

Alternative Learning During a Pandemic: Use of the Website as a Mathematics Learning Media for Student Motivation

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Alternative Learning During a Pandemic: Use of the Website as a Mathematics Learning Media for Student Motivation

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ABSTRACT

In March 2020, direct learning activities were transferred online due to the Covid-19 pandemic. There are many alternative technology-based learning media used for online learning systems. However, the use of this media has not been able to increase students' motivation to learn mathematics. One of the media that can be used as an alternative learning media during this pandemic is a website. The purpose of this study was to find out how to use the website as a learning media in the midst of this pandemic, and to determine student learning motivation. This research is a descriptive study with a quantitative approach, the subjects in this study were 15 students of grade 8 and 9 Junior High School. The results of this study were that many students agreed with the use of websites as alternative learning media during this pandemic and students' high motivation to learn mathematics when using the website with an average percentage of 70,3%. From this research it can be concluded that the website can be an alternative media for learning mathematics in the midst of this pandemic, because the website has various advantages that can also increase student learning motivation.

1. INTRODUCTION

The Covid-19 pandemic has hit all countries in the world, including Indonesia. The Covid-19 pandemic has an impact on all sectors of life, such as the economy, health, education and others (Damanhuri, 2020; Susilawati et al., 2020; Zhang & Ma, 2020). In the education sector, the Covid-19 virus pandemic has stopped educational activities from the lowest levels of education (Pre-Primary School) to higher education. In connection with this, the Minister of Education and Culture of the Republic of Indonesia issued Circular Number: 36962 / MPK.A / HK / 2020, March 17, 2020 regarding Online Learning and Working from Home in the Context of Preventing the Spread of Corona Virus Disease (Covid-19). This circular contains 4 important things, (1) study at home through daring or distance learning implement to experience without being burdened to complete the curriculum target for grade promotion or graduation, (2) distance learning can be focused on life skills education example Covid-19, (3) students activities and task could be varied among students in accordance with their interest and condition including learning gap and facilities at home, (4) proof or product activity should be given feedback which is qualitative and useful for teachers without giving a score or quantitative grade (Kementrian Pendidikan dan Kebudayaan RI, 2020).

It is hoped that the sudden change in conditions in the world of education will not hinder the learning process. The government policy regarding learning from home is one of the efforts to prevent the spread of the Covid-19 outbreak widely and to follow up to comply with social distancing and physical distancing rules (Pratomo, 2020; Yanti et al., 2020). Mathematics learning which is part of the school curriculum is also affected by learning from home policy. This needs to be a concern because it is related to the characteristics of mathematics.

Learning mathematics is still considered difficult by many students, this is caused by several factors (1) the concept of learning mathematics is considered abstract and hard to understand (Putra et al., 2018), (2) solving math problems requires problem solving skills and creativity (Maulidia et al., 2019), (3) in learning mathematics, students' critical thinking skills are needed (Rachmawati et al., 2021; Zetriuslita et al., 2017). Mathematics is a difficult subject to learn so it makes teaching mathematics, especially during this pandemic teachers must be able to prepare learning media to help students understand the concept of learning mathematics. In terms of developing instructional media, teachers are required to be more

creative and should take advantage of the facilities offered by information technology (Suripah, 2017).

When a pandemic occurs, many learning media can be used by utilizing information technology. Many teachers have started using the Learning Management System (LMS) platform such as Google Classroom, Edmodo, Schoology and others (Okmawati, 2020; Purnawarman et al., 2016; Roqobih & Ambarwati, 2020). In addition, teachers also use video conference technology facilities such as Zoom, Google Meet (Fakhruddin, 2016; Sajaril et al., 2020) and create interesting learning videos to upload on YouTube as an alternative learning media for students (Samosir et al., 2019). Another learning alternative that can be used is software such as Geogebra that can visualize mathematical concepts to students (Zetriuslita et al., 2020).

Even though there are many technological facilities that can be used as alternative media during this pandemic, students' motivation to learn mathematics has actually decreased. Several previous studies have shown that student motivation decreases during the online learning process (Gustiani, 2020; Muslimin & Harintama, 2020; Subakthiasih & Putri, 2020). The decrease in motivation is caused by several factors, including bad internet network connection, improper media selection, and less conducive learning conditions. Whereas learning motivation is important for every student to have, with learning motivation will bring out the intention from within students to continue to carry out learning activities so that the desired goals can be achieved (Cahyani et al., 2020).

Therefore, interactive media is needed and can be the right alternative for use in online learning activities. One of the learning media that can be used in online learning activities is a website. Website is a collection of pages summarized in a domain or subdomain that contains multimedia in the form of audio, text, images and video and can be accessed via a web browser (Destiningrum & Adrian, 2017; Marisa, 2017). One of the advantages of the website as a learning media is that there is interactive multimedia that can be used in the learning process so that it can encourage student motivation to learn independently (Danaswari & Gafur, 2018). Based on this, the website becomes an efficient learning media because it can be accessed anywhere and anytime.

Several previous researchs have revealed the advantages of websites as learning media. Study from Ghani & Daud (2018) stated that the use of the website as a learning media can increase the effectiveness of the learning process, and most students feel satisfied and play a more active and critical role in developing their skills. In addition, study from (Astuti et al., 2020) stated web-based technology is often the technology of choice for distance education, given the ease of use of tools to browse web resources from any device, and the relative affordability of accessing them anywhere, websites can also be easily designed using the multiple online platforms available.

The findings from this study will help advance our understanding of the integration of the use of websites as alternative learning media in the midst of the Covid-19 pandemic on student learning motivation. Therefore, this study adds valuable insight into alternative learning media that can be used during online learning and increases student motivation in learning mathematics. To achieve this goal, this study aspires to answer questions (1) How is the use of the website as an alternative learning media during the pandemic? and (2) How do students' motivation when using the website as an alternative learning media?

2. METHOD

2.1. Research Design

This research is a descriptive study with a quantitative approach. In this study, it will be known how much intensity the students use of the website as a learning media. In addition, it will also be known how much student motivation when using the website. In line with

(Seixas et al., 2018), this approach will focus on the latest problems and phenomena that are happening in the form of research results in the form of numbers that have meaning about the use of websites on student motivation.

2.2. Participant

In this study, the sampling technique was random sampling. This is because researchers cannot limit someone from other institutions. Researchers only limit, the subjects in this study were students in grade 8 and 9 Junior High School. Researchers do not limit gender, school name, age of respondents, or others. This study involved 15 students from grade 8 and 9 Junior High School.

2.3. Research Instruments

The instrumen in this study was made by researchers, research instrument in the form of a questionnaire made from Google Form and then distributed to research subjects. Researchers collected data through questionnaire from Google Form that consisting of 22 questions. The questionnaire will be filled in by grade 8 and 9 junior high school students. Of the 20 question consisted: 2 question contains about participant's profile such as name and class; 5 questions contained about the intensity of students using the website; 5 questions contained about the purpose of accessing the website; 5 questions contained about desire in learning; and 5 questions contained about interest in learning.

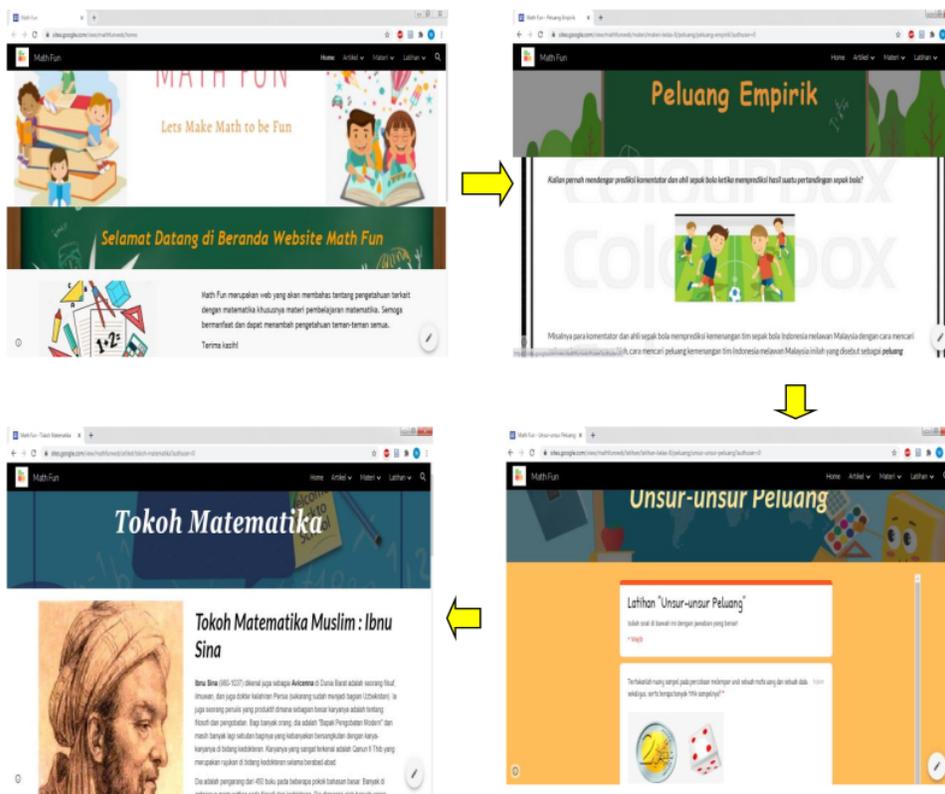


Figure 1. The example of interface an educational website using an interactive media for integrated mathematics

2.4. Data Collection and Analysis

Data was collected using Google Form as online survey. Google Form are used for reasons of the efficiency and flexibility of compability with student's learning during a pandemic, and because its easy to use. The questionnaire are disseminated through WhatsApp groups and emails. After the respondents fills in the questionnaire, the researchers will get a recapitulation results. The data obtained about the intensity of students using website, the purposes of accesing the website, student's desire learning, and student's interest in learning. The data obtained is then interpreted and described by researchers.

3. RESULTS AND DISCUSSION

3.1. Results

The results of a survey of respondents who were taken as participants in this study found that in the usage intensity section, students in general were able to access several mathematics learning websites during the Covid-19 pandemic.

Table 1. The Survey Results of Respondents in Usage Intensity

Indicators	Sub Indicators	Items	Frequency		Percentage (%)
			Score	Maximum Amount	
Usage Intensity	Understand student use of websites	I use the website in math learning activities	50	60	83,3%
		I use the website to find math subject matter	51	60	85%
		When doing assignments from teachers, I was not interested in finding information on the website	27	60	45%
	Understand the time to use the website	I access math learning websites when I have free time	40	60	66,7%
		I can't take the time to access maths learning websites every day	35	60	58,3%
		Total	203	300	338,3%
Total Percentage Amount					67,7%

Table 1 shows that the intensity of using the website by respondents is quite high. From this table, it can be seen that respondents often use the website when learning mathematics and looking for mathematics teaching materials. However, when using the website, some respondents still did not take full advantage of the website. This can be seen

from the results in the table, where only 45% of respondents access learning websites during their spare time and 58,3% of respondents have time to access learning websites every day.

The results of the survey of respondents who were used as participants in this study found that in the section on the purpose of accessing the website, most of the students understood the use of the website as a source of information and independent learning resources, so they always studied independently and found out things related to mathematics learning. Especially in conditions of the Covid-19 pandemic like this, students are required to learn independently by utilizing existing technology (see [Table 2](#))

Table 2. The Survey Results of Respondents in the Purpose of Accessing the Website

Indicators	Sub Indicators	Items	Frequency		Percentage (%)
			Score	Maximum Amount	
Purpose of Accessing the Website	Using the website as a means of information	I use the website as a means of getting the latest learning information	53	60	88,3%
		I use the website to find information on the latest movies and games	41	60	68,3%
	Using the website as a learning resource	I use the website as a substitute learning resource when the teacher cannot carry out face-to-face learning	50	60	83,3%
		I use the website as a learning resource and media to access math learning materials	53	60	88,3%
		I use this website as a complementary media to access learning materials and gain insight and knowledge about mathematics	51	60	85%
Total		248	300	413,2%	
Total Percentage Amount					82,6%

[Table 2](#) shows that many students use websites as learning resources during the Covid-19 pandemic. This can be seen from the results in the table, where around 83.3% of respondents access the website as a substitute learning source when they cannot do face-to-face learning activities, 88,3% use the website to access mathematics learning material, and 85% of respondents use the website as a complementary media to add to their insights. However, for the use of the website as information, there are still some students who aim to

access information on the website for entertainment such as playing games and looking for movies.

The results of a survey of respondents who were taken as participants in this study found that in the part of the desire in learning, most of the students showed a great desire to learn when using the website as an alternative to their learning media. The presentation of attractive material and information that is easy to understand is able to attract the attention of students to use the website in the learning process (see [Table 3](#)).

Table 3. The Survey Results of Respondents in Desire in Learning

Indicators	Sub Indicators	Items	Frequency		Percentage (%)
			Score	Maximum Amount	
Desire in Learning	Student's attention when participating in mathematics learning	I'm excited to use the website to find math learning materials	53	60	88,3%
		Using the website helps me understand math learning material	50	60	83,3%
		By displaying interesting material on the website, it makes me even more excited about the mathematics learning process	52	60	86,7%
		Learning math using the website makes me feel bored	21	60	35%
		I feel hopeless while working on math problems	23	60	38,3%
		Total			199
Total Percentage Amount					66,3%

[Table 3](#) shows that many students expressed their concerns when using the website. Website material is presented with interactive multimedia which is able to attract students' attention in learning mathematics. This can be seen from the results in the table that 83,3% of respondents better understand mathematics learning materials using websites and also only a small proportion of respondents feel bored when using the website as a learning media. This means that students' desire to learn is high enough when using the website as an alternative media for learning mathematics

The results of a survey of respondents who were taken as participants in this study found that in the part of interest in learning, most students showed their interest in using the website. The interactive presentation of material on the website can increase students' curiosity and enjoyment in the learning process (see [Table 4](#)).

. **Table 4.** The Survey Results of Respondents in Interest in Learning

Indicator	Sub Indicator	Items	Frequency		Percentage (%)
			Score	Maximum Amount	
Interest in Learning	Student's curiosity when taking mathematics lessons	I feel happy trying to do math problems using the website	50	60	83,3%
		If I have trouble understanding the material, I look for more information on the website	51	60	85%
		I postpone doing assignments given by the teacher even though I use the website	21	60	35%
		I am interested in finding other study materials on the website	52	60	86,7%
		I am not interested in learning mathematics because I am always given assignments	20	60	33,3%
		Total			194
Total Percentage Amount					64,7%

Table 4 shows that many students are increasingly curious when using the website as an alternative learning media. Many of them want to use the website for subjects other than math. This can be seen from the results in the table, 86,7% of respondents are interested in using websites for other subjects and 83,3% of respondents like to use websites when learning mathematics. Only a small proportion of them are not interested in using websites and learning math

Based on indicators 1 to 4, the total score can be visualized in the following table.

Table 5. Percentage of Website Usage on Student Learning Motivation

No.	Indicators	Percentage (%)
1.	Usage Intensity	67,7%
2.	The Purpose of Accessing the Website	82,6%
3.	Desire in Learning	66,3%

4. Interest in Learning	64,7%
Total	70,3%

Table 5 show the percentage of total indicators of using the website as a media for learning mathematics on student learning motivation. Based on the interpretation criteria of the modified students' learning motivation scores from Riduwan (2010) (see Table 6), the average percentage of student learning motivation is 70,3%. So that based on these results student learning motivation when using the website as a learning media can be categorized as high.

Table 6. Interpretation Criteria for Student Learning Motivation Scores

No.	Motivation Range	Interpretation Criteria for Mathematics Learning Motivation
1.	$0\% \leq \text{Motivation} \leq 20\%$	Very low motivation
2.	$21\% \leq \text{Motivation} \leq 40\%$	Low motivation
3.	$41\% \leq \text{Motivation} \leq 60\%$	Enough motivation
4.	$61\% \leq \text{Motivation} \leq 80\%$	High motivation
5.	$81\% \leq \text{Motivation} \leq 100\%$	Very high motivation

Based on these results, the use of websites as a media for learning mathematics can increase student motivation. The interactive presentation of material, easy-to-understand information, and easy access makes the website an alternative learning media which is quite effective to use during online learning. The use of websites in mathematics learning can increase students' enthusiasm and curiosity. So that the website can be used as an alternative learning media in the midst of this pandemic.

3.2. Discussion

In addition to discussing the use of websites as alternative media for learning mathematics for student motivation, this study will also discuss the selection of appropriate alternative learning media in the midst of this pandemic. In the findings of this study, there are two important points. First, this study shows that the website is a learning media to support e-learning; several previous studies have also shown that the website is a learning media that is often used in e-learning (Astuti et al., 2020; Dogan, 2016; Hamdunah et al., 2016; Lestari, 2019; Usta, 2011), however teachers still have difficulty applying math concepts on the website. This is because teaching math concepts is very difficult for teachers (Indriani et al., 2017; Maulydia et al., 2017), and also added to the factor of teachers who still have difficulty teaching online (Karal, 2015; Kebritchi et al., 2017; Wang & Ip, 2016). Many teachers have understood the selection of alternative media during the pandemic, including using Learning Management Systems (LMS) (eg Google Classroom and Edmodo) as well as facilities such as video conference (eg Zoom and Google Meet). Based on this, it means that many teachers have mastered the use of technology even before this pandemic. For the selection of appropriate alternatives during this pandemic, teachers must be able to adapt again and adapt the media to the needs of students. Website can be an alternative because it contains multimedia and the information conveyed is easy to understand.

Second, the results showed that many students used the website as an alternative learning media. Some of the existing indicators even show that student learning motivation increases with the use of websites as a media for learning mathematics. The use of multimedia in the form of audio, text, video, and animation increases student motivation during the learning process (Almarabeh et al., 2015; Leow & Neo, 2014; Maria et al., 2019;

2asrum & Herlina, 2019; Setiawan et al., 2015). Using this website can better support the online learning system in the midst of this pandemic besides using the Learning Management System (LMS) platform, video conferencing, and others (Djamdjuri & Kamilah, 2020; Handayani & Utami, 2020; Lubis & Sari, 2020; Nartiningrum & Nugroho, 2020; Putri & Irwansyah, 2020; Wiratomo & Mulyatna, 2020). Website is one of the media that can be accessed anywhere and anytime, this is one of the supporting factors to increase student motivation in using the website. The use of the website is also simple, by clicking on the website link students can directly link to the website homepage.

This study examines the use of websites as an alternative media for learning mathematics towards student motivation. it is not easy to choose the right media to use during this pandemic, there are many limitations and obstacles encountered in each lesson. However, teachers and students must be able to adapt to these changes, namely by trying to make optimal use of existing information technology, one of which is accessing the website to develop mathematical insights.

4. CONCLUSIONS

From results and discussion, we could conclude that: (1) Websites can be an alternative learning media during this pandemic. Based on the intensity of use and intended use, it is known that students are interested in using websites in the mathematics learning process, (2) The use of websites as a media for learning mathematics can also increase motivation. with an attractive presentation of material, easy access, and easy-to-understand information to make students more motivated in the mathematics learning process. Students' attention and curiosity when accessing mathematics learning materials on the website increases their learning motivation. The use of the website is also recommended for use in other subjects.

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