Playful Learning with Virtual Reality Media

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Abstract. Playful learning is a teaching and learning atmosphere that can focus participants' full attention so that learning outcomes can be maximized. This study aims to analyze and understand virtual reality-based fun learning in increasing the learning motivation of elementary school students. Playful learning with the help of virtual reality has an important role in improving students' interest in learning and learning motivation through fun teaching methods. The research method used is a mixed method with a sequential explanatory strategy. Techniques Data collection is done by using interviews and questionnaires. A questionnaire then strengthened the data obtained from interviews of students' learning motivation. The sample in this study was 25 elementary school students. The sampling technique is purposive sampling. The results showed that fun learning increased learning motivation. The implications of this study indicate that virtual reality-based playful learning is categorized as suitable for use in learning for elementary school students and can improve student learning motivation.

Keywords: Playful Learning, Virtual Reality, Learning Media, Learning Motivation

1 Introduction

Fun learning will bring the teaching and learning situation to be comfortable and harmonious. In addition, the interaction between educators and participants can also flow smoothly. Conditions like this will naturally foster a high enthusiasm for learning students and motivate them to be actively involved in every teaching and learning process. Play is the most important way for the child to learn [1]. Through play, children learn resilience as they face small challenges and Help children to focus on learning. Studies show that learners can focus on academics through play, participation in meaningful activities by prioritizing deep engagement [2]. In addition, play as a child's work in which they learn about the rules, risks and rewards [3].

Moyles stated that there are three concepts of playful learning, namely: (a) Games developed and controlled by learners in which the teacher serves as a resource to maintain the imagination of highly creative and open learners; (b) Enjoyable learning in

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which learning is led by students, other students, or adults while engaging in roles and activities such as play; and (c) Enjoyable teaching in which the teacher intentionally presents fun activities and materials that will involve learners in achieving certain learning outcomes [4]. The media is given to children by their teachers; but after entering the virtual play world, the child controls the character in a fun scenario. Play learning is a whole child's learning approach that includes free play and guided play. In our study, students were directed when and where to engage in the game, but took control of the action after the game started.

Each educational unit uses technology for instructional purposes. The research that has been carried out investigates the elements of fun pedagogy found in schools [5]. The elements in which play and technology have the potential to coalesce include learning, change of place (various settings when delivering instructions) motor activities, and problem solving through the integration of technology. It is this last aspect of fun pedagogy that supports the use of our game through technological intervention [6].

In the world of education, technology is used in helping the learning process to achieve learning objectives. One of the technologies used is virtual reality, since the pandemic began virtual reality has received a surge in attention because it is expected to create a new paradigm of change towards innovative learning. Virtual reality significantly changes the adaptation of conventional learning to meaningful learning, with the level of learning of one or several fields of study using virtual reality as a higher medium will increase motivation and learning [7]. In addition, the use of virtual reality helps in increasing the interaction between educators and students [8]. Based on previous research suggests that combining a virtual environment in the classroom to prevent students from becoming bored and motivate positive attitudes towards learning [9]. Virtual reality as a tool that projects virtual displays in a two-dimensional form by combining the real environment and the virtual environment at the same time Previously virtual reality has been studied in the world of education, from these various studies found positive results on the use of virtual reality including increasing motivation and learning experiences, increasing understanding, increasing learning effectiveness [10].

Based on the results of preliminary observations made using interview and questionnaire techniques for one of the elementary schools, data was obtained that learning resources or teaching materials used for teaching and learning activities, especially in thematic subjects, namely the teacher still uses student worksheets and books provided by the school when explaining the material, and from the results of researchers' observations when the teacher explains the material using the media of the Participant Worksheet Students can be seen that there are several children talking and not paying attention to the teacher while teaching. The use of media the worksheets of students are not in accordance with the application of the 2013 curriculum because it does not stimulate the creativity of children. This has an impact on the learning process such as: students feel bored in following learning, low student motivation and also have an impact on low learning achievement. Looking at the problems in the field that show that the learning outcomes of categorized children are still developing, therefore researchers intend to use playful learning strategies along with Virtual Reality media for the learning process where the goal is to provide new experiences for children and provide something interesting activities so that they can motivate students in learning. So that with this

Virtual Reality learning media, it is hoped that it will be able to grow children's learning motivation to increase so that it will automatically make their learning outcomes will also increase.

Based on the above problems, researchers use a virtual reality learning media in a playful learning strategy that has been previously made by researchers. Where this learning media has been tested by experts before, but this virtual reality media has not been carried out a study to measure student learning motivation. Our research shows that applying virtual reality media, as a fun form of pedagogy, allows teachers to structure student learning around standards without wresting all control out of the hands of children. Thus, technology acts as a motivational route towards child-centered learning. The effective and developmental application of technology allows teachers to achieve a healthy balance between the interests and motivations of young learners during enjoyable learning and structured learning from a curriculum that is aligned with standards.

2 Method

The research methodology used is a mixed method, which is a combination of qualitative and quantitative methods. The instrument used in this study was a questionnaire designed to determine learning motivation based on playful learning strategies using virtual reality media. The subjects of this study were 25 students of SD Negeri 4 Pucangan Kartasura. The sampling technique, namely purposive sampling, is a technique for determining the sample using technological facilities and school infrastructure. Techniques Data collection is done by using interviews and questionnaires. The research data analysis phase was preceded by analyzing interview data and motivational questionnaires based on a combination of learning motivation indicators proposed by Uno and Sardiman, namely (1) There is a desire and desire to succeed; (2) There is encouragement and need in learning; (3) Diligent in facing the task; (4) tenacious in the face of adversity; (5) There are interesting activities in learning [11][12]. The motivation scores obtained are then classified according to their respective indicators. The guidelines for categorizing students' learning motivation are as shown in table 1 below:

Table 1. Levels of Learning Motivation

Percentage of Student Learning Motivation (%)	Interpretation
< 20,00	Very Low Motivation
21,00 – 40,00	Low Motivation
41,00 – 60,00	Enough Motivation
61,00 – 80,00	High Motivation
81,00 – 100	Very High Motivation

3 Result and Discussion

This research was conducted on thematic learning in elementary schools by applying playful learning strategies accompanied by virtual reality media. The study results were obtained through interviews with students and a student motivation questionnaire at State Elementary School of Pucangan Kartasura which found 25 students. The goals that are found in the motivational goals used are: (1) There is a desire and desire to succeed; (2) There is encouragement and need in learning; (3) Diligently face the task; (4) Tenacious in the face of adversity; (5) There are interesting activities in learning.

In the interview conducted by the researcher with the Class Teacher, the researcher asked several things related to the factors of student learning motivation. The first is related to student participation in learning. He explained that the learning participation of students is very less if the teacher does not innovate in learning in the classroom. This is because students are bored with teaching materials if learning with conventional methods. According to the class teacher, the teacher's ability to innovate learning is still lacking. However, after implementing Playful learning with the help of virtual reality media, teachers find it helpful to apply these virtual reality strategies and media in the classroom. While the results of the interviews that the researchers conducted with two students, basically students considered thematic subjects to be quite difficult, after implementing the playful learning strategy with the help of virtual reality, the students increased their motivation. The initiative and enthusiasm evidence this is carried out by students when there is material about the natural environment that is not understood, namely asking directly by asking the teacher or looking for other sources on the internet. In addition, students' initiative in finding other learning resources, for example, from the internet, is also an indicator of fulfilled learning motivation. The assignments given by the teacher are still well done and submitted on time. In addition, cheating while doing assignments and exams is something that students avoid. This certainly has a good effect on students' learning motivation.

Based on the results of the data analysis obtained, students' answers were categorized into 2 groups, namely very high learning motivation (M1), high learning motivation (M2). The results of the data analysis can be presented in Figure 1 below.

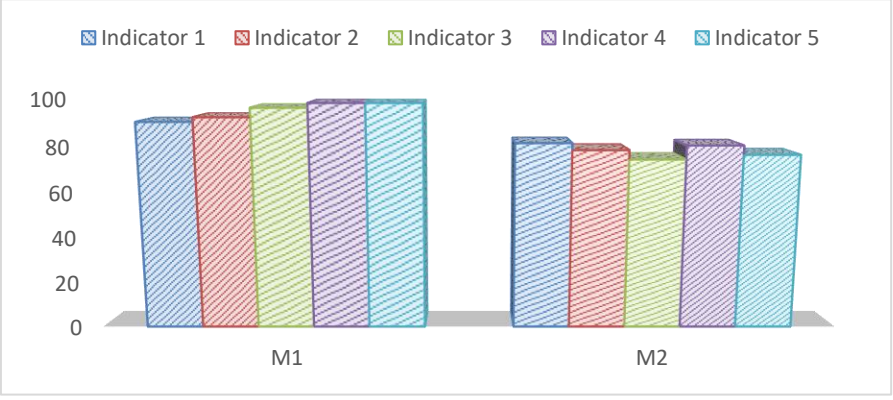

Fig. 1. Analysis of Aspects of Learning Motivation

As can be seen in Figure 1, the percentage of motivational lift results based on indicators, the three groups have different learning motivations. Here are the data on the student's learning motivation score and the results of interviews with all three subjects.

3.1 Subject 1 (Very High Motivation)

In figure 1 the analysis of the motivational aspect shows that the student has a very high motivation towards his desire and desire to succeed. This can be seen from the resulting percentage of 90%. Very high motivation is shown students on the aspect of encouragement and the need to learn with a large percentage of 92%. Being diligent in the face of a given task and tenaciously facing difficulties sequentially showed very high motivation indicated by percentages of 96% and 98%. The existence of interesting activities in learning causes students to have very high motivation which is shown with a percentage of 98%.

In addition to providing questionnaires, interviews were also conducted to students and data was obtained that by using virtual reality media in playful learning, students were more interested and enthusiastic about participating in lessons. This is due to the accustomedness of technology in their lives, this generation feels comfortable in an environment full of media, surrounded by various types of digital tools such as computers, LCD Projectors, MP4s and iPhones. Living in this multimedia environment, they want to show themselves with interactive computers such as games and movies both at home and at school. During the implementation of learning using virtual reality media, the activities carried out by children are observing and listening. Through virtual reality media the child gets a hands-on experience without having to go to the observed object. For example, when children are invited to find out the types of wild animals, they do not have to enter the forest to observe these types of wild animals. Because children can already observe the types of wild animals through virtual reality media. This is also supported by the theory presented by which states that virtual reality media is easy to use, provides better visual information, is fun so that students do not feel bored and helps improve student understanding [13][14].

This situation can be used as capital to create an effective learning atmosphere in order to improve children's higher learning outcomes [15]. The child's positive response will be the first step towards an effective learning environment. So, by obtaining a very positive response from children to the application of virtual reality media to vehicle recognition materials in the classroom, it can indicate that virtual reality media can be well received by children [16].

3.2 Subject 2 (High Motivation)

In figure 1 the analysis of motivational aspects shows that the student has a high motivation towards his desire and desire to succeed. This can be seen from the percentage generated of 81%. High motivation is shown by students on the aspect of encouragement and the need to learn with a large percentage of 78%. Diligently facing the assigned tasks and tenaciously facing difficulties sequentially showed very high motivation indicated by percentages of 74% and 80%. The existence of interesting activities

in learning causes students to have very high motivation which is shown by a percentage of 76%.

The results of interviews conducted by researchers by spreading questionnaires about the use of media where teachers still use print media, such as using image media when explaining wild animal recognition materials. So that researchers provide solutions to use Virtual Reality media to be used as a medium to support the learning process which is expected to be able to help students to make students more active during learning and be able to achieve maximum learning outcomes [9].

The use of virtual reality in learning attracts the enthusiasm of students, and increases the motivation to learn and develop skills, it helps in the learning process by involving related technologies [8]. In addition, the use of virtual reality has two points, namely (1) the hedonia aspect, namely virtual reality provides a fun and inspiring new experience so as to increase visual-spatial ability or the ability to see objects from various points of view, and (2) utilitarian aspects, namely virtual reality increases understanding of the material [17] [18]. Based on the overall answers to the student learning motivation questionnaire, the average results of student learning motivation were obtained as in table 2 below.

Table 2. Average Results of Student Learning Motivation

Indicator	Percentage	Category
The existence of a desire and desire to succeed	85,5	Very High Motivation
The existence of encouragement and needs in learning	85	Very High Motivation
Diligently facing tasks	85	Very High Motivation
Tenacious in the face of adversity	89	Very High Motivation
The existence of interesting activities in learning	87	Very High Motivation

Table 2 shows that the average student has a very high motivation when implementing playful learning with virtual reality media. On the indicators the desire and desire to succeed by 85.5% falls into the category of very high motivation. In the indicators of the presence of encouragement and needs in learning by 85%, the indicator of diligently facing tasks by 85%, the indicator of tenacity in facing difficulties by 89% and the indicator of interesting activities in learning by 87%.

Fun learning can be interpreted as learning that can attract the attention of students with various methods applied, so that when learning takes place students do not feel bored. Thus, it can be said that fun learning is a learning process that takes place in a pleasant and impressive atmosphere. A fun and memorable learning atmosphere will attract students to be actively involved, so that students' learning motivation can increase. In implementing playful learning, it is assisted by media, namely virtual reality media [19] [20]. Virtual reality (VR) is the use of computer technology to create a simulation environment that can be explored at a 360-degree angle, the real environment in the real world will be copied into a virtual environment. The reason for choosing

Virtual reality is because of its very high ability to visualize objects close to their original form [21][13] .

Fig. 2. Virtual Reality Media Display

For the digital generation, learning is considered an interactive activity and must involve calming activities. Instead, learning is considered interactive and involves fun activities. They want teachers or educators to include fun games and activities in the learning process. Therefore, to ensure that the learning style of the current generation can be fulfilled properly, the strategies applied must adjust to the needs of students. This playful learning can be seen through 4E (Enjoy, Easy, Expert, Earn) [22][23]. Enjoy and Easy This is the first key to the educational success of our children. If students do not enjoy education, and feel that learning is a heavy burden, of course education will not give good results, instead making children stressed and damaging their mental health. The results of research by American and British schools propose that the absence of enjoyment is one of the fundamental reasons why children fail to reach their potential [23][24]. An analysis of the relationship between enjoyment and learning outcomes, shows that enjoyment produces a flow state, reduces anxiety, and makes students comfortable, so learning becomes easier [25][26]. Playful learning not only makes learning easier, but this theory also explains that we learn more deeply, where students not only passively consume material, but actively build new knowledge or skills.

In the application of playful learning, the use of virtual reality media is also no less important to motivate students to learn. Virtual Reality has the advantage of attracting students to new worlds and being able to increase the effectiveness of the learning process in the classroom. So far, what has happened is that the activities carried out by students are limited to remembering and reading books and listening to the subject matter delivered by the teacher. Passive activity activities become boring things for students. The use of VR in the learning process makes it very appropriate to use because it makes learning more meaningful. Considering that students are now a digital native generation, they are more interested in learning to use technology media than just using traditional media. Virtual Reality can also improve student learning outcomes and skills. This is because students are easier to learn the material given and the learning process in class is not boring.

4 Conclusion

Based on the results and discussions that have been previously stated, it can be concluded that in the application of playful learning accompanied by virtual reality media, student learning motivation is included in the very high category. This is because a fun and memorable learning atmosphere will attract students to be actively involved, so that learning objectives can be achieved optimally. By utilizing Virtual Reality media, it can attract students to new worlds and be able to increase the effectiveness of the learning process in the classroom so that student learning motivation increases. The implications of this study show that virtual reality-based playful learning is categorized as very good and suitable for use in learning in elementary school students and can increase student learning motivation.

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