Staidear Board Game Model Application in Facilitating Vocational School Students Learning

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A R T I C L E   I N F O

A B S T R A K

Siswa mengalami kesulitan saat mempelajari materi dasar desain grafis. Hal ini berdampak pada hasil belajar siswa yang rendah. Penelitian ini bertujuan untuk mengembangkan sebuah media pembelajaran berbasis permainan yang dapat digunakan untuk memfasilitasi belajar siswa SMK dalam kegiatan pembelajaran multimedia. Jenis penelitian ini adalah penelitian dan pengembangan dengan menggunakan model ADDIE. Sampel dalam penelitian ini adalah 30 orang siswa. Teknik pengumpulan data menggunakan wawancara dan kuesioner. Instrumen pengumpulan data menggunakan kuesioner. Teknik analisis data menggunakan analisis deskriptif. Hasil penelitian yaitu uji kelayakan materi memperoleh skor 3.88, sedangkan uji kelayakan media memperoleh skor 3.87. Hasil implementasi 76.6 persen responden tertarik belajar multimedia menggunakan board game Staidear, 93.3 persen responden pikir board game Staidear mudah untuk digunakan. Disimpulkan bahwa media pembelajaran boardgame layak untuk digunakan pada proses pembelajaran desain grafis. Penerapan media boardgame efektif pada pembelajaran desain grafis, tampilan board game yang unik dapat menarik minat siswa dalam belajar. Implikasi dari penerapan boardgame ini adalah terdapat peningkatan nilai rata-rata ujian siswa.

A B S T R A C T

Students need help with learning the basic material of graphic design. It has an impact on low student learning outcomes. This study aims to develop a game-based learning media that can be used to facilitate vocational students' learning in multimedia learning activities. This type of research is research and development using the ADDIE model. The sample in this study was 30 students. Data collection techniques using interviews and questionnaires. Data collection instrument using a questionnaire. Data analysis technique using descriptive analysis. The study's results, namely the material feasibility test, obtained a score of 3.88, while the media feasibility test obtained a score of 3.87. Implementation results 76.6 per cent of respondents are interested in learning multimedia using the Staidear board game, 93.3 per cent of respondents think the Staidear board game is easy to use. It was concluded that board game learning media is appropriate for use in the learning process of graphic design. The application of board game media is effective in learning graphic design. The unique appearance of board games can attract students' interest in learning. Implementing this board game implies an increase in the average student test scores.

1. INTRODUCTION

Learning is an activity that a person does to gain new insights and also experience changes in himself. In the learning process, students need the role of the teacher to guide and direct (Abdullah et al., 2021; Buchari, 2018; M. Dewi, 2021; Suhroh & Cahyono, 2020). Good classroom management is needed to create a fun, effective, and efficient learning atmosphere (Korucu & Alkan, 2018; Nanggala, 2020; Wang et al., 2015). Currently, learning has undergone many evolutions, one of which is the application of gamification in learning which makes the process full of challenges and fun (Coil et al., 2017; Palaniappan et al., 2022). Based on the research that the author conducted on 30 students of SMK majoring in multimedia, the authors obtained information that 76.7 percent of students had experienced difficulties when learning the basic material of graphic design. 86.7 percent of students like the learning process that is carried out directly or direct learning. Observation activities were carried out for students of class 10 vocational high school majoring in multimedia by observing the average value of students in the midterm exam results which obtained an average score of 71. This shows that there is a gap with the national average score set, which is 75. Graphic design is a science that is closely related to art and requires more frequent practice and guidance. During the learning process, 36.7 percent of students tend to dislike the learning process by reading books and prefer the learning process accompanied by games. There is a difference in the level of student involvement between conventional learning and gamification learning, where gamification learning has an effect on increasing student involvement in the learning process (Dewi et al., 2017; Hakak et al., 2019; Navarro-Espinosa, J. A. et al., 2022).

One game that can be applied in class by combining learning materials to facilitate student learning is a board game (Elianta et al., 2018; W. C. D. Safitri, 2019; Widiyanto & Yunianta, 2021). In research conducted by Bayeck, the use of board games in learning in Africa has good potential because it can integrate material, curriculum, and social intelligence (Bayeck, 2017). Facilitating learning according to AECT 2004 is an effort to think about the best way to organize the learning process by providing facilities that can facilitate the organization in learning (Januszewski & Molenda, 2008). Playing a board game requires good teamwork and a fast level of thinking to make the game run smoothly (Nurfaizah et al., 2022; Widiyanto & Yunianta, 2021). The results of Rajković's research stated that the application of board games in problem-based learning can increase the intellectual and emotional involvement of students so that students can find new knowledge during the learning process (Rajković et al., 2017). In the study it was found that 80 percent of the 30 respondents preferred to use board games in learning and also in the learning evaluation process. Studies conducted in the health sector state that the application of learning with board game media can affect anxiety levels, social functioning, beliefs, and biological health, in addition to academic knowledge and abilities (Gauthier et al., 2019).

Based on the results of this research, the authors took the initiative to develop a learning media in the form of a board game that could make it easier for SMK students majoring in multimedia in learning graphic design material. This board game is called "staidear" which is taken from the Irish language which means learning. The board game will be in the form of a game board using cardboard material which is played by 2 teams, each consisting of 2 people. The benefit of this project is to make it easier for students in learning processes/activities by using interesting, fun, and easy-to-understand learning media, so students can focus and won't easily get bored while studying (Lara & Calero, 2020; Nurfaizah et al., 2022; Taspinar et al., 2018). With this project it can also increase students' creativity in being creative and students' ability to explain material will also increase, so understanding will also increase (Elianta et al., 2018; Tiing & Yunus, 2021). The purpose of this project is to create a learning media that is easy for students to understand and understand, with a board game design that is made as easy as possible to play. So that the learning that has been designed will run according to what has been planned from the start. Then accompanied by this boardgame media, the learning materials will be easily implemented by the students and the learning objectives will be in accordance with the expectations of the educators.

Based on the background described above regarding the creation of learning media that we do, we designed and created a board game-based learning media called the Staider Board Game. Games developed have learning objectives for users to become learning media that can help students learn typographical material. In addition, students understand and can use one of the basic graphic design elements in their designs. To become a good learning media, it uses one of the elements in the design (Nurfaizah et al., 2022; Safitri, 2019; Widiyanto & Yunianta, 2021). Besides that, the other goals are to provide insight into knowledge about software that supports the creation of graphic designs in educational games and provides experience. Play while learning with challenges that challenge students to compete. Board games were chosen because they motivate students to learn (Elianta et al., 2018; Taspinar et al., 2018). The hope to be achieved with the development of this staidear board game is to increase students' understanding of graphic design material in the hope that this game can increase the average student exam score from 71 to above 75. Because based on previous research, most students are familiar with this board game and what is certain is that because this is a game that we deliberately combine with learning media, this method of learning while playing board games is the right solution (Avianto & Prasida, 2018; Safitri et al., 2023).

Compared to conventional learning, with the help of board games it can increase the cognitive level of students, so that the material to be given can be understood properly (Barrull et al., 2022; Safitri, 2020). Based on research conducted by analyzing the PsycINFO and PubMed databases, the results show that board games can be expected to increase understanding of knowledge, increase interpersonal interaction between participants, and increase student motivation (Noda et al., 2019). A very striking advantage is because our solution is a game, therefore students are more interested in the way the teacher teaches. Not only that because we can provide new experiences for students, the experience is very possible if the experience can be included in their long-term memory or what we usually know as long-term memory which makes students pay special and unique attention to the learning that the teacher has given. And what is certain is that the material that has been included in the game can be easily remembered and understood by students (Jääskä et al., 2022; Liu et al., 2020; Zaki et al., 2020). The application of the "TITUNGAN" board game to learning mathematics has an effect on the level of student understanding related to students' creative mathematical understanding (Widiyanto & Yunianta, 2021). In learning bioenergy and biofuels with the application of board game media it is proven to increase student interaction and understanding with improved student exam results at the University of Granada (Lara & Calero, 2020). The results of research conducted by Nakao on the effects of using board games are that they can increase cognitive levels, brain function, and modify environmental factors, so that students will avoid health problems caused by smoking, sex, mental illness, and other things due to learning stress (Nakao, 2019). The application of board games in efforts to socialize the environment is also effective based on the results of research at the

Norwegian University of Science and Technology (Fjællingsdal & Klöckner, 2020). In teaching in the health sector, the use of board games also has good results on the level of students' understanding in the nursing learning process (Lickiewicz et al., 2020).

Now we can immediately conclude because no program is always perfect or sometimes we can run not according to the analysis and design, so here we consider that if there are students who are interested then there are also students who are not interested. Explanations of how to play or demonstrations for students who are not used to playing will make it more difficult to understand learning and make us as teachers have to provide re-evaluation and re-analysis for students so that we can complete and develop the methods that have been prepared. Therefore we can try solutions and develop student learning methods with reference to surveys and data sources that we have collected, namely 30 SMK students majoring in multimedia. 86.7 percent of students like the learning process that is carried out directly or direct learning. This is because graphic design is a science that is closely related to art and requires more frequent practice and guidance (Widyastuti & Susiana., 2019). During the learning process, 36.7 percent of students tend to dislike the learning process by reading books and prefer the learning process accompanied by games. One of the games that can be applied in the classroom by combining learning materials, one of which is in the form of a board game. So the conclusion is that the solution we provide is appropriate and very appropriate to try and do so that students learn more easily and can compete to get the best results. The purpose of this study was to find out the obstacles experienced by students in learning graphic design, find out the learning media students needed, produce the right learning media to facilitate learning graphic design, and find out the level of effectiveness and usability of the resulting learning media.

2. METHOD

This type of research is research and development using qualitative data in exploring user needs. Research and development is research conducted with the aim of developing a product based on planning, production, and evaluation processes (Sugiyono, 2019). The sample used in this study was 30 people from grade 10 students of vocational school. The model used in this study is the ADDIE (Analysis Design Development Implementation Evaluation) model. It is a learning design model that focuses on building training program tools and infrastructure that are effective, dynamic and support the performance of the training itself (Rustandi & Rismayanti., 2021). This model was first developed by Reiser and Mollenda in the 1990s and is a development of its predecessor learning design model (Widyastuti & Susiana., 2019). The ADDIE framework is divided into five stages that are interconnected with each other. These stages are built on the basis and purpose of each in order to get the desired result. The design that is built cannot be completed if one is incomplete or incomplete (Yeh & Tseng, 2019). Analysis is done by analyzing needs, identifying problems, and performing task analysis. Analyze user needs and product development based on constructivist theory and humanistic theory. Constructivistic theory is a learning process that prioritizes student experience, humanistic theory is a theory of understanding human learning (Budiningsih, 2012). In the design, planning activities and knowledge are carried out to support the desired learning outcomes. Designing a product must be done systematically based on various theories, principles, and procedures (Warsita, 2008).

Data collection techniques using interviews and questionnaires. Interviews were conducted to explore the needs of students and multimedia teachers. The questionnaire used consisted of material feasibility questionnaires, media feasibility questionnaires, and student response questionnaires. Product feasibility was assessed by four validators that is multimedia teachers. Material expert eligibility validation sheet contains aspects of content, serving, and language. The media expert eligibility validation sheet contains aspects of design appearance, ease of use, consistency, and benefits. Each indicator has three criteria. If three criteria are met then 4 points are awarded, if two criteria are met then 3 points are given, if one criterion is met then 2 points are given, and 1 point for indicators where no criteria are met. Material eligibility indicators in Table 1, while media eligibility indicators in Table 2.

Table 1. Indicators of Material Feasibility Assessment

No	Aspect	Indicator
1	Content	Presentation of the material is quite clear
		Material according to KI, KD, and curriculum
		The suitability indicators with the material
2	Serving	The quality of this media is generally suitable for learning vocational students
		The suitability of the answer key with the question
3	Language	Accurate use of language
		The accuracy of the choice of sentences used (not multiple interpretations)
		The material presented is deep and accurate

Table 2. Indicators of Media Feasibility Assessment

No	Aspect	Indicator
1	Design View	Composition of text and background colors
		Attractive design
		Layout
2	Ease of Use	Visual and verbal graphic illustrations are in sync
		Systematic presentation
		Ease of operation
3	Consistency	Consistency in the use of font shapes and sizes
		Consistency in words, terms, and sentences
		Layout consistency
4	Benefit	Ease of teaching and learning activities
		Ease of interaction with the media
		Attract students' attention

The instrument used to determine student responses to the application of the Staidear board game model in this study used a questionnaire consisting of 10 questions that had to be answered by 30 grade 10 vocational students. Data analysis techniques used descriptive analysis. Validation and practicality of the data is calculated by the average score for each aspect assessed.

3. RESULT AND DISCUSSION

Result

Based on the analysis of user needs, data is obtained that students need learning media in the form of board games, board games use color combinations that can increase enthusiasm for learning and soothe the eyes, students want the number of players to use 2 people with 2 groups per game, the material used is cardboard so that it is light and easy to move, students want a board game that has a variety of practice questions, board game has two views, namely the question and player display so that it is easy to play, students want other features that can help when playing games, and students want challenges in board games to increase the fun of playing while learning. The results of the research produce user personas that have two user characteristics, namely teachers and students. User persona is used to find out what the needs and roles of each prospective user of learning media are (Kusuma et al., 2020). During the implementation of learning using the boardgame, the teacher here acts as a supervisor as well as a supervisor for the course of learning using the boardgame and for students to act as players who play the boardgame. In the user analysis, it was found that the teacher here is as a board game maker from making boards to play to the questions needed during the implementation of learning using board games and also as supervisors of the course of learning using board games. In addition to supervising teachers, they also guide and direct their students to carry out learning using board games so that there are no errors in the implementation of learning. Students are players in the implementation of this board game. In this board game, the student must be able to solve the questions he gets in order to continue his game. The board game consists of the main game board, attack cards, and defense cards that are useful in winning the game. This is the final result of the staidear board game showed in Figure 1.
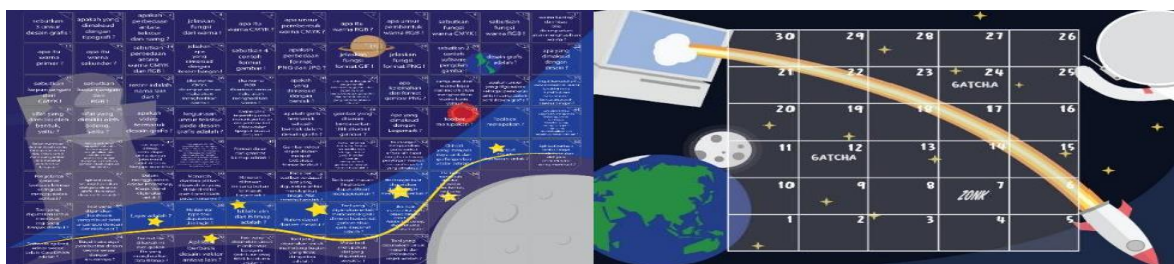

Figure 1. Board Game Question and Position Side

Figure 1 is a side view of the question boardgame and player position boardgame. The question board game is used to place a number of questions that will be used as material for evaluating student knowledge, while the position board game is used to find out how far the player has reached his position since the start of the game. If a player can occupy the number 30, then that player is declared the winner. Figure 2 is a side view of attack cards and defense cards. This card can be used to attack other players by giving them more challenges that

are listed in the card description. Defensive cards can be used to defend against opponent attack cards which can be used to defend a player's position in the game.

Figure 2. Attack and Defense Card

The rules of the game are that there are two board games, namely the question board game and the player board game. The teacher divides the students into 2 groups. Each group consists of 2 members. The teacher determines which group has the right to play first by using a coin toss. The group that gets the first turn, starts the game by rolling the dice and advancing the pawn based on the number of the dice that has been thrown on the problem boardgame. Players answer questions located in the boardgame questions based on the number on the boardgame where the pawns are. Players are also entitled to take gacha cards based on the number of dice that came out previously (odd numbers take attack cards and even numbers take defense cards). The group that succeeds in answering the right questions can advance the pawns on the boardgame player by 2 squares, if wrong 0 squares. The next player will start advancing the pawn starting from the last position of the previous player in the problem boardgame. The problem boardgame is one of the challenges for players to be able to advance pawns to the finish line on the boardgame player. Gacha cards serve as an opportunity to interfere with movement between players. Can attack with attack cards and can defend with defense cards. The group that reaches the finish line first on the boardgame player will be the winner.

The feasibility of the Staidear board game learning media can be seen from the validation results by material experts and media experts. The validation test was carried out by a multimedia teacher at a vocational school in Malang City. Material eligibility assessment is assessed based on the aspects of content, serving, and language. The content aspect consists of 3 indicators, the serving aspect consists of two indicators, and the language aspect consists of three indicators. The results of the staidear board game assessment will be presented from the material validation test showed in Table 3.

Table 3. Material Feasibility Validation Results

No	Aspect	Score	Category
1	Content	3.83	Very High
2	Serving	3.88	Very High
3	Language	3.92	Very High
	Average	**3.88**	**Very High**

Based on Table 3 it is known that the average feasibility of material validation products is 3.88 which is included in the very high category, so it is suitable for use in graphic design learning. Media feasibility assessment includes aspects of design appearance, ease of use, consistency, and benefits. The display design aspect has 4 indicators, the ease of use aspect has 2 indicators, the consistency aspect has 3 indicators, and the benefits aspect has 3 indicators. Data from the staidear boardgame media validation test results in Table 4.

Table 4. Media Feasibility Validation Results

No	Aspect	Score	Category
1	DesginView	3.88	Very High
2	Esay of Use	3.75	Very High
3	Consistency	3.92	Very High
4	Benefit	3.92	Very High
	Average	**3.87**	Very High

Based on Table 4, the media expert's product feasibility average is 3.87 which indicates the boardgame staidear is in the very high category. The results of the summative test conducted at the end of the semester by the teacher also had an increase in value, before implementing board games, the average student score was 71, but after implementing board games in learning, students obtained an average score average of 80. Based on the results of the assessment of student responses to this board game, the results are obtained 76.6 percent of respondents were interested in learning multimedia using the Staidear board game, 70 percent were interested in using the Staidear board game in learning rather than lectures, 66.6 percent of respondents felt the Staidear board game was not too complex, 93.3 percent of respondents thought the Staidear boardgame was easy to use, 80 percent of respondents thought using the Staidear boardgame was easy to understand, 86.6 percent of respondents imagined that many people would find it easier to learn with the Staidear boardgame, 90 percent of respondents felt it was effective in learning with the Staidear boardgame, 83.3 percent of respondents liked the design appearance of the Staidear boardgame, 86.6 percent of respondents found various uniqueness in the Staidear boardgame, and 80 percent of respondents chose to use the Staidear boardgame in testing thinking skills.

Discussion

The Staidear boardgame media developed on graphic design material has components of a question boardgame, player boardgame, attack cards, and defense cards. Boardgame questions consist of questions and pictures that are relevant to graphic design material. The player's boardgame consists of pawn positions, challenge instructions, and pictures, while the attack cards and defense cards consist of pictures and commands to attack or defend. This component was embedded based on previous research which stated that providing the components of attack cards, defense cards, question board games, and position board games can provide excitement as well as challenges for students when playing the board game (Avianto & Prasida, 2018; Gauthier et al., 2019). The way to make learning fun is to include interactive elements such as using board games (Prastyo et al., 2021; Ratminingsih, 2018; Taspinar et al., 2018). This is in accordance with the results of previous research which states that the application of board games can help increase student interaction in learning (Barrull et al., 2022; Rajković et al., 2017; Tsai et al., 2020). The interactive learning process can turn students' learning motivation to be more active because of their interest in learning media in games. The findings of previous research also stated that game media can develop the senses and attract attention and interest (Arisandy et al., 2021; Bayeck, 2017; Ilmiyah & Sumbawati, 2019; Meriyati et al., 2019).

The selection of plastic-coated cardboard material is applied so that the board game has a good level of resistance so it is not easily damaged (Widiyanto & Yunianta, 2021). Images that are relevant to the subject matter will attract students' interest in learning while playing (N. Dewi et al., 2017; Elianta et al., 2018; Halimah, 2019). The developed boardgame staidear fulfills the feasibility of the material and media. In the material expert test, the results of the content aspect were 3.83, the serving aspect was 3.88, and the language aspect was 3.92, thus obtaining an average of 3.88 and fulfilling the very high category. In the media expert test, the results of the design display aspect were 3.88, the ease of use aspect was 3.75, the consistency aspect was 3.92, and the benefit aspect was 3.92, so that an average of 3.87 was obtained and it fulfilled the very high category. Based on the material and media aspects, it shows that the Staidear board game is suitable for use in the learning process (Fjællingsdal & Klöckner, 2020). The application of board game media in this study shows that there is an increase in student understanding, where the results of the previous exam obtained an average student score of 71 and increased to 80. This research is in accordance with previous research which stated that the use of board games can improve students' cognitive understanding (Gauthier et al., 2019; Nakao, 2019; Tsai et al., 2020).

The contribution made in this study is that for graphic design subjects which have more memorization and practicum material, the learning process can be carried out by applying board game media which has more challenges and rewards for students who win the game. Playing while learning can help relieve students' stress loads, so that the process of cognitive achievement becomes better (Fithri & Setiawan, 2017; Holis, 2016; Ulhusna et al., 2020). The limitations of this research are that research is still being carried out on 10th grade vocational school students and only on graphic design subjects. The recommendation that can be given is that for further research, research can be carried out at other levels and also on other subjects to find out whether other subjects will also help improve students' cognitive understanding.

4. CONCLUSION

The conclusion that can be drawn based on the results of the application of board game learning media to class X students of SMK is that there is an increase in the average student test score. These results also state that the application of board game media effectively teaches graphic design to 10th-grade students of SMK. The novelty of this Staidear board game is that it has two points of view, namely the question side and also the

player's position side, and has challenges in the form of attack and defence that can be used to add to the excitement of learning while playing to get the top position in the game.

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