniques use observation, interviews, and questionnaires. The data analysis technique uses quantitative descriptive.

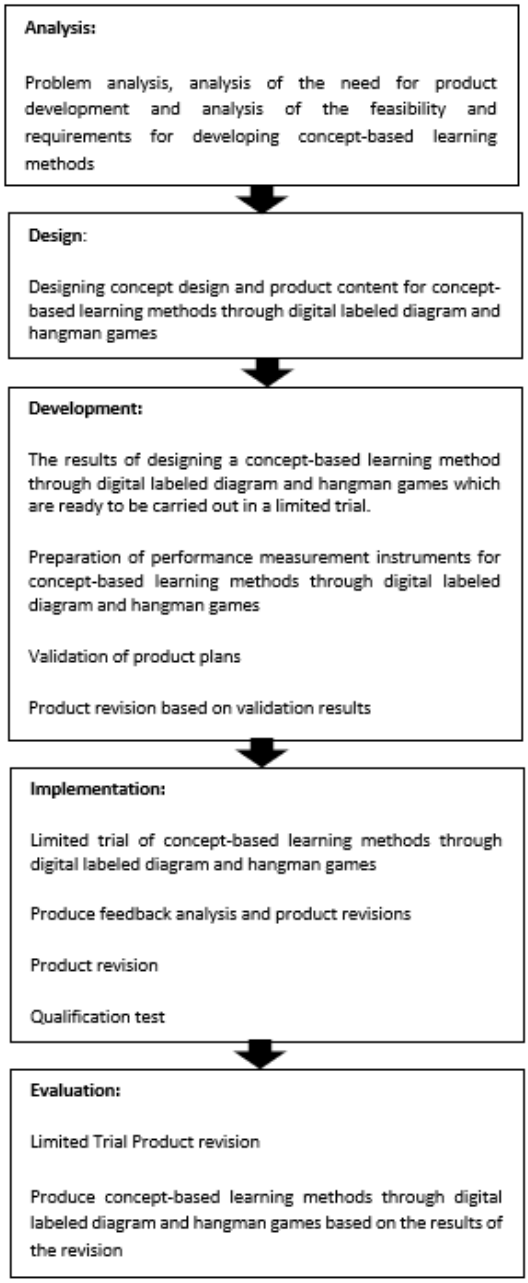


Figure 1 Product Development Flow

C.Result

Analysis

At this analysis stage, data on problems in the field is produced. The location that is the object of research is MI Al-Ikhlas because it examines the problem of low understanding of concepts and the school is included in the Independent Curriculum

Independent Learning category by the local area. The adaptation of the Social Sciences concept in the 2013 curriculum towards Ilmu Pengetahuan Alan dan Sosial (IPAS) is a new problem apart from the low understanding of the concept. Apart from that, MI Al-Ikhlas has adequate digital facilities and infrastructure, but they have not been developed to such an extent. Based on the 2024/2025 profile of MI Al-Ikhlas, MI Al-Ikhlas has several potentials that can be developed further, namely, digital facilities and infrastructure are available including internet access for school residents, the curriculum adaptation period is seen as an opportunity to improve the quality of services education, as well as heterogeneous student profiles. Based on the analysis of these conditions, a problem-solving solution was formulated, namely the development of a concept-based learning method assisted by digitally labeled diagrams and hangman games. Based on a study of the feasibility and requirements for method development from both theoretical and practical sides, the development of concept-based learning methods through digital games is feasible. On the other hand, MI Al-Ikhlas as a research object for the development of concept-based learning methods is considered appropriate from the perspective of existing problems and potential.

Design

At the level *of design* produce product concept designs for concept-based learning methods through digital labeled diagrams and hangman games. The following is the plan at the design stage:

Table 1 Initial Product Design

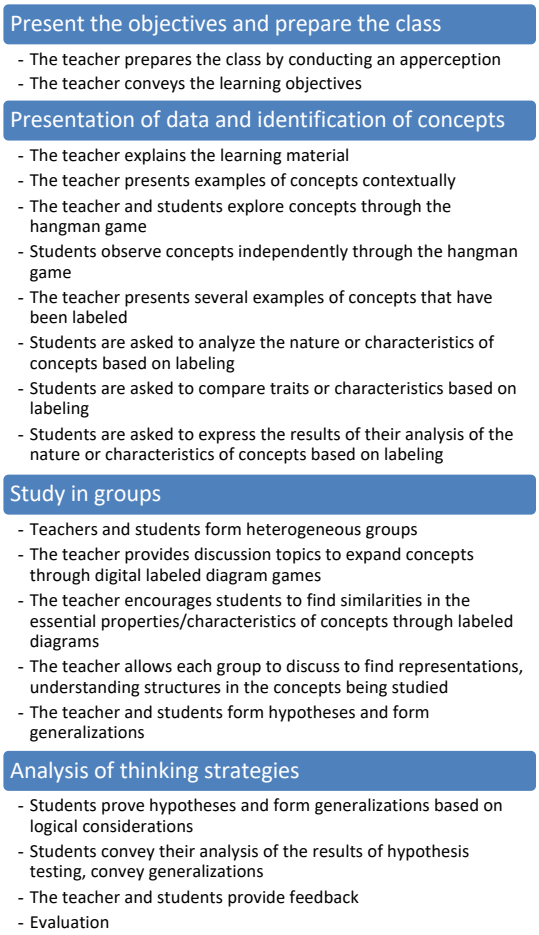
Present the objectives and prepare the class
• The teacher prepares the class by conducting an apperception
Presentation of data and identification of concepts
- The teacher explains the learning material - The teacher presents examples of concepts contextually - The teacher and students explore concepts through the hangman game - The teacher presents several examples of concepts that have been labeled - Students are asked to compare traits or characteristics based on labeling - Students are asked to express the results of their analysis of the nature or characteristics of concepts based on labeling
Study in groups
- Teachers and students form heterogeneous groups - The teacher provides discussion topics to expand concepts through digital labeled diagram games - The teacher encourages students to find similarities in the essential properties/characteristics of concepts through labeled diagrams - The teacher allows each group to discuss to find representations, and understand structures in the concepts being studied - The teacher and students form hypotheses and form generalizations
Analysis of thinking strategies
- Students convey their analysis of the results of hypothesis testing, convey generalizations - The teacher and students provide feedback - Evaluation

Development

The design above then enters the stage *of development* namely the stage where the design is validated by learning method experts and learning

design experts. Based on the validation results, it was suggested that the method development steps did not yet describe the continuity of syntax which is an important requirement in a learning method. Apart from that, the ease of implementing the method is also a consideration when revising the learning method design. The results of the design expert's validation are that the development of learning methods has not been oriented towards changes in understanding of concepts that are closely related to social studies concept learning outcomes. The score obtained from method experts was in the good category with a value of 82.5%, while from design experts it was 80% in the good category, but provided that it was worth testing after revising the design according to the experts' input. The following is the revised draft:

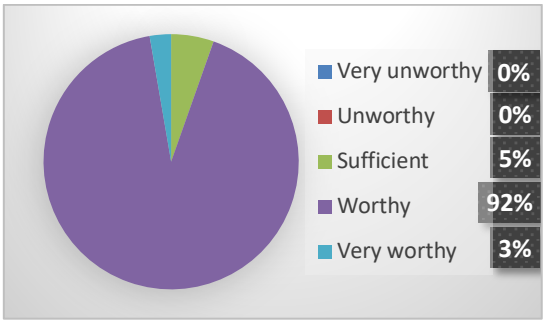
Table 2 Post-Revision Validator Design



Implementation

Next, enter the stages *of implementation* which are divided into limited trial and field trial stages. Before the field trial was carried out, an instrument for measuring the performance of concept-based learning methods through digital labeled diagrams and hangman games was first prepared. The limited trial was carried out in class 6 A with a total of 37 students and 1 parent. The following is limited trial results data:

Figure 2 Product limited Trial Data



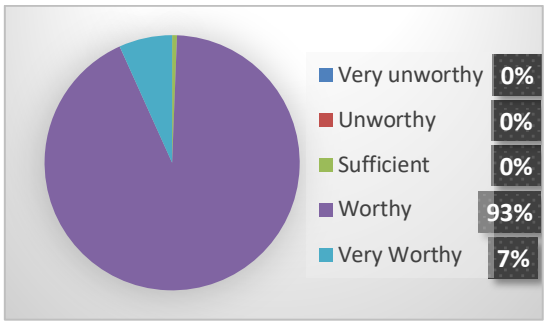
Based on the diagram above, it is known that the results of limited trials produced data on the development of concept-based learning methods through digital games, 34 respondents stated that they were feasible with a percentage of 92%, while 1 respondent was very feasible and 2 respondents were quite feasible. The results of interviews with homeroom teachers obtained data that this concept-based learning method design was worthy of being tested in field trials considering the novelty that existed in the stages. However, revision notes were found from the results of limited trials, namely that when grouping needed to be game-based, it encouraged students to pair up through pair card games. Next, we found steps that were difficult to understand, namely formulating hypotheses testing hypotheses, and forming generalizations. These findings became a revision note for the field trial. The following is the revised draft of the limited test:

Table 3 Product Design Post imited Trial Revision

Present the objectives and prepare the class
- The teacher prepares the class by conducting an apperception - The teacher conveys the learning objectives
Presentation of data and identification of concepts
- The teacher explains the learning material - The teacher presents examples of concepts contextually - The teacher and students explore concepts through the hangman game - Students observe concepts independently through the hangman game - The teacher presents several examples of concepts that have been labeled - Students are asked to analyze the nature or characteristics of concepts based on labeling - Students are asked to compare traits or characteristics based on labeling - Students are asked to express the results of their analysis of the nature or characteristics of concepts based on labeling
Study in groups
- Teachers and students form heterogeneous groups through pair card games - The teacher provides discussion topics to expand concepts through digital labeled diagram games - The teacher encourages students to find similarities in the essential properties/characteristics of concepts through labeled diagrams - The teacher allows each group to discuss to find representations, understanding structures in the concepts being studied - The teacher and students form hypotheses, classify concepts, and restate definitions according to the essential properties or characteristics of the concept to form generalizations
Analysis of thinking strategies
- Students prove hypotheses and form generalizations based on logical considerations - Students convey their analysis of the results of hypothesis testing, convey generalizations based on concept classification and essential characteristics, and give examples in everyday life in discussion forums - The teacher and students provide feedback - Evaluation

Next, field trials were carried out in classes V-A, V-B, II-A, and II-B with a total of 167 students and 4 homeroom teachers. Field test results obtained the following data:

Figure 3 Field Trial Results



Based on the data above, it is known that 11 respondents stated that the concept-based learning method through digital games was very feasible, 151 respondents stated that it was feasible with a percentage of 93% and 1 respondent stated that it was quite feasible. The results of interviews with users obtained data that the method steps can be used and are easy to understand. The existence of games encourages changes in students' learning atmosphere and understanding of concepts. Both teachers and students can follow the flow of concept-based learning methods through digital labeled diagrams and hangman games. The following are the percentage results for the feasibility of concept-based learning methods through digital games per indicator:

Table 4 Percentage of Product Feasibility by Indicator

Indicator
The flow of the learning process is easy to understand (79,8%)
The learning process flow is easy to implement (81,5%)
The learning method raises students' interest in following the entire learning path (82,2%)
Students are more active in learning with concept and game-based learning methods (80,6%)
Students are motivated to learn better after implementing concept and game-based learning (83,8%)
Students understand various concepts after carrying out the concept and game-based learning (81,5%)
Students can more easily achieve learning goals (78,7%)
Students feel a challenge during the learning process with games (81%)
Students are involved in learning activities with friends of different abilities (78,4%)
Students provide input on learning activities that have been carried out (77,5%)

Based on the indicator data above, it is known that all indicators are in the feasible category, therefore it can be concluded that the results of field trials show that the concept-based learning method through digital game media labeled diagrams and hangman is declared feasible.

Evaluation

The evaluation results directed researchers to obtain feedback from the results of field trials. In general, the research data showed that the feasibility of the product increased

after revisions and field trials were carried out. However, there is an evaluation of the lower classes in the group formation process. The formation of heterogeneous groups is not conducive if done without media that attract students' interest. Therefore, the use of speaking cards and flash cards was added to the method design. The following is a revised draft of the concept-based learning method as a result of the evaluation:

Table 5 Design Post Revision Feedback

Present the objectives and prepare the class
- The teacher prepares the class by conducting an apperception
- The teacher conveys the learning objectives
Presentation of data and identification of concepts
- The teacher explains the learning material
- The teacher presents examples of concepts contextually
- The teacher and students explore concepts through the hangman game
- Students observe concepts independently through the hangman game
- The teacher presents several examples of concepts that have been labeled
- Students are asked to analyze the nature or characteristics of concepts based on labeling
- Students are asked to compare traits or characteristics based on labeling
- Students are asked to express the results of their analysis of the nature or characteristics of concepts based on labeling
Study in groups
- The teacher and students form heterogeneous groups through speaking cards/flashcards
- The teacher provides discussion topics to expand concepts through digital labeled diagram games
- The teacher encourages students to find similarities in the essential properties/characteristics of concepts through labeled diagrams
- The teacher allows each group to discuss to find representations and understand structures in the concepts being studied
- The teacher and students form hypotheses, classify concepts, and restate definitions according to the essential properties or characteristics of the concept to form generalizations
Analysis of thinking strategies
- Students prove hypotheses and form generalizations based on logical considerations
- Students convey their analysis of the results of hypothesis testing, convey generalizations based on concept classification and essential characteristics, and give examples in everyday life in discussion forums
- The teacher and students provide feedback
- Evaluation

After going through the evaluation stage and carrying out final revisions, the product produced by this research is a concept-based learning method through digital games that can be used in social studies learning. This is based on a series of trials and continuous product revisions and improvements to produce products that are suitable for use. Based on the field test results, it is known that the product assessment is above 70% with the highest percentage being the indicator that students are motivated to learn better after implementing concept and game-based learning at 83.8%. The results of this research are in line with the findings of Hermawan et al. (Hermawan et al., 2018) that concept learning can create a pleasant atmosphere in the learning process, especially using games as an approach that is popular with students. The lowest percentage was 77.5% in the indicator of students providing input on learning activities that had been carried out. This is supported by the research findings of Tamim et al. (2023) that the implementation of concept-based learning encourages increased learning activities of students.

E. Conclusion

Based on the results of development research through the ADDIE model, a product was obtained in the form of a concept-based learning method through digital games. As for the process, the design of this concept-based learning method through digital games has gone through a revision process repeatedly, these revisions include design revisions, limited trial revisions, field test revisions, and revisions from the evaluation stage. The validation results by expert judgment obtained a percentage of 80% for the validation of learning designs and 82.5% for the validation of learning methods. The limited trial stage obtained a feasibility percentage of 92%, while the field trial stage obtained a percentage of 93%. In the final stage, the percentage of feasibility test results obtained by users with the highest score on the motivating indicator was 83.8%, while the lowest was on the indicator of student involvement in providing input, namely 77.5%. The product up to the final stage of the ADDIE model has met the feasibility test so that it can be used by the general public to support increasing students' understanding of concepts in social studies subjects.

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