

Development of a Multimedia-Based Virtual Tour Learning Media: Sociology Subjects

DOI: <https://doi.org/10.47175/rielsj.v5i3.1063>

| Fakhruna Saif^{1,*} | Samsidar Tanjung² | Keysar Panjaitan³ |

^{1,2,3}Department of Education
Technology, Postgraduate,
Universitas Negeri Medan,
Medan, Sumatera Utara,
Indonesia

*fakhrunasaif@gmail.com



This work is licensed
under a Creative Commons Attribution-
ShareAlike 4.0 International License.

ABSTRACT

This research aims to develop multimedia-based learning media through virtual tours in sociology subjects at SMA Negeri 1 Binjai, Langkat. The background of this research is based on technological developments in the industrial era 4.0, which requires education to adapt to these advances, especially for the Alpha generation, who are very familiar with technology. Interesting and effective learning media are very necessary to increase student interest and learning outcomes. The research method used is research and development (R&D) with the Borg & Gall model, which consists of several stages, starting from initial research to field trials. The research results show that virtual tour learning media is effective in increasing student engagement and learning outcomes. The use of this medium makes it easier to access information, increases the attractiveness of learning material, and allows students to learn independently and interactively. This research was carried out at SMA Negeri 1 Binjai, Langkat, in class X of SMA in the 2023–2024 even-semester academic year. The research results show that: (1) multimedia-based virtual tour learning media is suitable for use in sociology subjects at SMA Negeri 1 Binjai, Langkat; (2) multimedia-based virtual tour learning media is more effectively used in sociology subjects at SMA Negeri 1 Binjai, Langkat when compared to PowerPoint media.

KEYWORDS

Instructional media; virtual tour; multimedia; sociology

INTRODUCTION

The current learning process that is appropriate for the Alpha generation is a learning process that is student-centered rather than teacher-centered. So if the learning process that is created is not interesting, it will result in very fatal consequences for students, namely that the material cannot be understood by students and they become misunderstood. Based on this problem, a solution will be created to avoid failure in the learning process. For example, before starting learning, the teacher must be able to determine and prepare for the needs of students, such as learning media. Given that they are the primary developer of curricula and the architect of classroom learning, teachers play a crucial role in education (Natsir et al., 2021). Teachers must be observant of the classroom situation by seeing whether the learning media used is appropriate and effective or not in the learning process in the classroom. Not all media should be suitable for use in all learning conditions.

According to Djamarah and Zain (2010), learning media are the means of transmitting learning information or conveying a message. According to AECT (Association for Education, Communication and Technology) by Arsyad (2004), media are all the formats and channels used to convey messages and information. Apart from the fact that media are support or referral systems, the term mediation is often used. Media is a mediator,

indicating its function or role of managing an effective relationship between the two main parties in the student learning process and the lesson content. Media is a very important element in supporting the learning process. Learning media is also the key to success in achieving learning goals.

The application of information technology, namely multimedia-based learning through virtual tours, will bring about a tremendous change both in terms of the education system that will be developed, the materials that will be taught, and the way in which the educational process will be conducted; as well as the obstacles faced by both students, teachers, and teacher administrators.

The use of learning media such as virtual tours in the learning process is expected to be an alternative to overcome the problems of learning autonomy that often arise, as it will allow students to seek and learn a wider range of knowledge, thereby bringing out students' creativity in studying science. Apart from that, with this learning, it is also hoped that students' cognitive abilities regarding learning outcomes can achieve maximum results so that they can achieve achievement and meaningful learning.

The subject of sociology is one of the compulsory subjects at the high school level, especially the Social Sciences major. Sociology is also a branch of the social science discipline. According to Auguste Comte, sociology is a positive scientific discipline, namely studying symptoms in society that are based on rational and scientific thinking. Another definition was put forward by Max Weber. Sociology is the science that studies social action or human behavior. Sociology essentially has two meanings, namely, sociology as a science and sociology as a method. Sociology is said to be a science that is a body of information about culture and society that has been methodically organized using logical analysis. Sociology is said to be a method when it is seen from the perspective of a way of thinking to reveal the socio-cultural reality that exists in society with procedures and theories that are scientifically justified. Ministry of National Education, Curriculum (2004). The special characteristic of this sociology subject is that it always discusses and studies the society within it, be it social problems, social phenomena, social interactions, local wisdom found in society, or social actions or human behavior.

The course matter covers fundamental concepts, methodologies, methods, and analytical procedures for investigating numerous occurrences and problems in real-world society. Sociology is taught as part of social studies in primary school, but as a separate topic in secondary school. According to Soekanto (2007), the scope of sociology subjects includes the following aspects: (1) social processes; (2) social structure; (3) social change; and (4) social institutions and institutions.

Soekanto (2007) states that the Sociology subject aims for students possess the following skills: (a) To understand sociological concepts such as socialization, social groups, social structures, social institutions, social change, and conflicts leading to the creation of social integration; (b) To understand various social roles in social life; (c) To understand attitudes, consciousness, and social care as well as mutual respect in multicultural social life; and (e) carry out social communication to achieve independence in life skills in society.

Soekanto (2007) William F. Ogburn and Meyer F. Nimkoff argue that sociology is scientific research into social interaction and the result, namely social organization. According to Alex Inkeles in Qomariyah (2008), the main concern of sociology is social relations, institutions, and society, which are the units of analysis themselves in sociology.

This situation is in accordance with the conditions that occur in the field; this can be seen through initial observations that occurred in class X-1, precisely at SMA Negeri 1 Binjai, which is located at Jalan Yos Sudarso, Suka Makmur, Kec. Binjai, Langkat

Regency, North Sumatra 20762. Apart from that, conventional learning is still implemented by teachers using only PowerPoint and textbooks. As a result, students feel bored and passive, so they are unable to develop reasoning abilities, ideas, and thoughts. Moreover, students are unable to absorb the material and understand the content.

Rosch (1996) states that multimedia is a combination of computer and video. Multimedia is usually a combination of three elements: audio, images, and text. Turban et al. (2002) state that multimedia is a combination of at least two input or output media of data. These media include audio (sound, music), video animation, text, graphics, images, etc. According to Rusman (2011), multimedia is the use of a number of different media combined as a tool to convey a message or information in the form of text, graphics, audio, animation, or video. Zainiyati (2017) defines multimedia as the collaborative use of different types of media such as text, video, and images, all working together to achieve the given learning objectives.

Virtual tour then developed into a multimedia site that contains various A type of media that displays information, images, text, audio, etc. But not only that, the concept of a virtual tour is currently considered to have greater complexity than the type of information presented through applications or multimedia. Sarwono (2006) believes that the application of virtual tours with the help of the internet as a learning medium in the world of education also makes learning activities easier.

Virtual tour-based learning media is currently one of the main choices for utilizing internet-assisted technology. Virtual tour-based learning media also has many advantages, of course, one of which is being able to update content or materials if there are changes to the curriculum. Virtual tour-based learning media can be used as the main learning medium or can also be used as a replacement learning medium for textbooks. Apart from that, virtual tours are also able to create meaningful learning for students because, by applying virtual tours, students' imagination and memory work to create meaningful learning.

Nagarajan and Jiji (2010) argue that virtual tours are a medium assisted by electronic technology that can speed up the process of sending information from educators to students. For example, by entering audio, text, images, videos, and animation teaching materials into a system, Rosyid (2021): A virtual tour is a digital agency that refers to characteristics it enhances or extends the experience through personalization, interactivity, and content diversity. According to Vidiardi (2015) virtual tours are a collection of images, audio files, text documents, and videos that are recorded digitally and can be accessed via electronic media. According to Umar and La Sulo (2020), virtual tours provide a learning atmosphere that focuses on audio and visuals using one-way communication.

Based on research conducted by Harti and Darsono (2023), it appears that the condition of students in the history learning process that takes place at school shows a decline in interest and learning outcomes because teachers still use conventional media and there is a lack of innovation in media creation. Based on the above problems from research conducted by Harti and Darsono, an effort is needed to overcome the learning limitations that have occurred so far, one of which is by innovating learning media to increase learning interest and learning outcomes in students by utilizing technology that is designed in such a way and produces Virtual tours can be accessed virtually by emphasizing visuals and audio.

A virtual tour is a form that exists in cyberspace, allowing visitors to access and explore rooms or collections via digital platforms without having to be physically present. A virtual tour can function as a digital trace of physical or independent action while maintaining a

position of authority as granted by the International Council of the United Nations of the United Nations (ICOM) Rosyid (2021).

The formulation of the problem in this research includes: (1) What is the feasibility of multimedia-based virtual tour learning media in sociology subjects at SMA Negeri 1 Binjai, Langkat?; and (2) What is the effectiveness of multimedia-based virtual tour learning media in sociology subjects at SMA Negeri 1 Binjai, Langkat?

RESEARCH METHODS

This study used a research and development approach known as R&D research, a process that, as stated by Borg and Gall (2003), involves the development and validation of an educational product. This research was carried out at SMA Negeri 1 Binjai, Langkat, whose address is Jalan Yos Sudarso, Suka Makmur, Kec. Binjai, Langkat Regency, North Sumatra 20762. There are several reasons that are the basis for this research to be carried out at SMA Negeri 1 Binjai, Langkat, as follows: (1) There are related problems that the author has previously described above; (2) This type of research has never been carried out before at the school.

The total number of subjects found in the area and at the same level in the research is called the population (Sugiyono, 2017). The characteristics displayed in the population are very diverse, so researchers can take a sample for their research. Regarding the explanation above, the population in this study is the entire class X of SMA Negeri 1 Binjai, Langkat. The population in this study was 150 students, consisting of 5 classes.

This type of research is research and development (R & D). The orientation of this research and development is to produce virtual tour-based learning media to support the learning process for sociology subjects in class X at SMA Negeri 1 Binjai. The research procedure that the author uses is a research procedure from Borg and Gall.

Borg and Gall (2003) stated that there are ten procedures or stages in research. These stages include: (1) Research and information gathering. (2) Planning. (3) Development of preliminary product formulations. (4) Preliminary testing. (5) Major product review. (6) Field experiments (small group). (7) Operational product revisions. (8) Operational testing (large group). (9) Final product revisions. (10) Dissemination and implementation (mass production).

The grid of learning media expert feasibility test instruments in Table 1 you can see:

Table 1. Instructional Media Expert Feasibility Test Instrument

Aspect	Research Indicators	Assessment Items
Content Eligibility	Quality of Learning Materials	<ul style="list-style-type: none"> - Title Clarity - Clarity of Presentation of Study Instructions - Sequence of Material Presentation
Presentation	Learning Delivery System	<ul style="list-style-type: none"> - Ease of understanding the material - The material can be repeated at any time so it can improve memory - There are test questions - There are guidelines for the Material Presentation process - Balance image proportions - Preliminary Quality

	Quality of Learning Strategy	<ul style="list-style-type: none"> - Suitability of material to student needs - Usefulness of Learning Materials - Factualization of the content of the material - Suitability of Images in Explaining Material - Ease of Use of Google Classroom - Ease of Studying the Material - Highlight the featured image or headline - Ease of use of media
Graphics	Presentation Quality	<ul style="list-style-type: none"> - Selection of Font Type and Size - Text and Writing Readability - Clarity of Color Selection
	Display Quality	<ul style="list-style-type: none"> - Display Quality - Attractive Image Display - Color Portion Appropriateness

The material expert feasibility the test grid is shown in Table 2 as follows:

Table 2. Eligibility Test for Material Experts

Assessment Aspects	Indicator
Material Aspects	<ul style="list-style-type: none"> - Material suitability with core competencies (KI) and basic competencies (KD) - Clarity of learning indicators - Concept Truth - Systematic presentation of sub-material - Accuracy of the sequence of learning materials - Curriculum Appropriateness - According to the example given
Learning Aspects	<ul style="list-style-type: none"> - Clarity of learning objectives - Motivation - Summary - Clarity of Learning Indicators - Project Giver - Conformity to the Class Project study theme. - Involvement and role of students in learning activities - Suitability of material to students' situations - Adequacy of material to achieve learning indicators - Adequacy of material to achieve learning objectives - The breadth of material in the Class Project Show - Depth of material chapters in the Class Project Show - Accurate examples to clarify the content - Adequacy of the examples given - Presents concrete examples in everyday life
Appearance	<ul style="list-style-type: none"> - Suitability of images to clarify content - Appropriate appearance to clarify content
Language	<ul style="list-style-type: none"> - The sentences are easy to understand and do not create double meanings. - Use of standard language - Communicative use of language

The grid of learning design expert test instruments in table 3 you can see:

Table 3. Instrument Test for Learning Design Experts

Aspect	Variable	Indicator
Content Eligibility	Quality of Learning Design	<ul style="list-style-type: none"> - Suitability of Material to Learning Indicator Objectives - Appropriateness in Providing Training - Test Decisions with Learning Indicators
Presentation	Information Design Quality	<ul style="list-style-type: none"> - Providing Information - Clarity of material description - Clarity of examples of questions given - Use of new Information - Feedback on student test results - Fragmentation/suitability of the sequence of learning materials - Maximizing time in the Learning Process
	Quality of interaction	<ul style="list-style-type: none"> - Use of terms for learning instructions - Ease of Explanation of Material Terms - Feedback on student responses - Use of different texts to mark important parts
Graphics	Presentation quality	<ul style="list-style-type: none"> - Color match - Use of graphics - Selection of font type and size
Liveliness	Information Design Quality	<ul style="list-style-type: none"> - Image and video or animation quality - Ease of use for the learning process

Table 4. Question Item Indicators

Basic competencies	Essential Materials	Question Indicator
Apply basic Sociology concepts to understand various social phenomena in society	Various Social Symptoms	<ul style="list-style-type: none"> - Presented with an illustration, students can explain the social symptoms of the decline of nationalism - Presented with an image, students can analyze the positive impacts of globalization - Presented with an image, students can analyze the factors causing the emergence of consumerism - Presented with a statement, students can explain moral decadence - Presented with a statement, students can explain the causes of poverty - Presented with an illustration, students can explain the concept of deviant behavior - Presented with an illustration, students can identify examples of deviant behavior - Several case examples are presented, students can identify social symptoms in the form of crime

Data Analysis Technique

Both quantitative and qualitative data were gathered from the validation and trial procedures. quantitative information from respondents' proposals and answers. This data is used as a guide when revising the product being developed. Quantitative data from the

questionnaire results the evaluation results are averaged using descriptive statistics and converted into qualitative data to understand the quality of the developed media product.

Interpretation of the appropriateness of the material, interactive learning media, and learning design is carried out through descriptive statistical calculations. Data gathering was carried out utilizing questionnaires issued to material, media, and design professionals to provide an assessment of the viability of the interactive medium being developed.

Tabel 5. Validity Criteria for Average Value Analysis

No	Criteria	Score
1.	Very Eligible	4
2.	Eligible	3
3.	Enough	2
4.	Not Eligible	1

Source: Sugiyono (2017)

The average score was determined based on the research findings for every responder. It is possible to assess the viability of the product under development using the data analysis's findings. This can serve as a foundation for updating the product under development. The formula for measuring data per item is, namely:

$$P = \frac{x}{xi} \times 100\%$$

Information:

- P = percentage
- X = Respondent's answer in 1 item
- Xi = ideal value in 1 item
- 100% = constant

After measuring the data per item, the overall data is then measured using the formula:

$$P = \frac{\text{number of scores obtained}}{\text{sum of ideal scores for all items}} \times 100\%$$

To see the eligibility criteria which state that the product being developed is suitable for use, you can see the table 6 below:

Tabel 6. Criteria for assessing the effectiveness

Percentage of Achievement	Criteria
76 – 100 %	Very Eligible
56 – 75 %	Eligible
40 – 55 %	Enough
0 – 39 %	Not Eligible

Source: Arikunto (2018)

The normality test can be used to determine whether or not the distribution of learning outcomes data is normal. To test the homogeneity of data, the F test can be used. The test criteria are if $F_{count} < F_{table}$ at a significance of 0.05 then the research data is homogeneous.

Hypothesis Test

The validity of the research hypothesis must be ascertained; in this study, the t-test (an independent test) is the statistical method employed to do this. The sample group's post-test findings must be present for the t-test data analysis requirements to be fulfilled. The following is the hypothesis for the efficacy test that will be investigated:

$$\begin{aligned}
 H_0 & : \mu_1 = \mu_2 \\
 H_a & : \mu_1 \neq \mu_2
 \end{aligned}$$

Information:

- μ_1 : average learning results for students through the use of multimedia-based virtual tours
- μ_2 : average learning results for students while utilizing PowerPoint
- H_a : Classes that study with multimedia-based virtual tour materials and classes that study with PowerPoint materials have very different learning outcomes.
- H_0 : Classes taught with PowerPoint media and those taught with multimedia-based virtual tours differ not appreciably.

The two-party test formula is applied in order to test the hypothesis:

$$t_{count} = \frac{\bar{x}_1 - \bar{x}_2}{S \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

where S is the root of the joint variance, calculated as:

$$S^2 = \frac{(n_1-1)S_1^2 + (n_2-1)S_2^2}{n_1 + n_2 - 2} \quad \text{where } S = \sqrt{S^2}$$

Information:

- \bar{x}_1 : average experimental class score
- \bar{x}_2 : average control class score
- n_1 : number of experimental class samples
- n_2 : number of control class samples
- S_1^2 : variance in the experimental class
- S_2^2 : variance in the control class
- S : combined variance
- t : calculation price

$t_{count} < t_{table}$ If t_{table} is taken from a t-distribution list with good $dk = (n_1 + n_2 - 2)$ and $\alpha = 0.05$ levels, the test criterion is accepted as H_0 . To determine if there is an improvement in learning outcomes, the normalized gains (N gains) formula can be used as

follows:
$$N - Gain = \frac{\text{summative score} - \text{initial assessment score}}{\text{maximum score} - \text{initial assessment score}} \times 100\%$$

Description:

- N-Gain = Presentation of increased learning outcomes
- N initial assessment = Initial assessment value
- N summative = Summative value
- N max = Maximum value

Decision making in this test can be seen in the following table:

Table 7. Distribution of Gain Scores

N-Gain Value	Category
$g > 0,7$	High
$0,3 \leq g \leq 0,7$	Medium
$g < 0,3$	Low

Source: Ruhiat and Guntara (2021)

Table 8. Categories of Interpretation of N-Gain

Percentage (%)	Interpretation
< 40	Not effective
40 – 55	Less Effective
56 – 75	Moderately Effective
76 – 100	Effective

Source: Hakke (in Hartati, 2017)

RESULTS AND DISCUSSION

The material expert's evaluation results demonstrated that the multimedia-based virtual tour learning materials for the Sociology course met the researchers' expectations in terms of quality. Table 9 below displays the outcomes of the validation by material experts:

Table 9. Learning Material Expert Validation Data

No	Assessment Indicators	Average percentage	Criteria
1	Material Aspect	96%	Very Eligible
2	Learning Aspects	90%	Very Eligible
3	Viewing Aspects	100%	Very Eligible
4	Language Aspects	92%	Very Eligible
Average		95%	Very Eligible

Table 10 displays the average percentage of evaluations from specialists in learning design about the created media.

Table 10. Data Analysis from Learning Design Experts

No	Assessment Indicators	Average percentage	Criteria
1	Eligibility content	100%	Very Eligible
2	Servings	93%	Very Eligible
3	Graphics	97%	Very Eligible
4	Liveliness	100%	Very Eligible
Average		100%	Very Eligible

The average percentage of assessments from learning design experts regarding the media developed can be seen in table 11:

Table 11. Media Expert Data Analysis

No	Assessment Indicators	Average percentage	Criteria
1	Eligibility content	84%	Very Eligible
2	Servings	86%	Very Eligible
3	Graphics	74%	Eligible
Average		81%	Eligible

Table 12 displays the average percentage of individual trial results on the created learning media.

Table 12. Analysis of Individual Trial Data

No	Assessment Indicators	Average percentage	Criteria
1	Display Aspect	87%	Very Eligible
2	Aspects of Presentation	90%	Very Eligible
3	Aspects Benefits	87%	Very Eligible
Average		88%	Very Eligible

Table 13 below shows the average percentage of small group trial outcomes on the created learning media:

Table 13. Small Group Trial Data Analysis

No	Assessment Indicators	Average percentage	Criteria
1	Display Aspect	87%	Very Eligible
2	Aspects of Presentation	88%	Very Eligible
3	Aspects Benefits	87%	Very Eligible
Average		87%	Very Eligible

Table 14 below displays the average percentage of field testing results for the learning media developed.

Table 14. Field Trial Data Analysis

No	Assessment Indicators	Average percentage	Criteria
1	Display Aspect	86%	Very Eligible
2	Aspects of Presentation	86%	Very Eligible
3	Aspects Benefits	88%	Very Eligible
Average		87%	Very Eligible

Table 15 below provides an overview of the average percentage of evaluation findings for multimedia-based virtual tour learning media in Sociology subjects by media experts, design experts, material experts, individual trials, small group trials, and field trials.

Table 15. Product Feasibility Test

No	Respondents	Average percentage	Criteria
1	Material Expert	95%	Very Eligible
2	Learning Design Experts	100%	Very Eligible
3	Media Experts	81%	Very Eligible
4	Individual Trials	88%	Very Eligible
5	Small Group Trials	87%	Very Eligible
6	Field Test	87%	Very Eligible
Average		89.67%	Very Eligible

The multimodal virtual tour learning tool for sociology courses has been proven to be appropriate for use, according to the table above, as it has passed evaluations by media experts, design experts, material experts, individual trials, small group trials, and field trials, with "very eligible" results.

Based on the results of calculating normality test data on the subject, the values $L_{count} = 0.151$ and $L_{table} = 0.161$. Judging from the obtained values, it can be concluded that $L_{count} = 0.151 < L_{table} = 0.161$. So it can be said that the subjects used in the pre-test in the control class had a normal distribution.

Based on the results of normality test calculations on subjects, look at the pre-test data of class Judging from the obtained values, it can be concluded that $L_{count} = 0.143 <$

Ltable = 0.161. So it can be said that the subjects used in the pre-test in the experimental class had a normal distribution.

Table 16. Pre-Test & Post-Test Normality Test Results

Group	Lcount	Ltable	Conclusion
Pre-test Control Class	0,151	0,161	Normal
Post-Test Control Class	0,151	0,161	Normal
Pre-test Experimental Class	0,143	0,161	Normal
Experimental Class Post-Test	0,110	0,161	Normal

The following are the overall data results regarding pre-test homogeneity:

Table 17. Homogeneity Test Results Pre-test

Group Name	FCount	FTable	Conclusion
Control Class	1,126	1,882	Homogeneous
Experimental Class	1,126	1,882	

It is evident from the value of the homogeneity test results in the preceding table that the value obtained is Fcount < Ftable, so it can be said that based on these results the subject data obtained has a homogeneous variance.

Homogeneity test was carried out on each group. The following are the overall data results regarding post-test homogeneity:

Table 18. Post-test Homogeneity Test Results

Group Name	Lcount	Ltable	Conclusion
Control Class	1,559	1,882	Homogeneous
Experimental Class	1,559	1,882	

Based on the table above, it can be seen from the value of the homogeneity test results that the value obtained is Fcount < Ftable, so it can be said that based on these results, the subject data obtained has a homogeneous variance.

The results of data analysis or hypothesis testing can be seen using the N-Gain test formula (normalized test gain). Before knowing the results of the N-Gain test, researchers must look for the results of the pre-test and post-test values through the t-test. If tcount < ttable, then the results of the analysis are declared to have no influence whatsoever. However, if the results of tcount > ttable can be stated to have a significant influence between variables, .05 with tcount = 19.73 > ttable = 1.697.

Based on the results above, because tcount = 19.73 > ttable = 1.697, In comparison to pupils who utilize Power Point media, it can be stated that students get greater learning outcomes. Table 19 illustrates this as follows:

Table 19. Summary of Hypothesis Testing

Average Post-test value	t count	t table	Conclusion	
Using Multimedia-Based Virtual Tour Media	Using Powerpoint Media	19,73	1,697	There is a significant difference
93%	79%			

The learning outcomes of students utilizing multimedia-based virtual tour learning media were found to be higher than those of students using PowerPoint media, as

demonstrated by the results of hypothesis testing. The following describes the efficacy of multimedia-based virtual tour learning resources in sociology courses:

$$\bar{x} = \frac{\text{score obtained}}{\text{number of ideal scores}} \times 100\%$$
$$\bar{x} = \frac{2790}{3000} \times 100\% = 93\%$$

The effectiveness of PowerPoint learning media in Sociology subjects is as follows:

$$\bar{x} = \frac{\text{score obtained}}{\text{number of ideal scores}} \times 100\%$$
$$\bar{x} = \frac{2360}{3000} \times 100\% = 79\%$$

It is evident from the above results that using multimedia-based virtual tours for learning is more effective than using PowerPoint presentations in sociology classes at SMA Negeri 1 Binjai, Langkat.

Discussion

The development of a multimedia-based virtual tour in sociology courses has been carried out by examining factors of material, learning design, and media. The goal of this research and development is to create useful learning resources that SMA Negeri 1 Binjai, Langkat students can use to enhance the caliber and outcomes of their education.

This research and development procedure begins with preliminary studies, data and learning material collection, software design, software creation and production, and product testing that is validated by material, learning design, and media experts. After that, data analysis and product revision are carried out to ensure its suitability. The next stages use user assessments, field trials, small-group trials, and individual trials to create products that are efficient and helpful in the learning process.

Revised and refined aspects are based on assessments, suggestions, and comments from material, design, and learning media experts. The appropriateness of the presentation, language, images, and content are among the learning media aspects that are evaluated.

Aunurrahman (2009) stated that students' every instructor must comprehend and cultivate active learning as a crucial and fundamental component of the learning process.

This view is in line with Trinandita (2008), who states that student activity is the most basic thing needed in the learning process. The benefit of using multimedia-based virtual tour learning media in sociology subjects is the presentation of concepts that are easy to learn, understand, and systematic. This media increases students' activeness and independence and creates interaction between students and one another, as well as students and the media. This product is also equipped with quizzes that can be answered immediately, and the results can be seen immediately.

It is clear from the foregoing justification that multimedia-based virtual tour learning materials for sociology subjects have proven to be suitable for use. This media has gone through assessments from material experts, testing has been conducted on people, in small groups, and in field settings by learning design specialists and media experts with the results declared "very eligible".

The effectiveness of the product is seen from the average effectiveness of sociology lessons delivered through multimedia-based virtual tour learning resources, namely 93%, which is higher than PowerPoint learning media, which only reaches 79%. This data shows that multimedia-based virtual tour the sociology learning outcomes of students can be

enhanced by educational media. When it comes to learning resources, multimedia-based virtual tours have an edge over PowerPoint presentations in that they encourage student participation.

CONCLUSION

Based on the design of the study, its goals, and its analysis in relation to the development of multimedia-based virtual tour learning media in sociology subjects at SMA Negeri 1 Binjai, Langkat. So the author can conclude that:

1. Multimedia-based virtual tour learning media is appropriate for use in courses on sociology at SMA Negeri 1 Binjai, Langkat.
2. It is more efficient to use multimedia-based virtual tour learning resources in sociology subjects at SMA Negeri 1 Binjai, Langkat, when compared to PowerPoint media.

REFERENCES

- Arikunto, S. (2018). *Prosedur Penelitian: Suatu Pendekatan Praktik*. Jakarta: Rineka Cipta.
- Aunurrahman. (2009). *Belajar dan Pembelajaran*. Bandung: Alfabeta
- Arsyad, A. (2004). *Media Pembelajaran*. Jakarta: PT. Raja Grafindo Persada.
- Djamarah, S. B., & Zain, A. (2010). *Strategi Belajar Mengajar*. Jakarta: Rineka Cipta.
- Borg, W. R., & Gall, M. D. (2003). *Educational Research: An Introduction 4th Edition*. London: Longman Inc.
- Harti, S., & Darsono. (2023). Pemanfaatan Museum untuk Meningkatkan Minat dan Prestasi Belajar Sejarah Siswa Kelas X SMK Negeri 1 Kasihan. *Karmawibangga: Historical Studies Journal*, 5(1), 1–7.
- Hartati, T. (2017). Multimedia in Literacy Development At Remote Elementary School in West Java (Multimedia Dalam Pengembangan Literasi di Sekolah Dasar Terpencil Jawa barat). *Edutech*, 15(3), 301-310.
<https://ejournal.upi.edu/index.php/edutech/article/view/4873>
- Ministry of National Education, Curriculum. (2004). *Kurikulum 2004 Standar Kompetensi Mata Pelajaran Matematika Sekolah Menengah Pertama dan Madrasah Tsanawiyah*. Jakarta: Depdiknas.
https://www.academia.edu/31853917/KURIKULUM_2004_STANDAR_KOMPETENSI
- Nagarajan, P., & Jiji, G. W. (2010). Online Educational System (ELearning). *International Journal of u- and e- Service, Science and Technology*. 3(4), 37.
<https://jurnal.uns.ac.id/ijpte/article/view/14884>
- Natsir, M., Saragih, B., & Dewi, R. (2021). Ability to Write Anecdote Text by Using Caricature Media on 10th Grade Students of SMA Swasta Swakarya Binjai. *Randwick International of Education and Linguistics Science Journal*, 2(1), 44-51.
<https://doi.org/10.47175/rielsj.v2i1.198>
- Ruhiat, A., & Guntara, A. (2021). Importance Performance Analysis Method For Quality Analysis Of Attendance System. *J-Sin's - Jurnal Sistem Informasi*, 4(2).
<https://journal.unsap.ac.id/index.php/jsins/article/view/384>
- Rusman. (2011). *Model-model Pembelajaran*. Jakarta: PT.Raja grafindo Persada
- Rosch. (1996). *Easy Way to Understand The Multimedia*. Bostom: Allyn and Bacom.
- Rosyid, M. (2021). Museum Virtual Untuk Belajar Sejarah Selama Pandemi, Radarsemarang. Jawapos.com.
<https://radarsemarang.jawapos.com/artikel/untukmuguruku/2021/03/15/museum-virtual-untuk-belajar-sejarah-di-masa-pandemi/>
- Sarwono, J. (2006). *Metode Penelitian Kuantitatif dan Kualitatif*. Yogyakarta: Graha Ilmu.

- Soekanto, S. (2007). *Sosiologi suatu pengantar*. Jakarta: PT Raja Grafindo Persada.
- Sugiyono. (2017). *Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif, dan R&D*. Cetakan kedua. Cetakan pertama Tahun 2016. Bandung: ALFABETA.
- Trinandita. (2008). Penerapan Metode Pembelajaran Aktif Sebagai Upaya Membantu Meningkatkan Hasil Belajar. tersedia dalam <http://ipotes.wordpress.com/2008/05/24/prestasi-belajar/>
- Turban et a. (2002). *Aplikasi Multimedia Interaktif*. Yogyakarta: Paradigma
- Umar, T., & La Sulo, S. L. (2005), *Pengantar Pendidikan*, Jakarta, PT Asdi Mahasaty
- Vidiardi, S. (2015). *Pengembangan Museum Virtual Interaktif Menggunakan Teknologi Desktop Virtual Reality Pada Museum Ranggawarsita*. Under Graduates Thesis, Universitas Negeri Semarang.
- Zainiyati, H. S. (2017). *Pengembangan Media Pembelajaran Berbasis ICT (Konsep dan Aplikasi pada Pembelajaran Pendidikan Agama Islam)*. Jakarta: Kencana.