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Analysis of the Need for Mathematics Teaching Materials "Digital Comic Based on Islamic Values" for Class X SMA Students in Era 5.0

Niswatun Hasanah[1], Mohammad Syaifuddin[2], Rani Darmayanti[3], Akhsanul In'am[4]

[1, 2, 3, 4] Universitas Muhammadiyah Malang, Indonesia
Correspondence: ✉ syaifuddin@umm.ac.id

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Abstract

In modern Industrial Technology 5.0, educators are challenged to develop the ability to create learning media for use with technology support. Comics are top-rated among teenagers, including high school students. One type of comic is digital comics, which was once a global trend that served as a suitable learning medium. This type of research is research and development (R & D) using 3D research methods (definition, design, development). In this study, researchers were limited to the definition stage. The equipment used in this study was a questionnaire to analyze the needs of Class X teachers and students and nine math teachers in MAN 2 Malang. Based on the survey results, it can be concluded that students need digital comic learning media based on Islamic values of inverse functional materials. This is based on data that 81.7% of respondents strongly agreed and 83.5% of teachers strongly agreed that developing digital comic learning media based on Islamic values was necessary to motivate them to learn.

INTRODUCTION

Introduction Society 5.0 is a society that can overcome various challenges and social problems by utilizing various innovations that were born in the era of the industrial revolution 4.0, such as the Internet of Things (IoT), Artificial Intelligence (AI), Big Data, and robots to improve the quality of human life, one of which is by changing people's perceptions of education [1]–[3]. The changes made are far more significant than changes in teaching methods; they are changes in the perspective of the concept of education [4], [5]. Students are millennials who grew up in the digital era. Students are familiar with the flow of information and industrial technology 5.0 [4]. This is a significant challenge for educators, especially teachers and pre-service teachers [5]. So teachers and prospective educators must continue to learn to improve their competence in dealing with millennial generation students by utilizing technology, which will make learning activities more effective and efficient to attract students' interest and motivation to learn by using suitable teaching materials.

Teaching materials are one learning resource used in learning and can also be regarded as learning media, where technological advances in education can simplify and streamline the learning process [6]–[10]. Learning media can convey messages through various channels, stimulating students' thoughts, feelings, and willingness, thus encouraging the creation of a learning process

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and the achievement of learning objectives [11]. One approach to constructing education so that learning objectives are expected to be achieved in the industrial era 5.0, educators must also be able to develop skills in making learning media that will be used [12], [13]. This increases learning resources by including digital comics as learning media [14]. Educators will use digital comics to interact with students while they are learning, one of which is in the mathematics learning process.

Many studies have found that digital comics in mathematics learning have enormous potential to improve the teaching and learning process [14]–[18], whose findings will be presented in is article's results and discussion section. Because digital comics can project in real-time and involve the interaction of all five senses of students, learning media with digital comics can improve the learning process and student interest in learning [15]. "The more senses involved in the learning process, the more effective the learning process," according to Koehnert's Theory [17]. Learning media can increase students' learning power because of the stimulation of interest in students to learn. Digital comics as learning media are designed to be exciting and communicative with students, encouraging students to engage in multi-sensory activities (activities that require more than one sense) [18].

Based on interviews with educators and several students at MAN 2 Malang on June 18, 2022, the learning process at MAN 2 Malang will continue to use textbooks and worksheets. 2) Comic-style digital learning media have never been developed by teachers or other researchers for use in Class X.3) The use of media in the learning process is as follows: always classic, 4) teachers still do not have learning media with Islamic values, especially eyes mathematics lessons, 5) and teachers still rarely combine material with Islamic values in the learning process.

Based on the problems raised, an alternative solution is needed in the learning process to overcome these problems. One of them is to create learning media that meet the requirements of the 2013 curriculum and the characteristics of the material presented. This study is based on the issues and facts in this field, and related studies, by integrating Islamic values as a medium for learning mathematics into materials within the scope of mathematics that is compatible with digital comics learning media. Carry out development. It is overcoming problems and meeting existing needs with learning media in the form of digital comics effectively used as facilities and infrastructure to support the learning process.

However, before determining the learning media, researchers must first analyze the needs of students to develop comic learning media as alternative learning media that can be used later. Based on the explanation above, the research question is whether it is necessary to develop digital comic learning media that contains Islamic values to motivate learning inverse function material. Based on these problems, this study aims to analyze the need for developing digital comics learning media based on Islamic values to motivate learning inverse functional materials.

METHOD

This research was conducted in MAN 2 Malang City in June and July of the 2022/2023 academic year. The population in this study were all students and mathematics teachers of class X at MAN 2 Malang City. There are 390 students in class X and nine mathematics teachers. Sampling was carried out by researchers using purposive sampling, namely the sampling technique by taking into account unique factors. Samples were taken based on the results of students' daily tests. The observation and questionnaire technique is a data collection technique used in this study. The

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research instrument used in this study was an observation sheet, a questionnaire filled out via google form to analyze the needs of teachers and students regarding the development of Islamic value-based comic education media to increase motivation to learn about the inverse function. This study uses descriptive analysis to analyze the data.

The results of the needs questionnaire were analyzed using a measurement scale related to one particular scale, namely the Guttman scale. The Guttmann scale consists of multiple choice and a checklist with score interpretation. A correct positive statement is given a value of 1, and if it is incorrect, it is given a value of 0, while for negative statements, it is vice versa; if it is true, it is given a value of 0, and if it is wrong it is given a value of 1, it can be seen in Fig Table 1,

Table 1. Calculation of the Guttman scale

Scale Score	Evaluation
1	Agree
0	No

Then use the following formula to calculate the percentage for each question/statement. The percentage formula is obtained from the number of respondents' answers in one item divided by the number of outstanding values in the item, and then the result is multiplied by the value of one hundred percent (Harun & Suparman, 2019).

After calculating each question/statement, the percentage for each question is added and then divided by the number of respondents to determine the average percentage, called the average percentage. Concerning the development of digital comic learning media, we use the achievement conversion rate on a scale of 5 to interpret and make decisions for the needs of teachers and students, as shown in Table 2.

Table 2. Evaluation Criteria for Needs Analysis Questionnaire Sheet

No.	percentage	Category
1.	$0 \leq P \leq 20$	Strongly disagree
2.	$20 < P \leq 40$	Disagree
3.	$40 < P \leq 60$	Disagree
4.	$60 < P \leq 80$	Agree
5.	$80 < P \leq 100$	Strongly agree

[20], [21].

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RESULTS AND DISCUSSION

Based on the results of filling out the Learning Media Development Needs Analysis Questionnaire, photos of student responses to mathematics subjects are shown in a positive statement stating that students are very interested in mathematics and get a percentage score of 92.3 percent in the category of strongly agree. Meanwhile, in the negative statement, which states that students have difficulty learning the inverse function material, they get a score of 75.6 percent in the agreed category.

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As shown in Table 3, one statement is used to describe the teacher's reaction to mathematics, but all of them fall into the "disagree" category.

Table 3. Teachers' Reactions to Mathematics Subjects

No.	Percentage	category	Statement
1.	50 person	Disagree	Teachers have difficulty determining the suitable learning media using teaching materials

An explanation of students' reactions to learning media in learning and developing digital comics learning media. Developed using nine statements/questions, where a total of 8 statements with the category of "strongly agree," one statement "strongly agree" as shown in Figure 1, and "strongly disagree" is included in the category.

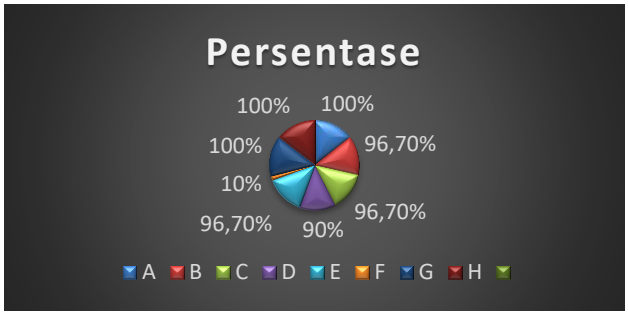

Figure 1. Student Reactions to the Use of Digital Comic Learning Media

Based on Figure 1, it can be seen that code A represents the statement "Teachers use learning media in the learning process" and gets a 100% score percentage in the "Strongly agree" category. Code B represents a statement that the learning media teachers use in the learning process supports and supports the learning process, with a score of 96.7% in the "strong consensus" category. Code C states that the learning media used by the teacher can be motivated by the learning process. Furthermore, D represents the sentence "Using instructional media makes it easier for students to understand the learning material," and E represents the sentence "Students agree that learning through pictorial conversation is more fun," with a percentage score of 90% and 96.7% for the "strongly agree" category. In addition, Code F states that "teachers use comic-based learning media to reverse functional material" and scores 10% in the "disagree" category. In addition, Kode G and H said, "Students agree that comics learning media can be accessed via smartphones/digital devices that can be accessed anytime, anywhere."

Moreover, "Learning with pictorial conversations and comics." Media motivates us to learn. "Needs to be improved and developed further," the statement got a score of 100% with the category "I completely agree."

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An explanation of the teacher's reaction to the use of learning media in learning and the development of digital comic learning media in development uses nine statements/questions, eight of which fall into the category of "strongly agree" 1 -I strongly disagree with the statement, as shown in Figure 2.

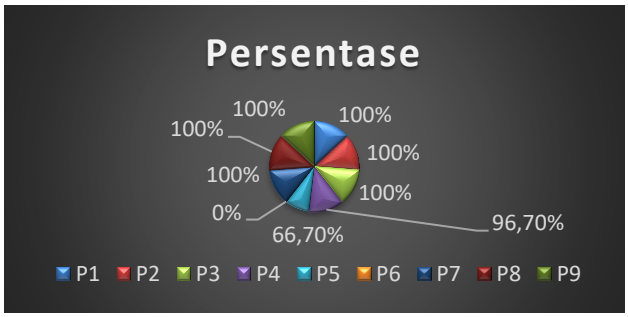

Figure 2. Teachers' Reactions to the Use of Digital Comic Learning Media

Based on Figure 2 above, it can be described: Code P1 with the articulation "Teachers have used learning media in learning handles". P2 "Learning media used in learning preparation have made a difference and support learning preparation" P3 with the articulation "Educators need learning media other than those already available". All three get a score by adding up the scores of each 100% in the category of strongly agree. While the P4 code with the explanation "Students must master the learning media that they can get free to make it easier to get the subject matter" gets a 96.70%. Code P5 P2, "Teachers currently have learning media that can be accessed by students anywhere and anytime via smartphones," scores 66.70% in the agree-on category. Code P6, with the articulation "Teachers have used learning media in the form of comics," with a score of 0% in the category, strongly opposed this idea. Codes P7, P8, and code P9 with the articulation "Educators are eager to use comic learning media as a development of learning media that are now accessible", "Learning media for comedians obtained through smartphones with relevant approaches must be made", and "Learning media using discussion pictures or comics can help students increase learning inspiration" all three of them got a score of 100% each in the category of strongly agree.

The depiction of students' reactions to the learning approach to the material studied can be seen through 2 statements/questions, all of which fall into the category of strongly agree, as shown in Table 4.

Table 4. Students Reactions to the Learning Approach on the Examined Fabric

No.	Percentage	Category	Statement
1.	86.3 Person	Strongly agree	Educators have linked optical impairment learning materials with practice and a way of life
2	98.7 Person	Strongly agree	Students are easier to learn if the material is related to sports and living standards

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Meanwhile, the description of the teacher's reaction to the learning approach to the material being considered appears through 1 statement/question, all of which fall into the category of strongly agree, as shown in Table 5.

Table 5. Teacher's Reaction to the Learning Approach on the Fabric Under consideration

No.	Percentage	Category	Statement
1.	93.4 Person	Strongly agree	Utilizing comedian learning media based on Islamic values by the opposite work

From the survey results examining student needs, it was found that 81.7% strongly agree and 83.5% of teachers strongly agree that an increase in learning media for advanced comedians is needed for an optical material. In addition to using survey information to analyze the wishes of teachers and students, the analysts also conducted a written review of previous questions related to the research subject.

Furthermore, based on the above discussion, the study on the importance of making computerized comics on the media used in the preparation of learning, especially science subjects, obtained the results: 1) the need for supporting media in learning handles, 2) the need to create computerized comedian media by advances in science and modern innovation, 3) the advancement of media in computerized comic frames has advanced, where in its use it will be easier for students because it can be stored on a device or tablet, 4) this computerized comedian will then coordinate Islamic values sourced from the Qur'an and Hadith, 5) this sophisticated comedian is then expected to fulfill the wishes of schools in teaching learning as a supporting medium that has developed innovations and coordinates other world values, 6) through computerization this comedian can add to the inspiration of students to learn math.

Figures 3 and 4. Cover and Basic Competencies Comic

The Digital Comic Based on Islamic Values consists of a front and back cover, usage instructions, core, and basic competencies, learning objectives, and activity instructions.

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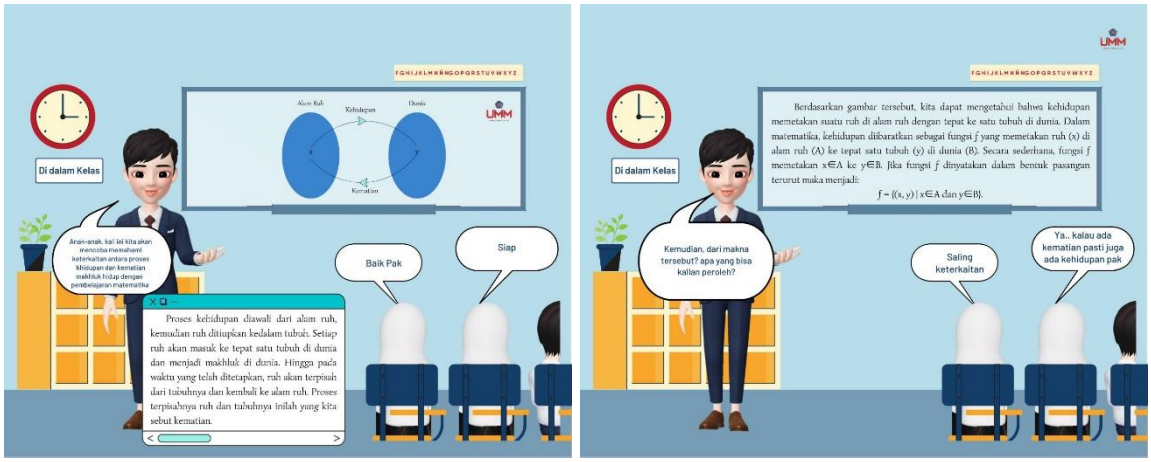
Figure 5. Comic Learning Objectives

Based on the core and basic competencies, it can be analyzed that students need digital comic learning media based on Islamic values of inverse functional materials. It was necessary to motivate them to learn objectives.



Figures 6 and 7. Comic Learning Activities and Exercise

As needed in the learning process,, there is very little to give an understanding of Islam, not even to discuss or apply one core competency about students' spirituality. Teachers still do not have learning media with Islamic values, especially mathematics lessons, and rarely combine material with Islamic values in the learning activities.

This advanced digital comic is designed to meet the learning needs of preparing and assisting students in obtaining and exporting learning materials that educators have provided. The computerized comics that have been made are planned not to show hypotheses and sharpen cognitive perspectives but also to direct students in using a standard language so that students can quickly understand the substance of comics, which students usually uphold. The assumption conveyed by Aggleton [19] that comics favorites are: a) Using ordinary dialects, so students can quickly understand the contents of comics, b) Using pictures that can clarify words from stories in comics, c) Using charm and bright colors so that students will be more persuaded to read comics,

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d) Stories in comics are very closely related to events experienced by students in their daily environment so that they better understand the problems they face.

As revealed by C. Bolton-Gary [20], Digital comic media preferences include 1) Judging from their preferences, comics can attract students' interest in learning and educate students to decipher stories into pictures so that students can remember them. 2) The fabric in the comic can clarify the whole story because there are outlines that can make it easier for students to know. It can get students interested in reading and other areas of reflection. 3) Digital comics in electronic information can be stored in digits or bytes and exchanged with various capacity media.

This can be seen by the excessive clarification of the point of interest of computerized comedian media so that when coordinating Islamic values in learning through a medium, it will not be like what has met the demands of today's progress, especially mechanical innovation. 5.0, but more than that, can create a more immersive otherworldly experience and an understanding of Islam in life settings. Learning with digital comics can increase students' inspiration and character, and digital comics deserve to be used as a learning supplement and be used as an alternative medium for various student difficulties [21]–[23].

CONCLUSION

Based on the description that has been clarified, it can be said that computerized comics with the coordination of Islamic values should be created as a supporting medium in science learning, preparing to expand learning inspiration in the opposite work. The number of tests taken can be more from various schools and can be made into help questions, especially for making questions.

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