Indonesian Journal of Informatics Education

The Development of Video Learning to Deliver a Basic Algorithm Learning

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Abstract:

The world of education is currently entering the era of the media world, where learning activities demand reduction of lecture methods and Should be replaced by the use of many medias. In relation to the function of instructional media, it can be emphasized as follows: as a tool to make learning more effective, accelerate the teaching and learning process and improve the quality of teaching and learning process. This research aimed to develop a learning video programming basic materials algorithm that is appropriate to be applied as a learning resource in class X SMK. This study was also aimed to know the feasibility of learning video media developed. The research method used was research was research and development using development model developed by Alessi and Trollip (2001). The development model was divided into 3 stages namely Planning, Design, and Develpoment. Data collection techniques used interview method, literature method and instrument method. In the next stage, learning video was validated or evaluated by the material experts, media experts and users who are implemented to 30 Learners. The result of the research showed that video learning has been successfully made on basic programming subjects which consist of 8 scane video. Based on the learning video validation result, the percentage of learning video's eligibility is 90.5% from material experts, 95.9% of media experts, and 84% of users or learners. From the testing result that the learning videos that have been developed can be used as learning resources or instructional media programming subjects basic materials algorithm.

Keyword : Video Learning, Basic Algorithm, Basic Programing

Introduction

The learning approach of basic algorithm is less on the visualization of the basic structure of programming (Analysis and Ala-mutka,,2004). Although there are already empirical studies related to programming languages, in practice many causes of difficulties for students who are not familiar with programming languages (Milne and Rowe, 2002). Algorithms are complex learning and require the ability to understand abstract programming concepts. Therefore, it is needed a learning media that can be used to introduce and provide understanding to students about programming through easily understood illustrations (Tantri, 2015). One of the media that can meet the needs of the readable is the learning media that use video.

Video learning is a media that presents audio and visual messages, language, procedures, application theory to help understanding of a learning material (Cheppy Riyana, 2007). Video is a audio and visual learning material that can be used for sending messages or recieving messages. It is said to be heard because the hearing (audio) and visual / video (visible) elements can be presented simultaneously. Video lectures to be most effectively used by students, they should appeal to their learning style preferences (Whatley and Ahmad, 2007). Video lecture appeals are as follows (a) their content is 100% relevant to course performance requirements and it is presented at a more detailed pace than classroom lectures, (b) videos can be replayed and enable students to repeat the instructor's explanation (c) they can be viewed at a time, location and under environmental conditions of a student's choice (d) their portability enables listening and study without the competing distractions that often accompany classroom lecture.

According to the description above, learning media needed to overcome the problems in algorithm learning. Videos can contain multimedia elements such as text, images, sounds and animations. These components can be arranged in a way that forms a video that can explain how algorithms work. In addition, the video is expected to help learners understand and arouse interest in material material. (Reiss, et al., 2017) Video is one of the best methods to attract students to enjoy and understand the material delivered. (Mendoza , Caranto & David, 2015) Shows videos very effectively to support learning activities, it is evidenced from student learning outcomes.

This paper contributes to literature by presenting a development based research on the use of Sparkol Videoscribe in visual audio learning media. The rest of the paper is structured as follows : in the next section the previous work in visual audio learning and technology, aided learning are presented. The method adopted in the research is elaborated in the next section. The stages constitute the developmental phases are presented in the following section. The findings, then are discussed before concluded.

Literature Review

If we believe that videos are a good means of helping students to learn skills, then recorded video, available on demand should prove to be useful to students. Isiaka (2007) who researched on the effectiveness of video as a media learning. Comparison Among the three schools use conventional methods, real body methods and video methods. Research found that video group performed better than the group without instructional media. The video group did significantly better than the chart group. He concluded that video was an effective medium for teaching / learning in schools. Deveaney (2009) who researched on the impact of Video Tutorials in an Online Educational Statistics Course, discovered that all his respondents were favourable to video tutorial. 75% reported that the tutorials were enjoyable and interesting, 84.6% indicated that, it met their needs, 100% reported that hey were straight forward and easy to understand, 92.4% agreed that the length of the tutorial were appropriate and 90.8% believed that viewing gave them better understanding than textbooks and guide sheets. He concluded that video is a viable tutorial tool for online courses. Kay(2012) In research The effects of using supplementary videos are increasing student activity. An important issue is establishing a methodology of embedding video clips in multimedia teaching material in order to improve the learning process.

Video learning should also be able to attract students' attention to learn. It is appropriate for students to more easily understand the material presented.. Sarker and Nicholson (2005) in research Exploring the Myths about Online Education in Information Systems, declared that for video effective, they must be

accepted and used by students. They must provide an enjoyable or at least satisfactory learning experience, be perceived by students as providing a time-efficient study resource and / or be perceived as improving understanding and grade performance.

Research methods

The research method used in this research is research and development using development model developed by Alessi and Trollip (2001). The development model is divided into 3 stages namely Planning (ideas), Design (design), and Develpoment (development). Stages of research that have been done are:

1. Planning Stage, This stage, will be do collecting the problem analysis, needs analysis, and generate ideas

2. Design Stage, This stage is the process of unit design and session, create storyboard, and script design

3. Development Stage, This stage is done the process created video, the process of making audio, programming material, preparing support tools, evaluate and review, and feasibility test

In this development research, learning video validation is done in two stages. The first stage, namely validation to the material experts and media experts. The second stage, which is validation to users involving 30 students. The aspects used refer to aspects of Anindita Agustania's assessment (2014). Material assessment is viewed from the material aspects and the benefits aspect, while the media assessment is viewed from the aspect of screen display, management and benefits. Meanwhile, the technique of data analysis using technique analysis of descriptive analysis. The formula used is:

$$Percentage\ (\%) = \frac{F}{B} X\ 100$$

Information :

F = Results of the assessment obtained, B = Total number of ratings (Source:

Riduwan, 2013).

The following criteria have been changed from the overall score that has been obtained:.

Table 1. Application Feasibility Criteria.

Assessment criteria	Percentage
Very Feasible	81% - 100%
Feasible	n61% - 80%
Less Feasible	41% - 60%
Not Feasible	21% - 40%
Very Inappropriate	0% - 20%

(Source: Riduwan, 2013).

Research Results and Discussion

Planning

This research produces a product of basic programming instructional video on basic algorithmic material for class X students. This instructional video is made in DVD that can be played on Laptop / DVD Player. The planning stage is done by identifying the problems and identifying the needs needed for the development research.

1. Problem Identification

   The results of interview researchers with basic programming teachers, get results include: many learners who have difficulty understanding the material presented by the teacher, and still the lack

of learning media used to support teaching and learning activities

2. Identification of Needs

The result of identification of needs in this development is to determine the material resources to be included in the learning video. In this case the material is taken from the basic programming book for SMK / MAK Class X (Dwi Maryono and Dhidhi Pambudhi 2014). This learning video is made into several sub-chapters of material, including algorithm history materials, natural language algorithms, introduction of typing, presentation of algorithms in pseudocode, presentation of algorithms using basic pseudocode and presentation of algorithms using flowchart.

In the development of this learning video required a special program, namely Sparkol Videoscribe. Sparkol Videoscribe is an animated video learning media that consists of a series of images that are organized into a whole video. With unique characteristics, Sparkol Videoscribe is able to present learning content by combining images, sounds and attractive designs so that learners are able to enjoy the learning process. Another support software is CorelDraw X7, which is used to create graphic design as needed. Smart Recorder, used for recording video learning narration. Adobe After Effect CC and Sony Vegas 10, used for editing learning videos. Nero Video, used to combine all the learning videos.

Design

This stage is designed about the development of learning video in the form of unit design, storyboarding, and script making. This is necessary to make the making of learning video process more focused.

1. Unit Design

The design of the unit is shown in Figure 1. The design of the unit aims to facilitate the use of learning videos.
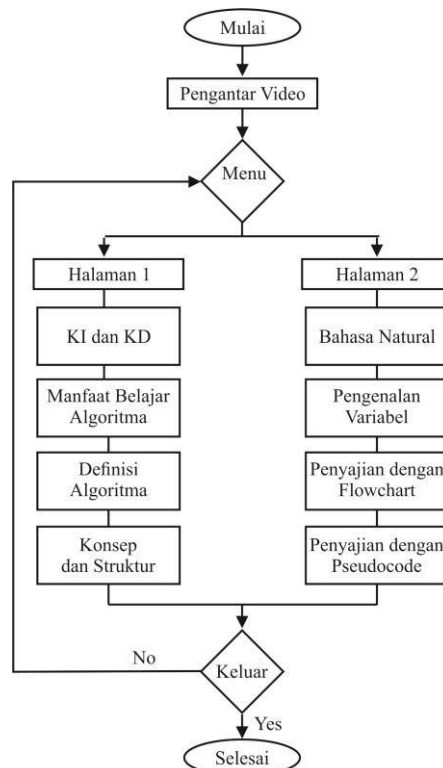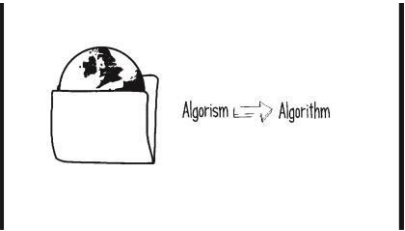

Figure 1. Video Learning Unit Design

2. Storyboard and Script Creation

The aim of the storboard is to facilitate the delivery of ideas about the concept of video learning. While the creator of the script aims to complete the storyboard with the narration to be delivered on the learning video. Here's one example of storyboard and video script 1 is the history of the algorithm.

Table 1. Storyboard and Video Script 1: History of Algorithm

No	Storyboard	Skrip
1	Sejarah Algoritma □ Intro Material History Algorithm □ Duration : 2 Second □ Making using Sparkol Videoscribe	Narration: The History of Algorithms
2	Sejarah Algoritma • Display the history of the algorithm accompanied by the image of the algorithm's inventor • Duration : 25 Seconds • Making using Sparkol Videoscribe	Naration : The algorithm comes from the name of a Muslim mathematician named Abu Ja "far Muhammad Ibn Musa Al-Khuwarizmi (780 M-850), which the westerners refer to AlKhuwarizm as Algorism, which means the process of counting with Arabic numerals. One of his monumental works is the book titled Kitab Al Jabar Wal-Muqabala which means "Book of restoration and reduction" (The book of restoration and reduction), which became the forerunner of the term "Algebra" (Algebra) used today.
3	Algorism ⇒ Algorithm • Page Understanding the algorism to be an algorithm • Duration : 10 Second • Making using Sparkol Videoscribe	Naration : Along with the development era isitilah "Algorism" changed into algorithm which then interpreted as a method of calculation (computing) in general. In Indonesian, the word algorithm is absorbed into an algorithm

Development

After making the storyboard and script making is done then the next step is the Development Stage. Video creation was developed using sparkol videoscribe software, because the video results from this software is considered very appropriate to make learning videos more interesting and easily understood by learners. While making audio using Smart Recorder software, because the sound produced more clear and clear. Here's an example of a learning video display developed.
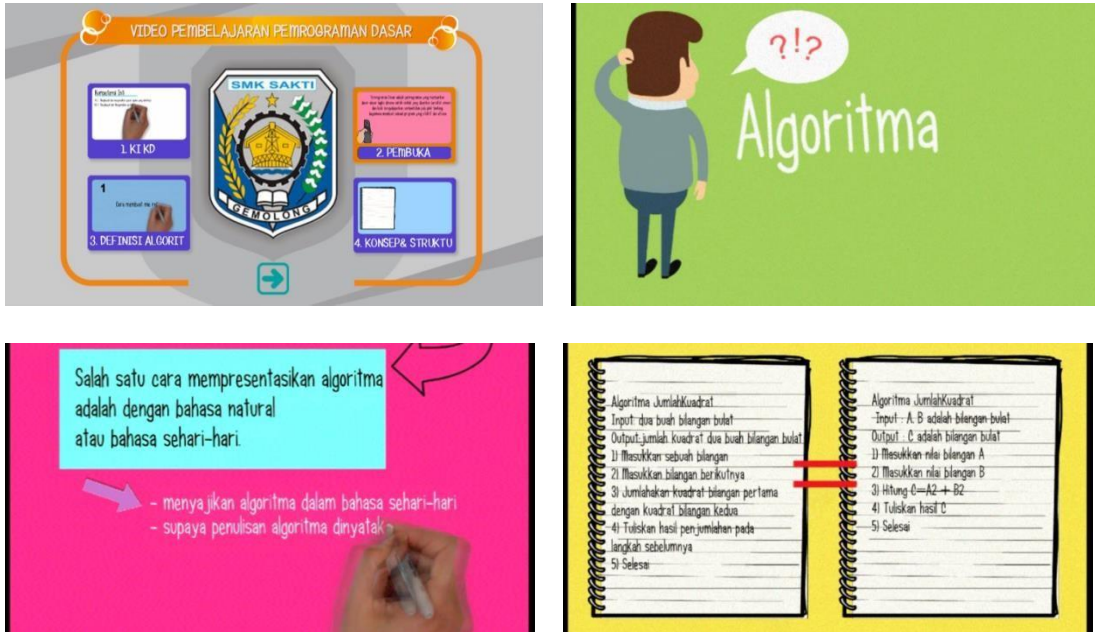
Figure 2. Learning Video Display

Furthermore, feasibility test of learning video. The feasibility of this learning video was obtained based on assessment data from 2 experts, ie material experts and media experts. Video learning is also tested to students of class X. Analysis of learning video eligibility is used as a consideration of whether the basic learning video programming can be tested to learners or not.

Table 2. Experts Material Assessment Results

No	Aspect	Value
1.	Material	87,7
2.	Benefits	93,3
	Final Results (Percentage)	**90,5%**

Based on the feasibility test conducted by the material experts, it was found that in terms of material aspects obtained percentage of 84, 7% and percentage of benefits aspect of 93.3%. Likewise, the average percentage of all aspects that reached 90.5% included in the category is very feasible. The result of percentage from both aspect is concluded that the learning video according to the material expert into the category is very feasible to be seen from the material aspect.

Table 3. Results of Media Expert Assessment

No	Aspect	Value
1.	Screen Display	84, 7
2.	Governance	100
3.	Benefits	100
	Final Results (Percentage)	**95,9%**

Based on the feasibility test conducted by media experts, it is found that in terms of screen display aspects obtained percentage of 84, 7%, management aspects obtained 100% percentage and percentage of the benefits aspect of 100%. Similarly, the average percentage of all aspects that reached 95.9% included in the category is very feasible. The result of percentage from both aspect is concluded that learning video according to media expert entering in category criteria is very suitable to be used from media aspect.

Table 4. User Rating Results

No	Aspect	Percentage (%)
1.	Material	84
2.	Media	81
3.	Benefits	87
	Final Results (Percentage)	**84%**

From the experiments conducted, it was found that in terms of material aspect obtained an average percentage of 84%, media aspects obtained an average percentage of 81% and a percentage of the benefits of 87%. Likewise, the average percentage of all aspects that reached 84% belongs to the very feasible category. The percentage results are concluded that the learning videos according to learners included in the kaleeria kateogi very feasible.

Conclusion

The result of the research shows that video learning has been successfully made on basic programming subjects which consist of 8 scene video. Based on the learning video validation result, the percentage of learning video's eligibility is 90.5% from material experts, 95.9% of media experts, and 84% of users or learners. This result shows that the learning videos can be used as learning media for basic programming subjects of algorithm chapter.

For the next development, it should have more chapter in basic programming subject. Furthrmore the development of learning video must be use a better application that can produce better graphic and sound.

Based on the assessment of learning videos has several advantages that are: (1) Video learning easy to use, (2) it has interesting design(3) There is material introduction learning video that is useful to facilitate learners to open insights before entering the subject matter . While the weakness of the learning video from the assessment results are as follows: (1) Learning video developed has a large file size. (2) video learning is not yet possessed enough features interactive enough. (3) the material presented on the video learning is limited.

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