

Designing the Development of Canva Application-Based Audio-Visual Teaching Materials on the Material "Point to Point Distance" for High School Students

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Abstract:

Pembelajaran matematika belum optimal karena keterbatasan media pembelajaran. Kebanyakan guru hanya mengandalkan materi manual dan latihan yang terlalu ketat. Tujuan dari penelitian ini adalah untuk membuat media pembelajaran audiovisual berbasis aplikasi Canva untuk pembelajaran kelas XII. Jenis penelitian ini adalah pengembangan media berdasarkan model pengembangan empat dimensi. Karena keterbatasan peneliti, pengembangan media ini baru sampai pada tahap development. Subyek penelitian ini adalah 2 ahli media, 2 ahli materi, 2 praktisi, dan 25 siswa. Metode pengumpulan data dalam penelitian ini adalah metode observasi, metode wawancara, dan metode angket. Data dianalisis secara kualitatif dan kuantitatif dengan menggunakan rumus rata-rata untuk mendapatkan skor efikasi rata-rata. Hasilnya, media audiovisual berbasis aplikasi Canva dengan topik "Jarak titik ke titik" meraih skor relevansi 4,53 untuk ahli konten dan 4,65 untuk ahli media.

Abstract:

Mathematics learning is not optimal because of limited learning media. Most teachers only rely on manual materials and exercises that are too strict. The purpose of this research is to create an audiovisual learning media based on the Canva application for class XII learning. This type of research is media development based on the four-D development model. Due to the limitations of researchers, the development of this media has only reached the development stage. The subjects of this study were 2 media experts, 2 material experts, 2 practitioners and 25 students. Data collection methods in this study are observation methods, interview methods, and questionnaire methods. The data were analyzed qualitatively and quantitatively using the average formula to obtain an average efficacy score. As a result, the audiovisual media based on the Canva application on the topic "Distance point to point" achieved a relevance score of 4.53 for content experts and 4.65 for media experts.

Keywords : Aplikasi Canva; Audio visual; model *four-D*; Jarak titik ke titik

Keywords : the Canva application; Audio visual; four-D models; Point To Point Distance

Introduction

The world of education today is closely related to the rapid advancement of information technology (Hämäläinen et al., 2021; Hasanah et al., 2022; Haviland et al., 2021). In addition to educational developments, technology is also very important in influencing the development of more diverse learning. Advances in information technology can improve the quality of education, so it is hoped that education will always adapt to technological advances to improve the quality of human resources (Artal-Sevil et al., 2018; Camilleri & Camilleri, 2017). Technological advances that can improve the quality of education by increasing human resources are inseparable from the learning process in the 21st century (Inganah et al., 2023; Sah RWA et al., 2022; Waite & McDonald, 2019). Learning in the 21st century is learning that prepares students to face various global demands and

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challenges (ND Safitri et al., 2023; Valtonen et al., 2021). In this century, advances in technology and information are developing very rapidly, impacting all areas of human life, one of which is education (Darmayanti & Fiddiana, 2022).

Every year we need professionals who can keep up with changing times, especially in the *new normal era* like today. One of the lessons that can be strengthened by the community is learning mathematics (Amir et al., 2021; Anjarwati et al., 2023a; Yeh et al., 2019). Because learning mathematics with subjects covers very broad topics, the learning process requires appropriate learning media (Darmayanti et al., 2023; Delviana et al., 2021; Soeiro et al., 2012). Learning mathematics can also be described as a learning approach that combines different educational content on the topic of education and personality development in basic education (Dintarini, 2021; Qomariyah & Darmayanti, 2023). Learning mathematics is not only about identifying and mastering a subject, but also about what aspects should be taught and how students can understand the concepts they learn in accordance with students' personalities and understanding (Cundiff et al., 2020; Salinas & Pulido, 2017). However, the reality in the field of learning mathematics is not optimal due to limited learning media. Most teachers rely on manuals and exercises that are too limited. The learning process is expected to be similar to SMA YALC Pasuruan, using relevant learning media to convey material.

Based on observations and interviews at SMA YALC Pasuruan it is known that the learning process carried out does not stimulate students' attention, interest, thoughts and emotions. As a result, students who were previously inactive became spontaneously active, and some students were even busy chatting with their friends or flipping through books in front of them. This is because not all students like to read and do not understand the content or intent of the books they study. The importance of student orientation, interest in learning and positive encouragement in learning, because new information can be added to students to facilitate the design of the learning process and enable them to achieve their learning goals adequately. When students usually don't like reading because teachers don't use innovative and creative media in the learning process, they have difficulty understanding the content of the material, especially the topics. Limited media, facilities and infrastructure used in the mathematics learning process limit the production of computational/digital-based media. Students feel bored and less motivated to work on the subjects they have studied. There is no audiovisual based on his Canva app for the subject. Especially the topic "Point to point distance". Limitations of supporting facilities and infrastructure are also one of the limitations in the learning process. In addition, teacher innovation and creativity are still lacking in utilizing and developing learning media or learning aids. These factors can make student boredom easily arise, causing students to be less active in participating during the learning process. The provision of media that is less innovative, creative and less focused on material is one of the obstacles in the online learning process or limited face-to-face treatment which only takes a few minutes.

A possible solution is to use instructional media as a facilitator for distributing material point-to-point distances in secondary schools (Asbari et al., 2020; Darmayanti, Baiduri, et al., 2022; Humaidi et al., 2022). The presence of learning media is very important for teachers in the learning process to achieve the goal of carrying out learning activities on an ongoing basis (Oyanagi, 2021; Wahyuaji & Suparman, 2018; Wulandari et al., 2022). Learning media can be in the form of tools, materials, or the environment that is used as a facilitator of the learning process. Therefore, teachers must be able to create appropriate learning media so that the learning process becomes interesting and of high quality.

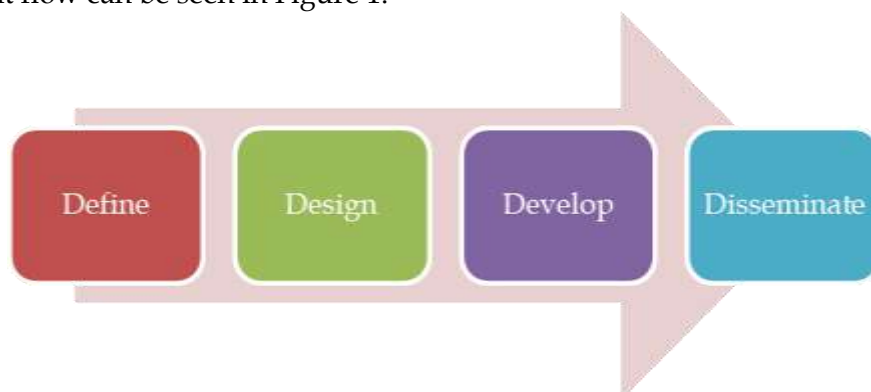
There are several types of learning media. Audio, visual and audiovisual media (Brucker et al., 2022; Khoiriyah et al., 2022). Audio media is media that contains sound elements to provide auditory information to students. Visual is media that contains elements

of visualization that enable students to learn about vision. Audio visual media is media that can be seen or heard that is used to convey information or messages, such as sound films, videos, television and slide shows (Sah et al., 2023; Sekaryanti et al., 2022; Ulger, 2018). Certain applications are available to support the use of audiovisual learning media. One of them is the Canva application. Audiovisual learning media based on the Canva application is a good medium for learning mathematics. Based on the Canva application, this audiovisual learning media can solve your student's learning problems (Fauza et al., 2022; Rahmah et al., 2022; Rahmatullah et al., 2020). The Importance of Developing Audiovisual Learning Media This can increase students' interest in learning and increase their motivation in the learning process, increase involvement in the learning process, and help them really know how to understand and calculate the distance point to point in a three-dimensional shape (Analicia & Yogica, 2021; Qomariyah et al., 2023; Sah RWA et al., 2022). Students learn to listen to audiovisual media and repeat material anywhere, because indirectly they are invited to continuously understand concepts and practice their skills.

Previous research findings state that audiovisual media can improve students' understanding of learning materials (Adawiyah et al., 2019). Audiovisual media can also improve student learning outcomes (Isnaini et al., 2021). Canva application-based audiovisual learning media. You can use audiovisual learning media in the Canva app Animated videos based on the Canva app increase student motivation and performance (Alfian et al., 2022; Yundayani et al., 2019). Create animated videos based on the Canva application that are suitable for use in the learning process (Kusaeri, 2019). The difference in this study is the "point-to-point distance" in learning mathematics, featuring cartoon tutoring animations that are animated as teachers in secondary schools. Further learning is carried out under *new normal conditions*. Moreover, the learning that is carried out on the Importance of Developing Canva Application Audiovisual Learning Media can increase students' interest in learning and increase their motivation in the learning process. This helps students understand the material, and is presented in the form of concrete objects, steps to work on questions in a coherent manner, is given a question and debate session so as to enable student and teacher interaction. This media not only conveys material but also practice questions and quizzes. As a result, learning becomes fun. The language used in conveying the material is also easy for students to understand. The presentation of the material is designed with a combination of colors that attracts students. Learning experiences based on attractive characteristics provide media packaging. Therefore, it is important to develop audiovisual learning media based on the Canva application for mathematics learning on the three-dimensional topic "Distance point to point" because the contents of textbooks are very limited and they tend to have difficulty understanding the material or studying independently due to the transition from abstract material. .

Method

The model used in this study is the 4D development model(Thiagarajan et al., 1974) (Define, Design, Develop, and Disseminate) were selected based on consideration of the ease of model representation when designing 4D learning models (Anjarwati et al., 2023b). This development flow can be seen in Figure 1.



In the research on the development of audiovisual learning media based on the Canva application, various approaches or stages of development were carried out according to the 4D model described in Figure 1 above, namely the Define Stage which consists of four parts, namely Needs Analysis, Curriculum Analysis, and Student Characteristics Analysis and Media Analysis. The second stage is design. At this stage the researcher designed a Canva application-based audiovisual learning media storyboard consisting of an opening, core, and closing. Start-to-finish activities involving audio recordings, laptops, and the Canva application in the audiovisual media editing process. The development stage of this research was carried out by developing products that had previously been consulted with the supervisor for suggestions and input to overcome existing deficiencies. The dissemination stage of this research was carried out solely through the dissemination of audiovisual learning media products based on the Canva application using the YouTube platform so that the media can be used to support learning. Data collection, the instruments used can be seen in Figure 2.

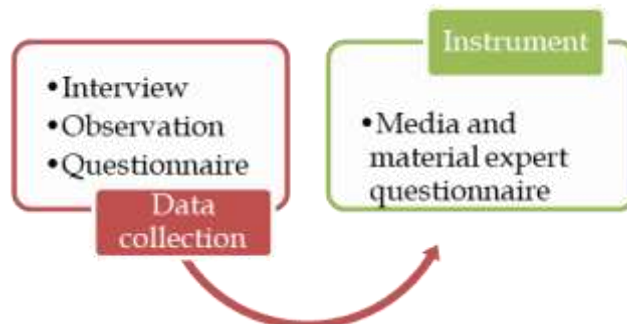


Figure 2. Data Collection and Instruments

In Figure 2, interviews, observations, and questionnaires are data collection methods used in Canva's development research, an application-based audiovisual learning media with the topic "Distance point to point". The results of the questionnaire are needed to determine the effectiveness and practicality of the media used. In this study, a 5-point rating scale was used as the research instrument. The instrument used in this study was a questionnaire instrument which was tested by material experts and media experts (Sugianto et al., 2022). In Table 1 the material professional grid tool, the media professional tool grid are shown in Table 2, and the practitioner tool grid is shown in Table 3. Furthermore, table 4 contains the student instrument tool grid and practicality scoring guidelines. Here's the description.

Table 1. Material validation sheet grid

Num ber	Viewpoint	Instruction	item th	units
1	Simplicity,	Usage, shape and size,	1 , 2 , 3, 4	4

	cohesiveness, language, text	illustrations, storyline, language compilation		
2	Colors, tools, appeal	Composition, layout, appeal	5, 6, 7, 8, 9	5
3	Quality and usefulness	Learning objectives, material completeness, material integration, material benefits, quality of motivation	10, 11, 12, 13, 14, 15	6

(Vidyastuti et al., 2022)

Table 2. Media validation sheet grid

Num ber	Viewpoint	Instruction	item th	units
1	Media Quality, Language Use	The quality of the video displayed, the ease of use, the clarity of the videos and images, the language and suitability of expressions.	1, 2, 3, 4, 5, 6, 7	7
2	Audio and text, media layout	Vocal clarity, clarity text/readability, video playback, video playback	8, 9, 10, 11, 12, 13, 14, 15	8

(Darmayanti, et al., 2022)

Table 3. Practitioner validation sheet lattice

Num ber	Viewpoint	Instruction	item th	units
1	Presentation of material, consistency of material	The accuracy of the content and the ability to be achieved, the completeness of the material, the relevance of the material, the use of the material, the quality of motivation	1, 2, 3, 4, 5, 6, 7	7
2	Media Quality, Language Use	Display attractiveness, video visual clarity, video and image clarity, quality of language use, adequacy of sentence placement	8, 9, 10, 11, 12, 13, 14	7
3	Audio and text, media layout	Vocal clarity, clarity Text/Readability, Video Presentation, Layout	15, 16, 17, 18, 19, 20	6

(Darmayanti, et al., 2022a)

Due to the limitations of researchers, the development of this media has only reached the development stage. In other words, it has just arrived at the validation stage by the validator. Two methods and methods are used for the data analysis method of this development study: a qualitative descriptive analysis method and a quantitative descriptive analysis method. Validity test using the Gregory formula. Relevance is the relevance, meaning, and usefulness that emerge from the evaluation of a tool. The effectiveness of the content can be determined by expert (judge) evaluation of the items in the tool grid. The average score obtained was transformed using a scale of five transformation guidelines to determine the effectiveness of each component of the media developed, and the media developed as a whole based on the calculation of the scale according to.

Results and Discussion

In the Canva application-based audiovisual learning media development research, various processes or stages of development based on the *Four-D* model were carried out.

Define

First, the definition phase consists of four parts: needs analysis, curriculum analysis, analysis of student characteristics, media analysis. Based on the results of observations and interviews with class XII teachers at SMA YALC Pasuruan, the learning process in *new normal conditions* is known to apply an *offline learning system*. Class XII is the most difficult class, because in addition to requiring a high level of patience, speed, understanding of concepts, honing extraordinary questions, a learning strategy is also needed where the teacher must teach as much as possible and maximize learning material which must later be completed within a predetermined target time. In other words, students are required to be able to complete class XII material coverage before the schedule for practical exams, test tests, final school exams begins. Students will find it difficult to understand the contents/concepts/readings of the books they are studying, namely the Class XII LKS book that they are currently getting. The book is just questions with a very concise summary of the material. Students are required to study independently both at school and at home to be able to pursue material mastery. It takes media and technology innovations used in the learning process to support the smooth learning process. The limited availability of media, facilities and infrastructure used in the learning process limits the production of computer/digital based media. Students feel bored and less motivated to actively participate in learning. There is no Canva audiovisual application around and in three-dimensional material, especially on the topic "Distance point to point" class XII. Based on the curriculum analysis carried out, basic competencies and indicators of success in learning textbooks, student books, and mathematics curricula were determined to be used as references for discussing material in audiovisual learning media. Basic Competency (KD) and metrics are shown in Table 5.

Table 5. Basic competencies and Competency Achievement Indicators

Basic Competency (KD) and Competency Achievement Indicators
3.2.3. Analyzing points, lines and planes in three-dimensional geometry (Explaining the meaning of the distance of points to points in space, Determining the distances of points to points).
4.2.3. Presents solving problems related to distances between points, points to lines, and lines to planes in three-dimensional geometry (using the concept of distance between points to solve problems related to distances from points to points in

space)

Design

In the second stage of *design*, the product designed is an audio-visual learning media based on the Canva application which explains the topic "Distance point-to-point" class XII SMA. First, we have to log in to be able to use this application by typing the link <https://www.canva.com>. Figure 3 below is a display of the Canva application used in this development.

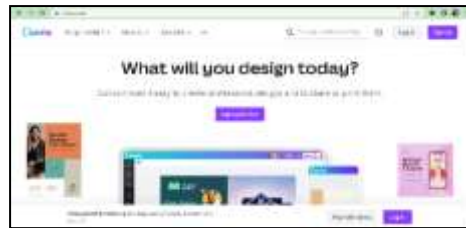


Figure 3. Display of the Canva application web page

After typing the *link*, then click on the *login menu*. To be able to *log in*, you can use an account from a *Google account* that was previously used, you can also use a *Facebook account* or another email address (which is already registered). Look at Figure 4 below.



Figure 4. Display of the Canva application login menu

After successfully logging in, the main page of the Canva application appears then to create the teaching materials that we will develop, namely the topic "Point-to-point distance" for Class XII High School, then click the button on the design menu.

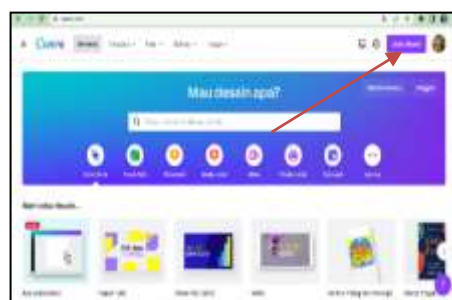


Figure 5. Display of the main (main) page of the Canva

The design menu is used to select the design template that we will need to deliver the material, all of which are available here. Because the development of this media is audiovisual based, choose a template design with a presentation type.



Figure 6. Display of the design menu page in the Canva application

Choose a template from the many template menus provided, choose an attractive template, which matches the theme that matches the age of class XII. Interesting but not tacky. After selecting, write the title in indicating the content of the material to be taught.

Designing and creating Canva application-based audiovisual learning media consisting of an opening, core and closing. The opening (opening) to closing (closing) activities use sound recordings, laptops and the Canva application in the audiovisual media editing process. So that the developed learning media can attract students' attention, the video contains a type of background music that is used, namely ghost music, and by using voice as the narrator, the learning media has existing talent. Next, create a storyboard that is intended to visually represent audiovisual learning media based on the Canva application on the topic "Point-to-point distance" for Class XII SMA.

Develop

Implementation of the current stage, namely development (Develop) in this study was carried out by making development products. After the audiovisual learning media was developed based on the Canva application, we evaluated the audiovisual learning media to determine its effectiveness. The examination of the adequacy of audiovisual learning media consisted of four instructors, two instructors as teaching material experts and two instructors as media experts. The results of the efficacy test obtained the average score of Canva application-based audiovisual learning media testing, with the topic "Point-to-point distance" for Class XII SMA with an average total of 4.53 for material experts and 4.65 for media experts. Translating these results was considered very good by professionals in the Canva application based on audiovisual learning media for the topic "Distance point-to-point" Class XII SMA was rated 'Valid'. Product revisions were carried out based on suggestions and input from material and media experts to improve the learning media that were developed. Criticism and suggestions from experts, that is, increase the number of practice questions with one more level of question level. Use questions that do not only discuss the questions in the student worksheet books but rather the questions they will face on school exams by providing 1-2 practice questions. The following is a display of audiovisual media that has been designed.

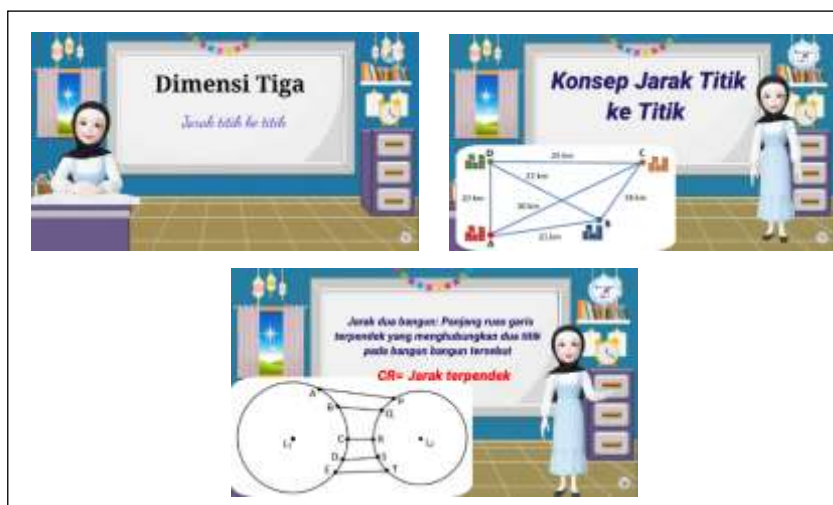


Figure 7. Display of the design menu page in the Canva application

In this development research, we created an audiovisual learning media based on the Canva application to explain material on the topic "Point-to-point distance" for class XII SMA. An audiovisual media application developed with the aim of overcoming existing problems in the learning process, especially in learning mathematics in high school. The development of this learning media is related to the stages of the 4D model which are easy to implement. The 4D model, which is arranged in a systematic sequence of activities, is suitable as a basis for developing learning tools and media (Darmayanti et al., 2023). The stages of the 4D model development are definition, establishment, development and dissemination (Sugianto et al., 2022). The Canva application-based audiovisual learning media is considered very qualified because it has unique characteristics compared to other audiovisual media. First, the audiovisual learning media based on the Canva application is suitable for use in the learning process related to the material or topics presented in the media.

Second, the Canva application-based audiovisual learning media design is suitable for use in the learning process. The development of Canva application-based audiovisual learning media contains several learning topics that can save time, videos contain interesting videos, animations, so that through Canva application-based audiovisual learning media students get an interesting and fun learning experience. and music. Watching audiovisual media not only attracts students' attention, but also focuses their attention (Darmayanti, Sugianto, & Muhammad, 2022; Rizki et al., 2022). Because students do not want to be left behind (Astuti, 2021; Tiara Melinda & Erwin Rahayu Saputra, 2021). Canva's application-based learning media makes it easy for students to engage in technology-based learning processes (Mudinillah & Rizaldi, 2021; Tanjung & Faiza, 2019). Canva's design results can increase students' interest and motivation in learning activities by presenting interesting material. Canva has a variety of attractive designs that make the learning process less monotonous and boring (Wijaya et al., 2021). The Canva app has an attractive design and lots of features. Canva application-based audiovisual media can be used as an alternative to support the process of learning activities that involve students actively. Interesting learning media such as learning videos can also be used as fun media for students so they don't get bored quickly, especially when studying math material. Therefore, further development is needed as teaching material in conveying material on the topic "Distance point-to-point" SMA class XII.

Conclusion

Audiovisual media based on the *Canva application* XII grade math High school on the topic " Point-to-point distance " material in three dimensions received a relevance score of 4.53 for material experts and 4.65 for media experts. Based on *audiovisual* media from *Canva* application assisted learning development. Media that has been developed is feasible to be tested in the learning process so that the effectiveness and practicality of the media can be known. However, the development carried out is limited to the develop stage, therefore the suggestion from this research is to be able to continue to the next stage.

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