



ORIGINAL RESEARCH ARTICLE

Implementation of Blended Learning Model Accompanied by
QuizWhizzer Game on Physics Motivation of Vocational Students

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ABSTRACT

Purpose: This study aims to assess the validity of blended learning model assisted by quizwhizzer game on physics learning motivation of vocational students.

Methods: The research method used in this study is descriptive research with a quantitative approach. Data collection techniques using questionnaires and observation.

Findings: The application of blended learning model assisted by quizwhizzer media to students' physics learning motivation can be seen that the number of students in the high category is 14 students, the medium category is 32 students, and the low category is 24 students. The results of the questionnaire analysis of students' physics learning motivation obtained data on students with high learning motivation categories as much as 20%, students with moderate learning motivation categories as much as 45.7%, and students with high learning motivation categories as much as 34.3%.

Conclusion: From the results of this study obtained data on physics learning motivation of students of SMK Negeri 1 Jember which is classified in the moderate category with the largest ARSC aspect in the aspect of relevance with a percentage of 75.70% and the smallest ARSC aspect in the aspect of attention with a percentage of 50%. From each aspect of ARSC, it can be explained that the attention aspect obtained is 50%, the relevance aspect obtained is 75.70%, the confidence aspect obtained is 54.30%, and the satisfaction aspect obtained is 64.30%. ©authors

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Introduction

The birth of industrialization and globalization has made rapid developments in information and communication technology (IPTEK). Technology in this case certainly affects human life and plays a role in every social life, especially the field of education. Education is a fundamental thing in life, so everyone has the right to get teaching. In this 21st century, the development of education is a must because with education students can develop their abilities to face and solve problems in real life.

Government Regulation No. 17 of 2010 related to Vocational Secondary Education is education that provides science and technology skills while developing students' vocational skills according to the needs of students. Physics is one of the subjects taught in Vocational High School. This is because physics is a basic vocational subject that can be used by students to increase basic knowledge to obtain competencies in their expertise program (Saolika et al., 2021). Basically, physics learning cannot be separated from the concepts of language, mathematics, images or graphics. Therefore, there is a need for new innovations to make it easier for students to support the understanding of concepts in physics. In line with what is explained by Wheelahan (2015) who explains that not only skills are needed by vocational students, but also knowledge to be the basis for applying these skills. Therefore, it is necessary to develop physics learning in accordance with the context of SMK.

In this study, the components of physics learning in the form of learning models accompanied by learning media will be identified on the physics learning motivation of vocational students in Jember Regency using a quantitative approach. Therefore, this research seeks answers to the question, is the blended learning model assisted by quizwhizzer media valid for physics learning motivation of vocational students in Jember Regency?

Literature Review

In education, the learning process can be seen as the process of understanding, observing, and analyzing student learning activities in the classroom (Albina et al., 2022). In other words, good education requires a good learning model. If the material used is good, but the learning model used is not appropriate, then the learning outcomes obtained will be less than optimal because the learning process is not interesting. Based on existing problems, research conducted by Coenders et al., (2010) stated that physics teachers can systematize appropriate learning by incorporating it into the vocational curriculum of students in SMK. One of them is by using the right learning model. What is meant by the right learning model is a model that can comprehensively represent all steps of the learning model by providing effective, innovative, and creative learning experiences.

The learning model itself has various alternatives to be applied in achieving educational goals. A good teacher in carrying out the learning process in the classroom is a teacher who can have efforts to create the best learning conditions for his students. In creating it in this case, of course, the teacher needs to sort out the right learning model and in accordance with the material to be taught to students (Aji, 2016). From the diversity of learning models, of course, there needs to be an appropriate sorting for students at a certain level of education and there needs to be adjustments to the level of student development and learning principles (for example motivation, interest, student activeness, student thinking power and feedback as reinforcement). Not only that, the selection of this learning model also requires a learning approach that has an orientation to the latest learning concepts (Safitri & Ayu, 2020).

Basically, the learning model is one of the learning components in determining the success and achievement of educational goals. The learning model itself has various alternatives to be applied in achieving educational goals. Success in the learning process can be determined by several factors, one of which is the teacher. In the learning process, teachers must make various preparations and choose learning tools to make it easier for students to understand the material, interact actively, and make learning more fun. One of the learning models that can be

used in the 21st century is the blended learning model. Blended learning model is a learning model that combines offline and online learning. Previous researches according to Harrell & Wendt (2019) explained that blended learning model can be implemented in person and online and has different social impacts. The online learning model only accepts limited space for students and teachers, so this condition allows students' interest in the learning process to be low. Not only that, the one-way interaction requires time to wait for the response to the learning outcomes in the form of text. In contrast, the blended learning model can provide immediate feedback on student learning outcomes which is easier to understand than written feedback in the form of text. However, some of these problems can be overcome by using blended learning model by conducting online and face-to-face learning. Thus, blended learning model becomes a more effective learning model compared to online learning model. The following is the syntax of blended learning model according to (Ramsay, 2001).

- 1) Search for relevant, clear and valid sources of information, both from books and the internet.
- 2) Find and formulate ideas.
- 3) Identifying information obtained from several sources.
- 4) Developing ideas or ideas from the interpretation of various sources.
- 5) Forming understanding through analysis, adjusting the results of discussions and being able to draw conclusions from several sources.

According to (Marlina, 2020), the procedure of the blended learning model can be determined as follows.

- 1) The learning process starts offline or fully online.
- 2) From various sources, students are asked to obtain a number of information related to the topic of discussion.
- 3) Students are expected to be able to understand, interpret, communicate and build on the knowledge they have acquired to draw conclusions from ideas from various sources used, both offline and online.

Based on the syntax of the blended learning model above, one of which is that learning can be done online, in other words, this blended learning model requires a learning media to support the learning process in the classroom.

Learning media makes a component that can support the learning process to create interesting, effective, and innovative learning. Among the learning media that can be used in this blended learning model is quizwhizzer media. This quizwhizzer media has a function as a medium in delivering material as well as a medium for evaluating learning in the classroom in a more interesting and fun way. In essence, learning media has the most important role for students in making it easier to understand physics material which has an impact on students' physics learning motivation. High student motivation in learning physics can certainly have an impact on good learning outcomes. Conversely, if a student's physics learning motivation is low, then the student will only do the learning process in the classroom by force alone. Thus, student physics learning motivation here is very synonymous with the level of student interest in the learning provided by the teacher in the classroom (Asmawiyah et al., 2021). Therefore, this study aims to assess the validity of the application of blended learning model assisted by quizwhizzer educational game on physics learning motivation of vocational students.

Method

This research uses descriptive research with a quantitative approach. The subjects of this study were grade X students at SMKN 1 Jember in the 2023/2024 school year. The independent variable in this study is the blended learning model assisted by quizwhizzer media. The dependent variable in this study is students' physics learning motivation.

Data collection techniques in this study used questionnaires and observations. Questionnaires and observations serve as instruments in this study. Questionnaires were used to see the percentage of students' physics learning motivation using a Likert scale. As

supporting data, observation was done through classical student observation. According to Sugiyono (2013:136), likert scale is a measurement whose function is to measure attitudes, opinions, and perceptions of a person about social phenomena. The following is a questionnaire to assess students' physics learning motivation using a Likert scale consisting of four answer options, namely never = 1, rarely = 2, sometimes = 3, and always = 4. Students' physics learning motivation is divided into three groupings, namely high, medium, and low. This data analysis technique is used to determine the student's physics learning motivation group from the questionnaire results by accumulating the results of all questionnaire items for the entire research sample. Where the scale of motivation to learn physics students there are 15 statement items with a score of 1 - 4, so that the minimum value is obtained.

Table 1.1 Student Physics Learning Motivation Categories

No.	Category	Score
1	High	60 – 45
2	Medium	44 – 30
3	Low	29 – 15

The next step is to determine the percentage of each category in several groups and determine the overall level of students' physics learning motivation. The category groups are high, medium and low. Equation (1) below determines the percentage of each category of students' physics learning motivation.

$$A = \frac{N}{T} \times 100\%$$

Description:

A = high/medium/low student physics learning motivation category (%).

N = number of students who have high/medium/low physics learning motivation.

T = research sample.

The results of the analysis of physics learning motivation questionnaire are used to see the level of student physics learning motivation of each category of students in the form of percentages. In addition, for student questionnaire data regarding student physics learning motivation, the percentage of each aspect of ARSC can be obtained using equation (2) as follows.

$$M = \frac{X}{Y} \times 100\%$$

Description:

M = percentage of each ARSC aspect.

X = ARSC aspect scores from all student questionnaires.

Y = the criterion score of the ARSC aspect.

Before being tested on students, this learning motivation questionnaire was validated by expert lecturers. This validation is used to check the suitability of indicators with ARSC aspects and the suitability of question items with indicators of student learning motivation in physics subjects and sentence structure. After being validated, it was then tested on 70 students of class X SMK Negeri 1 Jember to see the reliability of the questionnaire and finally conclusions can be drawn from all questionnaire data regarding student physics learning motivation according to ARSC aspects.

Findings

In the implementation of learning, teachers must prepare learning models by choosing learning media that are in accordance with learning objectives, so that students can understand the content of the lesson more easily and pleasantly, and students can interact more actively with each other. For this reason, the types of strategies, methods, models, and innovative learning media must be chosen according to the needs of students. From the ARSC aspect, student learning motivation categorization data consisting of three categories, namely high, medium, and low can be seen in Table 1.2 below.

Table 1.2 Grouping Motivation to Learn Physics

Category	Multiple students	Percentage
Hihg	14	20%
Medium	32	45,7%
Low	24	34,3%

Discussion

In the implementation of learning, teachers must prepare learning models by choosing learning media that are in accordance with learning objectives, so that students can understand the content of the lesson more easily and pleasantly, and students can interact more actively with each other. For this reason, innovative learning strategies, methods, models and media must be chosen according to the needs of students. The learning model that can be an alternative to classroom learning is the blended learning model. The blended learning model is one of the learning models that combines direct learning where teachers and students meet directly with online learning through online media that can be accessed at any time. According to Wardani et al., (2018), the combination of the two learning models is due to time constraints and the demands of growing technological developments. Therefore, the blended learning model is actually developed because of the shortcomings or advantages that occur in the learning process directly or online. The advantages of blended learning model according to Kusairi in Husamah, 2014:35), among others:

1. Online learning resources give students more freedom to learn the material independently.
2. Communication between students and teachers or students and other students does not need to occur when learning takes place.
3. The learning process outside of class hours can be well organised and controlled by the teacher.
4. Teachers can provide additional materials through the internet.
5. Teachers can ask students to read the material first or do a test before starting the learning.
6. Teachers can administer tests, ask questions, and use test results effectively.
7. Students can share files with each other.

Among the seven advantages of the blended learning model, the advantage of the blended learning model is that the learning process is carried out using technology to add learning materials in the classroom and questions are managed through communication with teachers by collaborating with each other to provide results that are in line with expectations, both for teachers and students.

The concept of blended learning model according to Driscoll in Hendarrita, et al. (2018), includes:

1. Blended learning model is a learning model that combines various types of technology to achieve educational goals.
2. The blended learning model combines various learning approaches such as constructivism, cognitivism, and behaviourism in achieving the learning process without using technology.
3. The blended learning model combines various learning technologies such as web, video, and others.
4. Blended learning model can combine technology and tasks to give positive impact in learning process.

From this concept, students can prepare themselves to get used to utilising technology in the learning process. With the blended learning model, students can also be more active in participating in learning activities in class with more enthusiasm, so that students are more enthusiastic in participating in the learning process. Not only that, the blended learning model can also help students accommodate their learning styles in the learning process. Therefore, this

blended learning model can help teachers in increasing students' interest in learning in the 21st era to be able to answer the challenges that occur in the digital era.

One of the visual media can be a learning tool that can be utilised in the learning process, either in the form of pictures, photos, or other illustrations. According to Paivio in Arsyad (2009) explains that learning by using the sense of sight can provide maximum benefits in the learning process. This is evidenced by the existence of two human memory systems, the first has a function in order to manage verbal symbols and the second has a function in order to process non-verbal images. Educational games are one of the learning media that has the potential to improve the learning process. This opinion is supported by Wibisono et al. (2010) who state that games are important in developing the human brain because they can increase concentration and train thinking to solve problems quickly and precisely. Not only that, Risnawati et al. (2018) also mentioned that educational games can make students have a better understanding and fun. One of the educational games that can be implemented into the learning process in the classroom is quizwhizzer media.

Quizwhizzer media is an interesting, interactive learning media that prioritises collaboration and communication to facilitate positive interactions between students through games in the classroom learning process (Susanto & Ismaya, 2022). Besides being fun, this media can also help teachers make lessons more interesting and less boring (Faijah et al., 2022). More than that, this media can also increase students' motivation and enthusiasm for learning in answering questions given by the teacher (Meileni et al., 2021). Through quizwhizzer media, teachers can provide several questions to students in the form of competitions by following a certain flow arranged to resemble a snakes and ladders game system. In this media, the teacher can set and adjust what types of questions will be asked to students. In addition, this media can give points for each question, can regulate the movement and position of players on the game board, and can give points for each question (Faijah et al., 2021).



Figure 1.1 QuizWhizzer Media Display

Through the use of this media, one of the factors that affect student learning outcomes is student physics learning motivation (Asmawiyah et al., 2021). Learning motivation is an encouragement or enthusiasm needed by students to achieve a learning goal. If student learning motivation is low, it also has an impact on low learning outcomes. Conversely, if student learning motivation is high, it also has an impact on high learning outcomes. According to the theory of Behaviourism, student learning motivation has an important role in encouraging student learning outcomes. Where learning motivation arises from the reinforcement given and the suggestion and desire to be able to understand the subject matter better.

Research by Rahardja et al., (2019) explains that the lack of student learning motivation can affect the learning process, causing less than optimal learning outcomes. Therefore, this study aims to test the validity of the application of blended learning models accompanied by quizwhizzer games on students' physics learning motivation conducted at SMK Negeri 1 Jember on energy and its changes. Measurement of students' physics learning motivation is based on aspects of attention, relevance, confidence, and satisfaction or commonly called

ARCS. Where the ARCS aspects are then developed into several indicators in the form of statements that can be presented in Table 1.3 below.

Table 1.3 ARCS Aspects of Physics Learning Motivation Indicators

Not.	Aspects	Indicator
1	Attention	a. Student learning interest in the blended learning process. b. The desire of students in obtaining information from the material learned in the learning process.
2	Relevance	a. The ability of students to adapt to different learning conditions. b. Students' knowledge and ability to use digital learning tools, such as quizwhizzer.
3	Belief	a. Ability to conduct discussion and interaction in the learning process. b. Able to voice opinions and answer questions.
4	Satisfaction	a. Always active in doing practicum. b. Able to complete practice questions, tasks, and test questions well.

Based on the results of the validation of the learning motivation questionnaire conducted by expert lecturers, a percentage of 85% was obtained with very good criteria. In other words, the results of this questionnaire validation are included in the categorisation of very feasible to use. Based on the results of the trial, it is known that the validation of the questionnaire of students' physics learning motivation is feasible to use.

After the learning motivation questionnaire is validated, then the data that has been obtained through the student learning motivation scale is given a score to facilitate researchers in the process of categorising and processing data. Based on the data obtained from the application of blended learning model assisted by quizwhizzer media to students' physics learning motivation, it can be seen that the number of students classified as high category is 14 students, medium category is 32 students, and low category is 24 students. From the results of the analysis, it can be converted into a percentage in each category, namely 20% including groups with high categories, 45.7% including groups with moderate categories, and 34.3% including groups with low categories. From these results it can be seen that the physics learning motivation of students at SMK Negeri 1 Jember is classified into the moderate category.

The learning motivation measured in this study is based on the ARCS aspect which is then calculated the percentage level as presented in Figure 1.2.

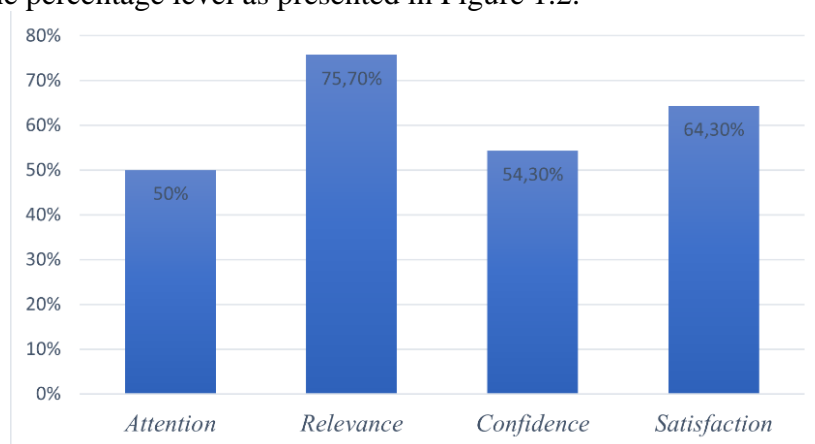


Figure 1.2 Percentage of ARSC Aspects

Based on the graph above, there are four aspects of ARSC on students' physics learning motivation, namely attention, relevance, confidence, and satisfaction. The graph above also shows that each aspect of students' physics learning motivation has a different range of values. It can be seen that the largest ARSC aspect is in the relevance aspect with a percentage of 75.70% and the smallest ARSC aspect is in the attention aspect with a percentage of 50%. From each aspect of ARSC, it can be explained that the attention aspect is obtained at 50% with two indicators, namely learning interest and students' desire to find information from the material studied in the learning process in class. Students' interest in learning can be seen from students'

willingness to participate in the learning process and students' interest in seeking various information available from various sources to deepen the material being studied. The next aspect, namely relevance, obtained 75.70% with two indicators, namely the ability of students to adapt to different learning conditions and the knowledge and ability of students to utilise digital learning tools, such as the use of quizwhizzer media. This is evidenced by the high ability of students to adapt to different learning conditions and the ability of students to use quizwhizzer media. Students who have the motivation to always learn can be seen by the encouragement in students to be able to use digital learning tools.

The third aspect is the aspect of self-confidence which is stated at 54.30% with two indicators, namely the ability to conduct discussions and interactions in the learning process and the ability to express opinions and answer questions. This aspect can be shown by the attitude of students who are able to complete all tasks, both individually and in groups. This is evidenced by students having the ability to complete tasks by using quizwhizzer media in carrying out the learning process in class. The last aspect, namely the satisfaction aspect, was achieved at 64.30% with an index of always actively carrying out exercises and being able to solve exercise questions, homework, and test questions. This satisfaction aspect is related to the teacher's interaction style during the learning process towards students' physics learning motivation. According to Sarnoto & Romli, (2019) explained that there are several factors that can affect students' physics learning motivation, namely environmental conditions and students' psychological readiness to achieve learning. The better the students' learning conditions, the higher the students' interest in learning, thus enabling the achievement of learning objectives that have been set previously effectively and efficiently. In addition, students' psychological readiness in the learning process shows how mentally prepared they are when participating in classroom learning.

From the four aspects of ARSC students' learning motivation above, it explains that in the learning process, students' physics learning motivation is important in achieving learning goals. This is because learning motivation can have an impact on the quality and learning outcomes at school. If students' physics learning motivation is low, it will affect students' physics learning enthusiasm later. This is in line with research conducted by Supriadi (2019) which explains that learning motivation has a significant effect on student learning outcomes. In other words, learning motivation affects student learning outcomes, which can be in the form of changes in attitude, grades, attendance, discipline, and understanding of a lesson and other positive things. This also shows that the use of quizwhizzer can improve student learning outcomes by creating an interesting and fun learning atmosphere, and can stimulate active participation and student enthusiasm in the learning process. So in other words, this quizwhizzer media can be one of the alternative media solutions that can be utilised to increase student motivation in carrying out the learning process in the classroom.

Conclusion

The rapid development of information and communication technology has proven the creation of many android-based learning materials that can be used to support the learning process in the classroom, including quizwhizzer media. Of course, the use of quizwhizzer in a blended learning model can be an alternative to solve learning problems both face-to-face and online. However, it should be noted that quizwhizzer media cannot be used as the only learning media to increase student learning motivation, but there needs to be other media development efforts so that the learning process is not boring and learning objectives can be achieved. From the analysis results, it can be converted into percentages in each category, namely 20% including the high category group, 45.7% including the medium category group, and 34.3% including the low category group. From these results it can be seen that the physics learning motivation of students at SMK Negeri 1 Jember is classified into the medium category with the largest ARSC aspect in the relevance aspect with a percentage of 75.70% and the smallest ARSC aspect in the attention aspect with a percentage of 50%.

Declaration of Competing Interest

The authors declares that he has no competing financial interests or known personal relationships that could influence the reports presented in this article.

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