# The Development of Mathematics Learning Media Using Google Sites Web Based on an Integrated Contextual Approach to Islamic Values for Junior High School Students in Riau, Indonesia

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Abstract. This article explains about the development of Google Sites web learning media based on a contextual approach integrated with Islamic values in mathematics material for junior high school or Islamic junior high school (MTs), including number patterns, circles, statistics, the Pythagorean theorem, and building flat-sided spaces, which can facilitate students' learning. The product developed was tested in Islamic junior high schools or Islamic junior high school (MTs) in the Riau Province regencies, including Pekanbaru, Kampar and Indragiri Hilir, with the schools that have internet access. The research material for the Pekanbaru area is on Circles and Flat-sided Space Buildings, the Kampar area is on Statistics and the Pythagorean Theorem, and the Indragiri Hilir area is on Number Patterns. The data collection techniques used questionnaires and posttest questions with data types in the form of quantitative data and qualitative data. Based on data analysis from the learning media developed for the five materials above, it shows that the Google Sites web learning media based on a contextual approach integrated with Islamic values is in the valid, practical and effective category, where each material tested has an average posttest score for the experimental class which is higher than the average posttest score of the control class.

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## 1 Introduction

According to Sariono in Nafisah, Muhammad Nuh as the Minister of Education and Culture at that time argued that with K-13, teachers are no longer preoccupied with thinking about the syllabus, but teachers can be more free in developing creativity in teaching [1]. One of the teacher's creativity in developing creativity in teaching can be done by developing learning media. In order to facilitate successful communication and interaction between teachers and students during the teaching and learning process at school, learning media are instruments, strategies, and approaches used by them in teaching and learning process to achieve the expected goals [2]. The existence of this learning media can facilitate learning activities and make students interested and active in learning [3]. This is in line with the demands of the globalization and post-pandemic era, with the development of information technology can be utilized in developing learning media [4].

In connection with the teacher's efforts to develop learning media, where one of the teacher's creativity in improving the quality of education can be done by developing electronic teaching materials in the form of websites that have steps to improve student learning outcomes [5]. The results of research by Rikani et al (2021) show that the use of websites-based learning media if carried out actively and efficiently can improve student learning outcomes [6]. Web-based learning is a learning process where students are connected to each other at the same time via the internet. Website as a learning media can be accessed whenever and wherever they are without time constraints [7]. According to Ayu's (2020) research, it shows that students who use e-learning in the learning process are more excited and easier to access and understand the material than conventional students because the material delivered online is more interesting and can be accessed at any time. Not only students who can benefit from learning using the website, but teachers can also be more active because teachers have to update materials and assignments on the website. It can be concluded that the learning model using the website is the right solution to be implemented as a variety of learning in the current post-pandemic situation [8].

There are many applications that can be used in creating websites, one of which is a product developed by Google, namely Google Sites. Google Sites is one Google products that can be used to create e-learning website-based learning media. Google sites is a tool for creating sites. Users can utilize Google Sites because it is easy to create and manage by ordinary users. Google sites become an interesting tool to learn for many reasons. First, it is free. Second, it is easy to create. Third, it allows users to collaborate in its utilization. Fourth, it provides free online storage. Fifth, this site can be searched using the Google search engine. As a Google product, of course this Google site has full compatibility with other Google products such as: Gmail, Google Drive, Google Forms, Google Classroom, Youtube, and others [9].

On Google sites, teachers can provide learning materials, assignments, include syllabus, and so on. The learning materials provided are in the form of text, images, videos, online games as exercises during the learning process or not, so that teachers can vary them as a forum to facilitate student learning. Given the importance of mathematics in everyday life, Google sites web-based learning media will be more effective if it is associated with everyday life. The linking of learning materials with everyday life in the educational world is known as contextual. Contextual learning is an approach that involves students to be able to connect learning materials with everyday life [10].

According to contextual learning theory, the concept of learning assumes that children will learn better if the environment is created scientifically, meaning that learning will be more meaningful if children "experience" what they experience and learn not just "know" it. So that learning is not only centred on the teacher but how students are able to interpret

what they learn. In this case students also need to understand what learning means, what the benefits are and how to achieve them. So that they realize that what they learn will be useful for their lives later. In Contextual learning, there are seven main components, namely Constructivism, Questioning, Inquiry, Learning Community, Modelling, Reflection, Authentic Assessment [11]. Additionally, contextual approaches focus on students as active learners, and provide a wide range of learning opportunities for those who use academic skills to solve complex real-life problems [12].

There have been many researches about learning with a contextual approach, but those that integrate Islamic values are very rare, whereas the integration of Islamic knowledge in learning is a hallmark of Islamic educational institutions [13]. This implies that education is required to always be aligned with technological advances, but not included with the necessity to build the values and character of each student through Islamic values. This is unfortunate, because it is clear that there is a very high appreciation for those who believe and have knowledge compared to mediocre people. Furthermore, based on the research from Sari, Revita, et al (2020), in order to develop the ability of students with character based on the 2013 curriculum, teachers need learning tools that can help students foster positive Islamic characters [14]. Therefore, it is necessary for the world of education, not least in learning mathematics, to integrate the values contained in Islam values in every lesson. Islam needs the next generation of people who love and understand the content of the Qur'an and are not blind to science, especially science including mathematics. Islam will flap its wings more in the field of science and technology so that an Islamic generation that is Faith and Taqwa (IMTAO) and science and Technology (IPTEK) is formed, namely a generation of Muslims who believe and fear and master science and technology [15].

The goal of integration is to bring things together to form a whole or rounded part. An other definition of integration is an unbreakable union. According to the definition given above, integration is the attempt of a person to unite two or more objects into a single, cohesive whole. The attempt to integrate mathematics with Islamic religious knowledge while preserving the special characteristics of the two fields is known as integration of Islamic values in mathematics. The integration of Islamic values into mathematics education, whether through questions or materials, is the process of teaching and learning about Islamic ideals[16]. In this study, researcher used the Al-taḥlīl Al-īmāni Integration Model by Kadar, meaning a faith-based analysis, where science learning not only conveys and analyses science theories as science alone, but science learning also explains aspects of faith or shari`ah contained and relevant to the science material taught or discussed, thus the integration referred to by researcher here is the presence of elements of good values in learning mathematics [17].

Mathematics is one of the important fields of education in life, especially in the development of science and technology. Teachers need to provide learning experiences that are interesting and in line with student circumstances, so that learning is based on the demands of learning that are expected today. The goal of teaching mathematics, particularly in junior high school and Islamic Junior High Schools (MTs), is to enable students to comprehend mathematical ideas, articulate how ideas relate to one another, and use ideas or algorithms in a flexible, accurate, efficient, and precise manner when solving problems [18].

The subject matter that the researcher developed is the mathematics material of junior high school / Islamic Junior High School (MTs) at grade VIII of the 2013 curriculum, namely circles, statistics, number patterns, the pythagorean theorem and flat-sided spaces. From the five materials, there are some of the materials developed in accordance with the material needs analysis, such as the results of research conducted by Ariyani and Setiawan state that in solving number patterns VIII grade students have difficulty in determining the pattern in the problem and formulating generalizations from number patterns. Whereas

number patterns are one of the benchmarks of a person's academic ability because many number pattern concepts are found in the Academic Potential Test (TPA) questions [19]. In addition, according to Curriculum 2013, number patterns occupy a strategic position in learning because the concept of number patterns is very applicable in everyday life ranging from house numbering patterns, determining the number of seats in a building, calculating the value of savings, and others.

Furthermore, based on the research from of Zulfikar's, (2019) there are some students who have difficulty in understanding the concepts of the pythagorean theorem material [20]. The difficulties faced by students are found when solving problems related to the Phytagorean Theorem. Then, Ni Made Ari Tresnawati, 2021 [21]; Rikani et all. 2021 [22] states that Google Sites is a product from Google that can be used to create learning media based on e-learning websites. This media can be used to assist the online learning process because it is easy to create and manage without using programming languages and is easily accessible to users. This is also supported by research conducted by Delia and Indah (2021); stated about difficulties when determining the principles that often occur when solving a problem, here students are often mistaken in determining the right concept to solve the problem or problem. So that, student learning outcomes in solving problems related to phytagorean theorem material are still unsatisfactory [23]. Based on the results of discussions with several teachers, it shows that the mathematics learning outcomes of 8th grade students in Islamic Junior High School (MTs) / Junior High Schools in Riau are still low. This is happen because when learning takes place, students are less active in learning, and another reason because of the lack of interest of students in learning math, even though the school has adequate computer laboratory facilities and a good Wi-Fi network. To take advantage of existing computer facilities, the researcher conducted a research to develop innovative teaching materials, so that they could support the learning process and improve students' concept understanding of mathematics material. The teaching material used is learning media using web Google sites.

## 2 Method

The research used is development research (Research and Development), with the sample of this research is class VIII students in Islamic junior high schools or MTs in the Riau region. The selection of Islamic junior high schools/MTs for research is a school that does have internet access and provides a decent computer laboratory. The research design used is the ADDIE development model, where the model consists of five development stages which include (1) Analysis, (2) Design, (3) Development, (4) Implementation, (5) Evaluation [24]. The product trials were carried out by the researcher and validated by many experts in learning materials and educational technology, including mathematics instructors with graduate degrees from Riau and lecturers in mathematical education. The resulting product is in the form of mathematics learning media using web Google sites based on a contextual approach integrated with Islamic values on the material of circles, statistics, number patterns, the pythagorean theorem and flat-sided spaces, which utilizes several digital platforms such as YouTube as a learning video, then the author can also add images, animations, learning videos, power points, educational games and several other media that support it.

The data collection techniques used is questionnaires and tests. Questionnaires are used to collect data regarding the assessment of various validation aspects of a learning website such as content feasibility, presentation feasibility, and linguistic feasibility. Students are given questionnaires to complete in order to get their opinions about the Google sites that have been assessed for learning materials. In this case, the test consists of questions about how learning outcomes were evaluated in the control and experimental classes. Data analysis techniques used are qualitative descriptive analysis techniques. In this research, Qqalitative data is used to make improvements to web Google sites provided by validators, while quantitative analysis to describe the test results from respondents regarding the feasibility of learning technology products in the form of web Google sites learning mathematics given to class VIII students in Riau region. The development research conducted was tested in Islamic junior high schools or MTs in the Riau region including Pekanbaru, Kampar, and Indragiri Hilir. As for the Pekanbaru area, the material of the Circle and Flat-sided Buildings, the Kampar area of Statistics and the Pythagorean Theorem, and the Indragiri Hilir area of Number Pattern material.

## **3 Results and Discussion**

Here are the presentation of the results and discussion of the development of learning media using contextual-based Google sites integrated with Islamic material on the Circle, statistics, number patterns, pythagorean theorem and flat-sided space:

### 3.1 Analysis Stage

At the needs analysis stage, the material used in the google sites web learning media is the material of circles, statistics, number patterns, the pythagorean theorem and flat-sided spaces in class VIII, while the results of the needs analysis conducted by researchers in interviewing mathematics teachers in Islamic junior high schools (MTs) in the Riau region on the learning media applied in these schools that student learning is still not maximally facilitated, the state of students learning back to conditions without technology which this will affects the access to limited learning resources. So, it can interfere with the activities of the student in learning process.

Meanwhile, because learning resources are only limited to textbooks, it also results in a lack of student interest in learning. The unavailability of learning media that can be used as independent learning by students can make student passivity in learning. The existing learning resources show that students lack facilities in learning and students lack materials carry out discussion activities with other students which is one of the reasons for not maximizing the function of technology, especially digital technology in schools. Of course this shows that the phenomenon of the need for the use of technology has decreased or has not maximized its overall use, so it needs to be rearranged so that the use of technology can be maximized.

#### 3.2 Design stage

At this stage, researcher make learning media web google sites that will be developed and designed the instruments that will be used to determine the level of validity, practicality, and effectiveness. The variables and indicators used were modified from the National Education Standards Agency (BSNP) [25]. The developed media starts from cover design, logo design and learning activity design. The learning media design was made using the Canva online application. In the design stage, researcher combined various media such as: learning videos, calculators, educational games and google forms. The learning media that researchers developed is the result of umbrella research between lecturers and several students which can be accessed using the link Table 1.

Material	Link Web Google Sites		
Circle	https://sites.google.com/view/lingkaranterintegrasikeislaman/h alaman-utama		
Flat-sided spaces	http://bit.ly/3jYYP75		
T. Pythagoras	https://sites.google.com/view/pembelajaran- teoremapythagoras/halaman-muka		
Number pattern	https://sites.google.com/view/bangunruangsisidatar-		
Statistics	https://sites.google.com/d/104Y2fzNXUulwe4b5gBKGiQGg8 DLfz_Mb/p/1vorNxemcHxZASxgbj-eaWd-06Y5aRxZ5/edit		

The link from the results of learning media development products using web Google sites based on contextual approaches integrated with Islamic values is expected can increase student participation and activeness in learning mathematics.

#### 3.3 Developmental stage

At this stage researcher began to create learning media web google sites by using supporting applications to be integrated into the web google sites such as: microsoft powerpoint, pdf, youtube, wordwall and other online games or quiz, google form and liveworksheets. The researcher make learning media web google sites as interesting as possible and presented in such a way that can be used easily by students and teachers. Every animation or design on the web google sites is created using Canva, the media designed in line with contextual learning components that have nuances of goodness values (integrated Islamic values), so it can increase students' interest in learning mathematics. The following is a media display of web google sites that researchers make for each material as follows.

Lingkar.		anda Kata Pengar Pember Patemat	tar · Lingkaran ~ · Menu mater lajarar fika	Lainnyd-v Q
ME	NGGUNAKAN WEB GOOG	LE SITES BERBAS	SIS KONTEKSTUAL TERINTEGI MATERI	+ + + + + + + + + + + + + + + + + + +
SUN	Ê	MULAI		

Fig. 1. Circle material web view

Figure 1 contains the title for the Circle material, logo, names of researchers (umbrella research students and supervisors) and several menu options on the navigation bar.



Fig. 2. Web view of Statistics material.

Figure 2 contains the title for the Statistics material, and several menu options on the navigation bar.



Fig. 3. Web view of flat-sided space material

Figure 3 contains the title for flat-sided flat building material, the name of the researcher (umbrella research student and supervisor) and several menu options on the navigation bar.



Fig. 4. Web view of phytagoras theorem

Figure 4 contains the title for the pythagorean theorem material, and several menu options on the navigation bar.

POLA BILA	ANGAN TERINTEGRAS	HOME · MENU · Kata Pengantar · Pend	dahuluan · Absensi · Lainnya v 🔍
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<sup>ພ</sup> λ	Sebelum memulai belajar denga	an google sites ini, marilah kita berdoa terlebih dah	ىتە و ulu.
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50 <u>B</u>			8 <b>1</b> F

Fig. 5. Web view of number pattern

Figure 5 contains the title for the pythagorean theorem material, and several menu options on the navigation bar.

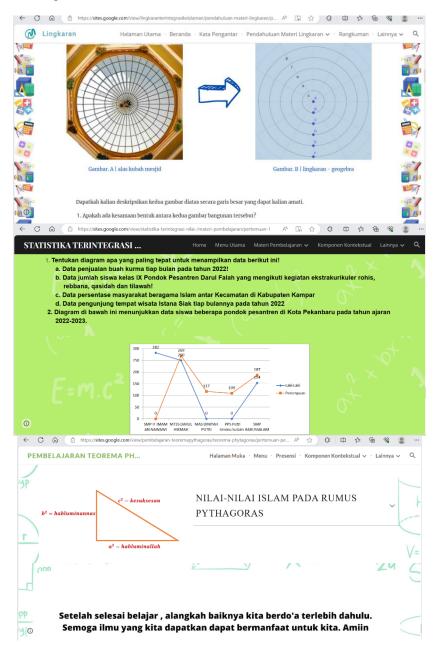
In every web of each materials, researcher create a student activity that applies contextual approach-based learning and project learning. By giving portfolio assignments and project assignments, teachers can assess students' actual performance and abilities. Therefore, authentic assessment can describe the development of students' abilities, both from the realm of attitudes, skills and knowledge [26]. The actual assessment is the part of one components from the contextual approach which can be seen as in Figure 6.



Fig. 6. The procedures of contextual approach

Figure 6 is about one of the websites where researchers made the steps of the contextual approach which contains seven components including constructivism, discovery, questioning, learning communities, modelling, reflection and authentic assessment. Researchers made the presentation of Google sites web media by following the seven contextual stages at each meeting, and used contextual problems related to Islamic values such as mosque building symbols, equipment and ornaments related to good values presented through images or Islamic phenomena, where the images / phenomena in

question can remind the students about good values that students can do / apply as presented in Figure 7.



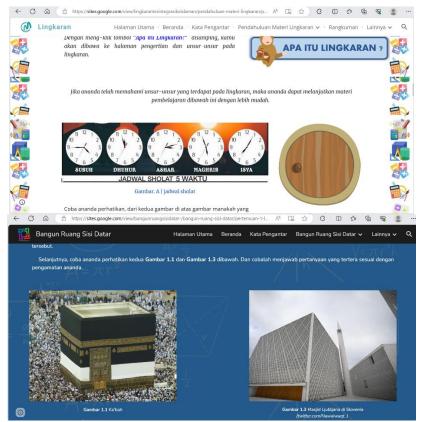


Fig. 7. Ornaments and contextual phenomena of goodness

#### **3.4** Implementation stage

An important stage after the product is finished is the validation stage carried out by learning material experts and educational technology experts. This stage is carried out by asking experts or people who are experienced in certain fields to assess the products designed by researchers, this statement is stated in Sugiyono's book [27]. At this stage, the learning media results were also tested which had been validated by the validator and had been revised according to the comments and suggestions given by the validator. The trial was limited to one class of VIII grade students in Islamic junior high schools or MTs in the Riau region. The trial of learning media was carried out by conducting learning with the help of contextual-based google sites web learning media integrated with Islamic values on Circle material, statistics, number patterns, pythagorean theorem and flat-sided spaces.

#### 3.5 Evaluation stage

At this stage, the final revision of the media is based on the suggestions and improvements from validators (material and technology experts), the Practicality test (the media is also revised based on the comments and suggestions of respondents/students after using web google sites learning media), and the results of the effectiveness test (average posttest). The following results of each material can be seen in Table 2.

Mathemati cs Material	Validity test		Praticality test		Effectiveness test (average)	
	Materi al expert	Technolo gy expert	Small group	Limited group	Experiment	Control
Circle	86.41	90	77.81	82.17	80.26	78.42
Flat-sided spaces	87.43	78	79.53	86.45	81.84	72.89
T. Pythagoras	81.50	80.28	90.13	81.68	86.02	74.01
Number pattern	95	87.56	87	85.46	86.05	79.5
Statistics	86.67	90	89.33	87.76	84.28	66.25

Table 2. Test validity, practicality, and effectiveness.

Table 1 shows that the results of validation by learning material expert validators for all materials are included in the very valid category, while for technology expert validators only flat-sided space building material is included in the valid category, the rest is in the very valid category, namely circle material, pythagoras, number patterns and statistics. In the small group Practicality Test, there are 2 materials, namely circles and flat-sided spaces in the practical category, the rest are in the very practical category, while for the limited group all materials are in the very practical category. In addition, the effectiveness of learning media web Google sites for all materials can be seen from the average posttest of the experimental class higher than the average posttest value of the control class. Based on the results of the effectiveness test of learning media using contextual-based web Google sites integrated with Islamic material on statistics material, it has been categorized as effective based on that tcount is greater than ttable. Thus, the results showed that the media was categorized as valid, practical and effective.

Based on the results that have been presented related to learning media, it shows that learning media can be used if it meets the criteria of validity, practicality and effectiveness, this is in line with the results of research from Maskur et al [28], state that the contextualbased web google sites mathematics learning media integrated with Islamic values developed has met the intended criteria. This proves that the learning media that has been developed can facilitate students learning mathematics, especially class VIII material. In terms of novelty analysis on the development of mathematics learning media web google sites based on contextual approach integrated Islamic values that the media products developed are in accordance with the achievements outlined in the independent curriculum, teachers can use this media as a portopolio for learning activities to be more effective and in accordance with technological developments and curriculum needs.

Related to the integration of Islamic values, the message or value of goodness that exists in the presentation of the concept of mathematical material is expected to improve the value of goodness (faith) in students during the learning process. So, the students can synergize towards a more characterful direction. The mathematical problems presented are Islamic phenomena that are close to students' experiences, so that students' mindsets can be formed starting from simple things to find mathematical concepts where learning activities are packaged more meaningfully because students are directed to construct their knowledge. Students can use this learning media wherever students are, including when students cannot attend / are unable to go to school, students can still take part in learning activities. In addition, the presentation of exercise questions is not menotonous because students can improve their abilities with online games or quizzes presented on the web without burdening electronic devices. And they can use it with a strong internet network without having to download applications and so on, thus it is hoped that future students will be more interested in participating in future math learning activities, this is also in line with the independent curriculum policy in 2022. From the habit of learning by using mathematics learning media integrated with Islamic values developed, it is hoped that it can be a motivation for teachers and students to make digital technology and internet facilities a facility that needs to be used for the advancement of education, especially the future Islamic generation so that an Islamic generation with IMTAQ and IPTEK is formed, namely an Islamic generation that is faithful and pious and masters science and technology.

# 4 Conclusion

In conclusion, the Google Sites web learning media based on a contextual approach integrated with Islamic values is in the valid, practical and effective category, where each material tested has an average posttest score for the experimental class which is higher than the average posttest score of the control class.

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