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E-Book Based Kvisoft Flipbook for Mathematical Creative Thinking Skills

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Abstract

In this paper, we present the results of research using Kvisoft Flipbook for Mathematical Creative Thinking Ability. The development, implementation, and evaluation stages were adopted from a quasi-experiment using 30 samples obtained from purposive sampling technique. The design used is a one-group pretest-posttest design. This study aims to see students' mathematical creative thinking skills in learning which is measured directly through observation, which is facilitated by an e-book based on Kvisoft Flipbook, and find significant results after using an e-book based on Kvisoft Flipbook.

Keywords
e-book; mathematical creative thinking skills; kvisoft flip flipbook

I. Introduction

The development of information and communication technology brings many consequences for the world of education. Changes in the characteristics of students, the format of learning materials, patterns of learning interaction, and the new orientation of the 21st century require a more interactive classroom. To be part of the era of the industrial revolution 4.0, education reform is needed to improve the quality of education. Using technology in learning is one of them. The Industrial Revolution 4.0 is the fourth generation of the industrial revolution which is marked by the emergence of supercomputers, smart robots, and other uses of the internet that can replace humans with computers..Therefore, lecturers have been encouraged to improve their ability to combine knowledge with technology. Digital literacy is an important skill to have. Lukum (2019) say thatHaving the ability to use digital tools and behavioral skills in utilizing science and technology are some of the responsible solutions to face educational challenges in the millennial era. Admittedly or not, 21st century students often get more actual information than the material presented by the lecturer. Students can study anywhere and anytime with a wide selection of learning materials. One of the significant effects of technology is the accessibility to digital learning resources that are easily found to meet the diverse needs of students. ssIn order to provide good quality learning, lecturers must compete competently in creativity and start from themselves.Creative in thinking to present the material well. This is in line with what was said Dwi Wiwik Ernawati et al. (2019) thatCreative thinking is an act of thinking to build ideas in solving problems. It increases self-confidence, academic achievement, and career achievement.

Teaching materials as one of the learning tools are considered important in distributing knowledge to students. According to Sultan et al., (2020) The development of teaching materials that utilize technology is considered more attractive when it offers ease and efficiency in its use. This really supports the learning process, especially if learning has to be done remotelyIndariani et al. (2019). Generation Z wants freedom to learn, likes

practical new things, always connected to the internet, prefers visuals over verbal, short attention span, likes to interact with many media, likes to collaborate and share but still maintain their privacy. Lecturers must change the paradigm that not only focuses on content but also focuses on developing creativity and independent learning skills. The role of the lecturer is more as a mentor, facilitator, resource person, and learning partner.

Teaching materials as media and learning methods are very meaningful in adding and increasing the effectiveness of learning. The development of teaching materials is strongly supported by science and technology. One of the teaching materials that are quite practical and do not require a lot of money to get them are non-printed teaching materials based on electronic book assistance applications (e-books). The use of digital books is very strategic and can overcome the weaknesses that exist in printed books. According to Restiyowati et al. (2012) Currently, there are many learning resources in the form of books, which were originally in the form of textbooks and developed into e-books. More, explained Yayi FP & Yuliana A (2019) that with e-books, students are not only motivated during the lesson but also motivated to learn outside the classroom and experiment with the material presented. Many devices such as smartphones with large cell phone storage capacity support reading e-books. So that more and more e-books can be stored on the cellphone and can be read at any time. Moreover, e-books are more in demand for practical reasons, there is no need to carry books physically, very suitable for the world of education. For this reason, there are many applications that are built to create e-books with a variety of views. This research was conducted using Kvisoft Flipbook Maker.

II. Review of Literatures

2.1 English Capacity Building

Sugianto et al. (2017) explain thatKvisoft Flipbook Maker ispowerful software designed to convert PDF files to flip page digital publications. This software changes the appearance of pdf files into reading books, magazines, flipbooks, and catalogs. Equipped with features that can insert video, audio, and animation. This application makes e-books an interesting interactive medium. The output of this application is HTML, EXE, ZIP, and APP. This application has the advantage of being able to make teaching materials that are usually monotonous with words, are now more interesting because they can contain video, audio, and motion animation. In addition, the application says Wibowo & Pratiwi, (2018) Kvisoft flipbook makerit can also be accessed offline so it does not require additional costs. With its advantages, digital books or better known as e-books are more efficient in their use and can affect the level of understanding of readers.

To be creative students, they must be supported with some creative applications. In this study, interactive media were designed to improve students' mathematical creative thinking skills.Zuhair Zahid & Pati (2017) stated that this implies the importance of developing mathematical creative thinking skills through creative activities in learning mathematics. Creative thinking is a process that involves the elements of (1) originality, (2) fluency, (3) flexibility, and (4) elaboration. Sumarni & Kadarwati (2020) stated that creative thinking skills are significant cognitive aspects that are becoming important in many disciplines as important as critical thinking skills. This shows that creative thinking can increase the power of thinking which includes insight with broad elements.Ripple & Jaquish (1981) stated from their research that one's education was the best predictor of fluency, flexibility, and originality. A person's education level accounts for the largest proportion of the variance. It's like a causal relationship that is interconnected with each

other. A person's creative level is strongly influenced by his education level, and to increase a person's level of education, it must be supported by the knowledge gained from studying, reading, and interacting, all of which can be obtained in the presentation of e-books.

Creativity is the ability to create something new, whether it is really something new or something new ideas are obtained by connecting several existing things and making them new. Creative thinking is one of the characteristics that must be owned by a social innovator. Creativity itself is actually not an easy concept to define. As a complex phenomenon, creativity has resulted in very varied research approaches, with their own methodologies.

Mathematics is one of the main subjects in the field of school education. In addition, mathematics is a science that is also needed is solving problems of everyday life (Sipayung, 2020). Mathematics as a basic science is one of the subjects that play an important role in every level of education as a means of logical, critical, analytical, rational and systematic thinking (Rambe, 2020). Given the importance of mathematics in the realm of life outlined above, mathematics education must employ the appropriate strategy to ensure that the concepts ingrained in students' minds are not readily forgotten or even survive for life (Junaedi, 2021). Anggoro (2015) said that the development of learning modules was able to measure the level of students' mathematical creative thinking abilities. Mentari (2018) in his research also showed that after the e-book was applied to 30 students, it was found that 63% of students were able to think very creatively, 23.3% were able to think creatively and the rest were stated to be quite creative. Based on these results, a research will be conducted on whether the use of e-books based on Kvisoft Flipbook Maker can improve students' mathematical creative thinking skills at Medan State University.

III. Research Methods

This study is a quasi-experimental study with a one-group pretest-posttest design with only one class used in this study. Students in the class will be given a pretest before treatment and a posttest after treatment (Figure 1).

O1	X	O2

Figure 1. *Quasi Experiment Design One Group Pretest-Posttest Design*

In Figure 1 above, O1 is assumed as the implementation of the pre-test creative thinking skills, X as the Kvisoft maker flipbook based on the e-Book application, and O2 as the implementation of the post-test creative thinking skills. Mathematical creative thinking ability test is given in an essay test with 4 questions. A total of 30 mathematics education students who were in the digital learning media practicum class were taken as research subjects. Selected by non-probability sampling method, sampling is done by convenience sampling (Creswell, 2012). The convenience sampling technique was chosen on the grounds that the researcher could only examine the class led by the researcher. Therefore, the sample may not be obligated to be representative of the population and this explanation applies only to the sample taken. Data in the form of pre-test and post-test values will be analyzed quantitatively. The normality test used is the One-Sample Kolmogorov-Smirnov Test and because the data comes from the same sample, it is clear that the data is homogeneous. And if both prerequisites for parametric statistics are met, then test the difference using Paired Sample Correlations. The increase in the value of

creative thinking skills is calculated using N-Gain. The test is Effect Size which is used to determine the effectiveness of Kvisoft Flipbook Maker-based e-books. Data analysis calculations were performed using IBM SPSS 22.Sawilowsky, (2009)

Table 1. Normalized Interpretation

Get Normalized Profit Value	Interpretation
0.70<g< 100	Tall
0.30 <g < 0.70	Moderate
0.00 < g < 0.30	Low
g = 0.00	No upgrade
-1.00 <g < 0.00	There is a decrease

Table 2. Interpretation of Effect Size

Interval Coefficient	Relationship Level
0.00<d < 0.199	Very weak (Sawilowsky)
0.20 < d < 0.499	Weak (Cohen)
0.50 < d < 0.799	Medium (Cohen)
0.80 < d < 1.199	Strong (Cohen)
1.20 < d < 2.00	Very Strong (Sawilowsky)
2 or more	Very Strong (Sawilowsky)

The development model used is the ADDIE model, this model includes Analysis, Design, Development, Implementation, and Evaluation. The results of this research development resulted in a book about digital-based learning media in the form of hardcopy and e-books. This product is assessed by experts (materials and media), then a trial is conducted to determine the effectiveness of learning using teaching materials.

IV. Discussion

4.1 Results

a. Description of Analysis Phase Results (Analysis)

The purpose of the analysis phase is to determine and determine the needs in the learning process so that quality interactive teaching materials are produced according to needs. This stage consists of curriculum analysis, student analysis, and system requirements analysis.

The initial stage of this research is to analyze the digital-based Learning Media Practicum course. This course is present in the Mathematics Education Study Program. Based on the experience of researchers, this was done with the aim of producing teaching materials according to current needs and conditions. The current pandemic period forces us to be able to create something digital-based, namely e-books. The results of the curriculum are analyzed, the material from this course is in the form of a practicum with the aim of mastering several applications that will later help students as prospective teachers to create various good learning media and attract the attention of students. Therefore, this teaching material will be equipped with explanations, pictures, and links that are directly connected to Youtube for video tutorials. It is hoped that by using this teaching material, students can understand even though they have to study independently. This e-book is designed using the kvisoft maker flipbook. This application has the advantage of being able to make teaching materials that are usually monotonous with writing more interesting because they can contain animated videos, audio, and motion. In addition, the kvisoft maker flipbook

application can also be accessed offline so it does not require additional costs. The impact is that students can learn and practice using only their fingers, without being limited by space and time. This application has the advantage of being able to make teaching materials that are usually monotonous with writing more interesting because they can contain animated videos, audio, and motion. In addition, the kvisoft maker flipbook application can also be accessed offline so it does not require additional costs. The impact is that students can learn and practice using only their fingers, without being limited by space and time. This application has the advantage of being able to make teaching materials that are usually monotonous with writing more interesting because they can contain animated videos, audio, and motion. In addition, the kvisoft maker flipbook application can also be accessed offline so it does not require additional costs. The impact is that students can learn and practice using only their fingers, without being limited by space and time.

Nowadays, it is important for students to not only have the will to learn but also have good abilities as well. One of the abilities that will be trained through these teaching materials is the ability to be creative. Through these digital teaching materials, it is hoped that students will be motivated to learn to master technology and produce works/products from outside the subject with high creativity. With this e-book, students are more creative to compete positively with their friends and eventually become their stock in the world of work.

b. Description of Planning (Design) Stage Results

After conducting the analysis, the next step is to design a solution to the problem that has been identified. Based on the analysis stage, the solution chosen is to develop e-book teaching materials based on Kvisoft flipbook maker as one of the reference book choices.

c. Description of Development Phase Results

After carrying out the digital book design stage, product development is carried out. As an early part of the preparation of the e-book, we designed the cover of the book containing the title, author's name, and images related to the material. The book contains a preface, table of contents, and 11 practical materials. Indicators and material achievements are in accordance with the content of the syllabus used and the current needs of students. The material description is equipped with supporting images and links that are directly connected to Youtube to view video tutorials and this e-book can be opened by users when they are offline. For the last part, our reference list consists of books, journals, as well as websites.

d. Description of Implementation Phase Results

At the implementation stage, the e-book that has been developed is validated by material experts and media experts. After the validator states that this e-book is suitable for use, a trial of the e-book is carried out on the respondent's learning to see its practicality and effectiveness. Aspects of the relevance of the material obtained an average of 3.30 from three validators. The consequences for the category are valid and feasible to use. For the results of the validation of the media aspect, the percentage of validators is 82.96%, with reference to the level of validity, which is included in the category of quite valid and feasible to use. The small-scale field trial stage was carried out by conducting an assessment through a questionnaire for the appearance, content, language and use of the e-book and obtained a percentage of 90%, with reference to the level of practicality, it was included in the very practical category. The results of this assessment indicate that the developed e-book has received a good response from students and can be continued for

large-scale field trials. And the results for large-scale field trials show that the percentage obtained is 85.54%, with reference to the level of practicality, it is included in the "very practical" category. This shows that the developed e-book received a very good response from students who have studied using this e-book. Analysis of the effectiveness of the developed e-book can be seen based on student mastery tests related to the material that has been taught. It is said to be effective if 75% of student test results meet learning mastery, namely 80. As a result, all students are complete in learning, where the lowest score is 84, exceeding the minimum completeness limit, which is 80 with an average class value of 88.58. Thus, based on the test scores carried out by students, the Kvisoft Flipbook Maker-based math practicum e-book proved to be effective in the learning process.

Normality of data distribution was calculated using IBM SPSS 22 with N = 30 and $\alpha = 0{,}05$. We got the asymptotic significance value for the 2-tailed hypothesis equal to 0.200 which is less than the 0.05 level of significance. Furthermore, from the t-test, we can calculate the effect size of difference, namely the t-test value of 16.784 divided by the square root of the sample size. It is present in table 3 below:

Table 3. Average Pretest and Posttest Scores, N-gain <g> Values, and Effect Sizes

Middle		***Get*normalized**		***Effect size***	
Prelim inary test	***posttest . test***	***<g>***	**Criteria**	***d***	**Interpretation**
65.92	88.58	0.65	Moderate	**3.064**	Very strong

As shown, the gain score of 0.65 is in the range of 0.30 <g < 0.70 with a value of*effect size*3064 and this is interpreted very strongly.

e. Description of Evaluation Stage Results (Evaluation)

Based on the percentage of practicality obtained 85.54% and included in the very practical category, the results of this assessment indicate that the e-book developed has received a very good response from students who have used this e-book. All students are also complete in learning, where the lowest score is 84, exceeding the minimum completeness limit, which is 80 with an average class value of 88.58. Thus, based on the test scores carried out by students, the Kvisoft Flipbook Maker-based math practicum e-book proved to be effective in the learning process.

4.2 Discussion

Mathematical creative thinking ability is a common problem in the teaching and learning process. Because we need this ability in many aspects. This is an ability that is close to the learning process. Ernawati (2019) also tried to identify the mathematical creative thinking of students without treatment and found that only 41.6%, 40.4%, 43.1%, and 43.1% of 188 students each had good categories for indicators of fluency, flexibility, initially , and elaboration. This means that students' mathematical creative thinking skills are in the low category. In many subjects, especially mathematics, to solve complex mathematical problems always requires mathematical creative thinking skills. Yaniawati, P (2020) have explained that these skills must be built in the minds of students to generate innovation in various problem solving. So why do we need to develop these skills in a multi-media practicum class? With the enormous need for technology that can be used immediately and quickly to help solve everyone's problems, especially as students, these skills are needed to encourage them to be creative in developing the use of digital media applications that support the learning process. For that, we raised this ability as a focus to

be built in a creative way in learning media. According to Septian, A., (2020), mathematical creative thinking skills with the Android-based GeoGebra application are better than ordinary learning.This supports the statement that mathematical critical thinking skills can be built using interesting media. Scott, G., (2004) stated thatmedia dissemination strategies contribute to successful creativity training. Besides that, Hansen (1994) stated thatIn Hughes' view, critical thinking is a skill, to evaluate arguments, outside the context of clear formal logic, to sound standards.

We developed this reason by making an e-book. Focusing on the test to be distributed to students, we take the validity of the instrument. As we know that the instrument must be specially made, to ensure unbiased data. However, because the correspondents are mathematics students who were not randomly selected, it is possible that there may be confounding variables and biases that threaten the internal validity of a research design. In addition, this study was only conducted in one class. So that the data used is only pre-test and post-test data from that class. This is done to see if there is an increase in the mathematical creative thinking ability of the treated class. And resulting in the data will be paired with one population data. When talking about paired data, the first thing that can be claimed is that in this case no homogeneity test is required. The results of the data normality test from the Kolmogorov-Smirnov test stated that the two groups of data were normally distributed. The results suggest that these data can be further analyzed using a t-test to find the relationship between the two groups of data. It was found that there was a significant effect as a result of the treatment given in the classroom, namely the provision of e-books as a substitute for printed guide books as learning media.Kumbhar (2018) say we are on the trend of using e-books refers to the use of printed books, and that will continue as technology advances. Therefore, the Kvisoft Flipbook Maker-based e-book is presented with all its advantages for both readers and writers. For the reader, the attractive display, and the videos that make it possible to be included in the book, as well as the ease of accessing this book, are very helpful in understanding the content and purpose of the book. As for writers, the output that can be generated from applications in the form of HTML, EXE, ZIP, and APP can help authors produce more than 1 output in one work and provide freedom for writers to express themselves. All these advantages motivate us to use this application. Based on the results, there was a significant difference between the mean of the two tests. The correlation value is 0.376 and p-value is 0.041. The p-value is slightly lower than our significant level of 0.05. However, it does not necessarily conclude that the two tests have a causal relationship. However, in general, the existence of a correlation is not sufficient to conclude that there is a causal relationshiphowever there is a correlation between the two tests. The t-value says that there is a very large mean difference between the two tests. This shows that our way of proving that the use of e-books as a learning medium is successful. By examining the N-gain value, how effective the e-book is to improve students' mathematical creative thinking skills is 0.65 in the medium criteria and the score is 0.65 *effect size* is 3.064 and this is interpreted very strongly.

V. Conclusion

From the research activities that have been carried out, a mathematics practicum learning design is produced using an e-book based on kvisoft flipbook maker to improve students' mathematical creative thinking skills. This design is applied to a digital book that has gone through product validation, namely material validation and media validation. The results of both validations are in the valid category, which means they are feasible to use.

E-bookwhich was developed received a very good response from students who had studied using this e-book with a student response percentage of 85.54%, and was included in the very practical category. Based on the tests given, all students are complete in learning, where the lowest score is 84, exceeding the minimum completeness limit, which is 80 with an average class value of 88.58. Thus, based on the test scores carried out by students, the Kvisoft Flipbook Maker-based math practicum e-book proved to be effective in the learning process.

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