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The Journey of A Math: As a Mathematics Learning Innovation

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ABSTRACTS

In the era of the Industrial Revolution 4.0, science and technology played an important role in the future. Therefore, education is fundamental in the formation and development of human resources. Thus, they can contribute to the development of science and technology, especially in Mathematics. Mathematics has an important role in the future, but as is well-known Mathematics is one of the subjects that is considered difficult. Many students complain about this lesson for several reasons, such as the monotonous learning and the way the teacher does not vary. Thus, it is difficult to understand. To solve this problem, there is an innovation called TJAM. TJAM is an application that is devoted to learning Mathematics. The features of TJAM are as follows: MyMaths, Math Stories, FunMath, and MathUrgent features. The research method we use is qualitative. The purpose of TJAM is to make students like mathematics and not be afraid of mathematics because in TJAM students can find features that will help them in learning Mathematics. TJAM has an advantage when compared to similar applications, TJAM has the FunMath and MathStorie features where these two features will make it easy for students to learn mathematics. Through TJAM, students are expected to like math and be helped by the features provided.

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1. INTRODUCTION

The era of the Industrial Revolution 4.0 proves that the development of technology in the last century has been very rapid. This is because science is developing faster. In the era of the Industrial Revolution 4.0, science and technology played an important role in the future. Science and technology are one of the results of human thought to achieve a better life, which begins at the beginning of human life. Educational institutions, especially school pathways, must be able to accommodate and anticipate developments in science and technology. Teaching materials should be the result of up-to-date science and technology developments, both related to the results of obtaining information and how to obtain this information and its benefits for the community (Ariani, 2019).

Education is believed to be one of the fields that has an important and strategic role in the development of a nation. It has even become a dominant factor in the process of increasing national intelligence. As an innovative agent, education has a role in developing knowledge, disseminating it, disseminating it, and applying it. Meanwhile, as an agent of change, education has consequences for the application of educational innovation products, so that education becomes a catalyst for social transformation (Ningrum, 2016).

Mathematics as one of the subjects studied in school is felt to have an important contribution to the lives of students. By studying mathematics, students are trained to be able to think logically, critically, creatively, and in a structured manner. In the end, through this ability students can develop their mind sets, especially in problem-solving. Therefore, students should be able to think of learning mathematics as a fun activity (Dirgantoro, 2018). However, in reality, mathematics is considered a difficult and frightening subject (Harahap & Syarifah, 2015).

The pandemic covid-19 has made teaching and learning activities carried out online or known as Distance Learning. However, the existence of Distance Learning can also be used as a first step in utilizing technology for the learning and teaching process in the era of this 4.0 industrial revolution. The survey was conducted using google form by the author of 50 respondents who studied mathematics during distance learning. In the survey, the authors asked whether mathematics learning was difficult to understand during distance learning.

The survey results found that 90% of respondents had difficulty learning mathematics during distance learning. Most of the reasons are due to ineffective learning and lack of facilities in the learning process. So that students are less able to understand the material presented by the teacher. Also, respondents feel bored because the tasks given are more than face-to-face learning. From the above problems, the authors are interested in making the TJAM application which is innovative mathematics learning application that is equipped with several features, namely: MyMaths, MathStrories, MathUrgent, and MathFun. With the feature, MathFun is hoped that later students will not be bored in learning Mathematics.

2. METHODS

This study uses two methods, namely the qualitative research method with descriptive qualitative research to explore the response and the Research and Development method as a method used in the process of developing the TJAM application.

The descriptive method is a method in examining the status of a group of people, an object, a condition asset, a system of thought, or a class of present events. The research activity was a descriptive method with the main topic of learning mathematics by describing mathematics learning innovations based on the difficulties of learning mathematics during distance

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learning. In the early stages of research, researchers spread Google Forms to students and students who live in West Java and West Sumatra who take mathematics subjects or courses. Google form was distributed from 7 October 2020 to 10 October 2020 and received 50 respondents. The next step is to analyze the form that has been distributed and found that 90% of respondents have difficulty learning mathematics during Distance Learning.

After collecting and analyzing data from google form, the next step is to create a TJAM application using the Research and Development method. The Research and Development method is a research method used to produce certain products and test the effectiveness of these methods (Hanafi, 2017). The focus of the Research and Development method in this study is on the development of the TJAM prototype that the researchers created as a mathematics learning innovation. The research procedures in the Research and Development method are in **Figure 1**. The data collected is in the form of primary data and secondary data. Primary data was obtained by filling in the google form that the researchers distributed. Meanwhile, secondary data were obtained by studying literature from various available media.

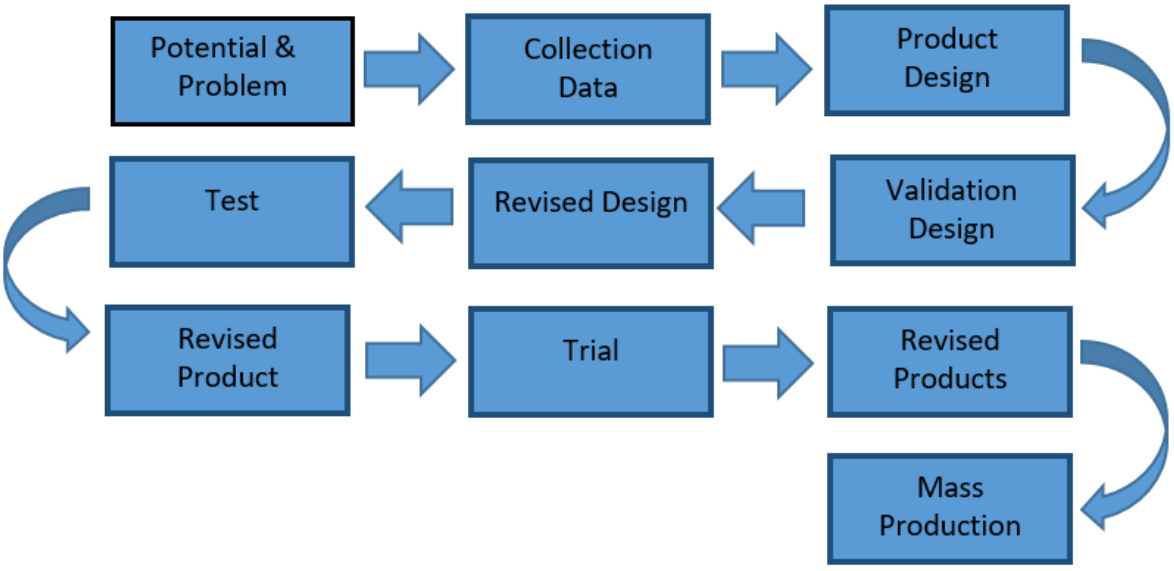

Figure 1. Research algorithm

3. RESULTS AND DISCUSSION

3.1 The Journey of A Math (TJAM)

The Journey of A Math (TJAM) is an application that contains various features related to mathematics. This is based on a survey we conducted of 50 respondents which stated that 90% of respondents experienced difficulties in learning mathematics during distance learning. Therefore, we created a learning media that is expected to be able to make it easy for students, especially high school students or the equivalent, to learn Mathematics. An overview of the TJAM application can be seen in **Figure 2**.

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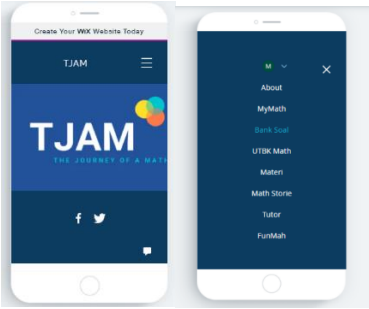

Figure 2. TJAM Application

3.2 Making the Design TJAM Application

The manufacturing procedure of design the TJAM application is presented in **Figure 3**. The procedure for making the TJAM application.

Making the TJAM application has 4 procedures before it can be used, such as the above procedure, which we have to do in the first stage can be seen in **Figure 4**, namely preparing the design needed for use in the application.

Making the design of TJAM itself has four steps: the first thing that must be prepared to make a design application is what we will use in making design, here we use the Canva application. After opening the Canva application, the next step is for the author to choose a template login the Canva feature, after selecting the logo feature, the author can immediately make a design from TJAM itself, and the last step, when finished designing, don't forget to download the results design in Canva. The second step when you already have a design for the application is to create a design application. In **Figure 5**, there are steps for making an application design. Here the author uses wix.com to design the TJAM application.

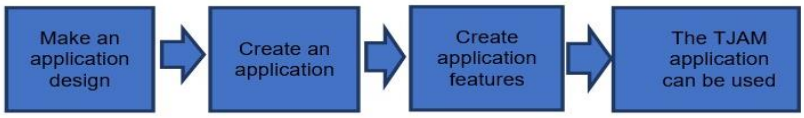

Figure 3. The procedure for making the TJAM application

Figure 4. The steps to create design TJAM

Figure 5. Steps for making the TJAM application

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In making design the TJAM application, we use wix.com in designing the application. The first step that must be done is to open the Wix.com application then after that choose to create a new design after choosing to create the next step is to choose this design including the depth of business features or others. The next step is that you will be given the option to make your design owner according to the template provided by wix.com and the final step is that we can create features in the application.

The third step is to make features in the design application, and **Figure 6** shows the steps of creating a feature.

In making the feature there is only one step in creating the feature, namely, we can make the features prepared by selecting the options site menu and the features can already be accessed. The features in this application aim that students when learning mathematics to be fun and not stressed when learning mathematics and the fourth procedure when it has features, the TJAM application can be tested for use.

3.3 Features of the TJAM

Application The TJAM application has 4 features, consisting of MyMaths, MathSories, MathUrgent, and MathFun features. **Figure 7** provides a display of the feature MyMaths.

MyMaths is a feature in the form of mathematics that wherein features MyMaths this is material, a question, the answers and the last is a matter of UTBK Mathematics. In MyMaths students will not only find discussion of the material but there are discussions through visual novels that will make it interesting in explaining the material later.

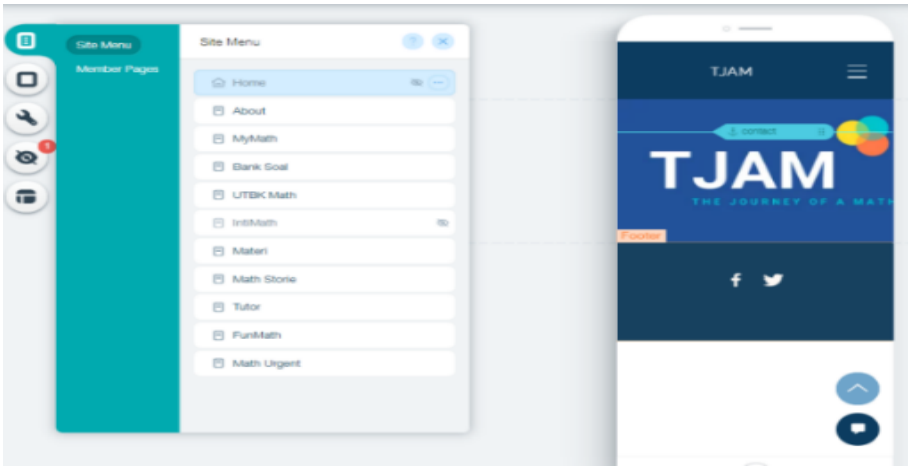

Figure 6. Steps to create the TJAM feature

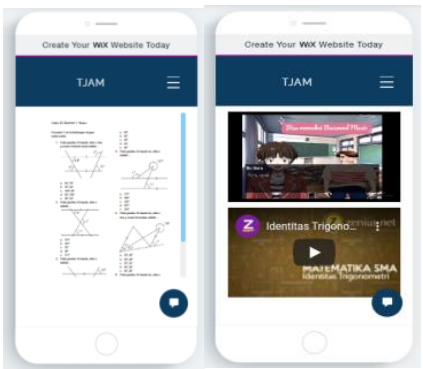

Figure 7. Feature MyMaths

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The second feature is MathStories, which is a mathematics learning consulting service. This consultation is a two-way interaction between tutors and students using the TJAM application. This feature will provide you with a short profile related to the math tutors who have joined the TJAM app.For tutors, it will be expanded with the opening of a program volunteer that is open to all of Indonesia. This is expected to be a collaboration in providing more in-depth information and knowledge related to mathematics in the future that will answer or help students who have difficulty learning mathematics. **Figure 8** shows a display of the MathStories feature.

The next feature is Mathurgent which contains messages or directions regarding the importance of us studying mathematics. The message conveyed in the application TJAM is also visualized very interestingly, either in video or animation. Apart from these features, we also complete the feature MathFun, which can be a temporary resting place after learning to use this application. Apart from games, there are web novels or digital comics that have wisdom in them. **Figure 9** shows a view of the feature Mathurgent & MathFun.

Figure 8. Feature MathStories

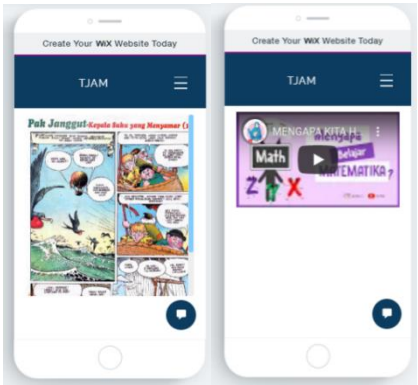

Figure 9. Features of Mathurgent & MathFun

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3.4 Advantages of the TJAM

The TJAM application is also an implementation of the e-learning process. With current technological advances, it is possible that these applications can have a positive influence on its users. The TJAM application is easily accessible anywhere and anytime. The ease of use and access to the application, of course, is an added value that the TJAM application has. Also, many existing features and well-packed and attractive materials complement this application. The MathFun features make the TJAM application superior to other similar applications. Because with this feature, it is hoped that students can play while learning mathematics.

4. CONCLUSION

TJAM (The Journey of A Math) is an application that contains various features related to mathematics. The manufacturing procedure of design the TJAM application consists of 4 stages, namely: Creating a design application using the Canva application. Then made the TJAM application and researchers used wix.com to create the application. After that, the researchers added features to the TJAM application. And after adding the features, the TJAM application is ready to be tested. The TJAM application has 4 features, namely: the feature MyMaths which contains mathematics learning material, the feature MathSories which provides consulting services for learning mathematics, the feature MathUrgent which contains messages or directions regarding the importance of learning mathematics and the feature MathFun which can be a temporary resting place after learning to use this application. This feature MathFun contains games, web novels, or digital comics that have wisdom in them. The advantage of this application is that it is easily accessible anywhere and anytime. This application is also easy to use and access. The feature MathFun makes the TJAM application superior to other similar applications.

5. ACKNOWLEDGEMENTS

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6. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. The authors confirmed that the paper was free of plagiarism.

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