The development of digital video applications for deaf students

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Abstract. The purpose of this study was to obtain a picture of the development as well as determine the practicality and effectiveness of digital video applications for deaf students. This research method using analysis, design, development, implementation, and evaluation (ADDIE). The study was conducted in extraordinary high school part B Ciamis. Samples are deaf student’s as many as five people. Data collection technique used observation, interview and assessment skills. The assessment process digital video applications is done by three expert judgment namely media experts, expert learning materials, and expert skills that the results show that the development of digital video applications for deaf students should pay attention to several aspects, namely, the speed of time, materials selection and image objects, font selection and color for the text narration, and must match the content of learning materials so that they can help students to gain an understanding in terms of both theory and practice. The result of the development of digital video learning applications for deaf students This has advantages that make it easier to understand the deaf students are with their material content direct overview and explanation in the form of narrative text and sign language so as to make a special attraction for the students to learn. This digital video applications can help replenish the skills for deaf students in the classroom so that learning is not only with the conventional method.

1. Introduction
The development of technology in today's growing, especially in education, seen from the school level at elementary, middle, and high use of technology in the learning into media learning resource for students, tekonologi in learning resources as one of the providers of information for students [1]. Learning media serves as a tool that can help the learning process and clarify the meaning of the message, so as to achieve the purpose of education or learning effectively and efficiently [2]. The use of instructional media in teaching and learning can arouse desire and interest for learning and bring a psychological impact on students in the use of instructional media at the stage of learning orientation will greatly assist the effectiveness of the learning process and delivery of messages and content in schools [3].

Deaf students is one of the special needs students who experience barriers to hearing, so as to optimize its ability to require special education services, deaf students have problems in the ability of sound perception and the ability to communicate verbally and non-verbally [4]. Winarsih argues that the hearing impaired is a general term that indicates trouble hearing from mild to severe, classified into deafness and hearing less [5]. Efforts to optimize the potential that can be developed in deaf students teacher needs to provide suitable education is needed for the life of deaf students in the future. Proper
education for deaf sequel is a vocational education or life skills (life skills) [6]. Life skills education in question in this case is a functional skills, the ability possessed in getting a decent income for life.

Characteristics of deaf students in the academic aspect, namely the limitations in speech and language resulted deaf students tend to have lower achievement in subjects who are verbal and tend to be similar in subjects who are non-verbal with normal students his age [7]. Vocational education is one of the solutions to solve the problem of future career deaf students for vocational education is concerned with vocational bimbimbangan. Also known as vocational subjects which includes exercises to develop life skills and creativity. Learning system on vocational education refer to the national curriculum, the curriculum implementation of vocational education should be oriented skills practice activities in schools so that teachers can understand students' abilities. Special vocational education curriculum to be an alternative to provide learning opportunities for deaf students, the curriculum is designed to facilitate learning for deaf students in schools [8]. Deaf students in vocational education into national programs in developed countries in order to receive the same education with no special needs students in general, the program is already running and growing so that students with special needs category are deaf do not have discrimination [9].

In general, the benefits of vocational learning for students is considered as a provision in the face of life permasalahan while the main purpose of such vocational education to improve the relevance of education to the values of real life or prepare students to have the ability, abilities, and skills required. Therefore, vocational education at extraordinary high school designed to prepare students to be able to live in being responsible and independent. However, in practice the process of studying the subject of vocational primarily on the skills of dressmaking, both students and teachers run into difficulty because when students are watching a demonstration of making clothing, demonstration only done once is not repeated and no explanation is given so as to make the students still looks confused as well as the unavailability of teaching media in the form of digital video for dressmaking skills. These problems need to be addressed through the media that can support the learning process so that the teacher is no longer the difficulty in explaining the material in class and not just hang with the demonstration but could be replaced with a video that can be played over and over again to increase knowledge. In this case the development of digital video into one of the solutions to simplify the deaf students to receive teaching in schools, especially in learning skills. Digital video offers many benefits in the context of education one of which can be used to record and analyze the interaction of class [10]. Special nature of the skill is to grow perfect through practice skills or training. The requirement is that the repetition of the basic movements accompanied by the application environment [11]. Vocational skills will be quickly accepted by the students when given a repetitive training, so that students will be familiar though less understood in theory but in practice to master the skill. According to the research states that after more than three days in humans generally can recall the messages conveyed through writings by 10%, 10% audio message, visual 30% and when combined with doing, it will reach 80% [12]. Therefore, the visual media that will be used to deliver a material to deaf students is by using a digital video system applications that support the search and playback of educational videos, and digital video displays in practice.

2. Method
One method that takes into account the basic stages of media development design simple and understandable is the ADDIE method. ADDIE method is a colloquial term used to describe a systematic approach to the development of learning. ADDIE is an acronym that refers to the main processes of learning systems development process, namely: (1) Analysis. The analysis was conducted to determine what the issue faced in learning, so it needs to be followed up immediately. After the analysis process carried out, then found the problems faced by teachers and students. (2) Design. Design created as a design to solve the problems faced by teachers and students. (3) Development. This step is done in an effort to implement a design that has been planned and made the design more developed for the needs of research. (4) Implementation. Implement which is a form of implementation of the plan design conceived and developed. (5) Evaluation. To test the success of a design that has been planned and
implemented, it needs to be evaluated. If the results do not meet the requirements in doing a redesign of the existing problem-solving, getting better and better.

Participants of this study is deaf students in class XI, amounting to 5 students, a class XI was used for the Deaf is taking vocational subjects at an early stage. The location of this research in one extraordinary high school West Java. The choice of location research based on the results of observations made that this school is a remarkable school that held a vocational program that is making a basic fashion in her school.

The procedures performed are: (1) The preparation stage, the activities carried out during the preparation as follows: (a) preliminary studies, the formulation of the problem, determine research objectives. (B) Establish a time and place of study. (C) To prepare research instruments. (D) To review the literature from various reliable sources such as direct science, books, and research on the development of digital video applications. (2) phase of implementation, the activities carried out during the implementation phase are: (a) the development of digital video applications for deaf students in a way to make a storyboard. (B) Do expert appraisal judgment against digital video applications. (C) Implement product development of digital video applications for deaf students. (D) Observing students using performance assessment. (3) The final stage, the activities carried out during the implementation phase are: (a) Make a conclusion. (B) Develop research conclusions.

3. Results and discussion
Phase analysis is the process of identifying the need to conduct performance analysis and requirements analysis. In this study, conducted the analysis phase prior to designing a digital video creation application this is done to simplify the design of digital video applications with attention to possible problems that occur and handling problems. From the observation that the teaching materials used by students in learning activities only a demonstration of teachers is only done once, not over and over again and no explanation given so as to make the students still looks confused. In addition, based on observations of the authors also note that the material dressmaking skills is one of the vocational learning materials are difficult to understand by learners. Thus, the student's skills in making patterns become less. Knowledge of students who are also poorly developed because students only obtain information about one of the demonstrations by the teacher. Furthermore, the results of a needs analysis conducted by interview, was conducted to determine how the learning skills of dressmaking make hand wipes and media needs learning for deaf students in extraordinary high school. According to the interviews, learning dressmaking skills make hand wipes for deaf students in extraordinary high school not using instructional media in accordance with the needs of students, due to limited skills and knowledge of teachers to make the learning media.

At the design stage, the researchers designed a digital video media applications to be developed. In this case, the design created is a digital video media application design learning basic dressmaking make hand wipes. The design phase is focused on three activities, namely preparing storyboards, specify the pictures in the video and digital video creation as a whole. In this stage the structure and framework designed instructional video making hand wipes. The results obtained at this stage was evaluated by media experts for the improvement of the design results.

At the Development stage, the researchers developed a learning plan in the form of digital video media applications insert sign language in the video content and prepare research instruments based design have made. At this stage of development is carried out several activities such as: search and collection of various sources of relevant material to enrich the material, making of illustration, typing, editing, and layout settings of digital video applications. Development in the creation of digital video of this application is to include a narrative text and sign language video content. So that students can obtain information more clearly, either through visual, writing and sign language tailored to the needs of deaf students. As part of the development of conventional media to digital media, digital video application can be accessed via a mobile device or laptop making it easier for students to learn not only in school, but can be done anywhere and anytime.
Here's what the results of the development of digital video applications that have made the development of:

![Figure 1. Home opener.](image)

In Figure 1 displays the opening page that contains the titles of teaching materials that will be displayed in digital video applications.

![Figure 2. Page menu.](image)

In Figure 2 displays the opening pages and digital video applications menu, which serves to help students find the title and sub lessons.

![Figure 3. Page contents.](image)
In figure 3 only displays the contents of a part that contains the contents of video impressions in the form of teaching materials that will be done by the students and the ordinances melaukan the hand wipes manufacturing practices.

![Image](image1.png)

**Figure 4.** The contents page with text narration.

In figure 4 there is a contents page with text narrative development in order to help facilitate deaf students in understanding the learning material. Then made the development of digital video applications by providing a narrative text on the page of the video content.

![Image](image2.png)

**Figure 5.** Content pages with narrative text and sign language.

In figure 5 there is a contents page that is equipped with both text narration is done by inserting the development of sign language. With the development of digital video applications with narrative text and sign language is expected to clarify the delivery of learning material for deaf students.

In this development include also the validity of the expert or experts judgment i.e. validation phase by the application of digital video in accordance with field validator are validator media, validator and learning materials, as well as the validator skills. Phase validity of the expert use assessment instruments that have been approved supervisor. Instrument ratings for digital video application consists of three aspects: format, content aspect and the aspect of the language that will be assessed by validator competent in their fields. Phase validity of these experts is used to get an assessment and remediation
for digital video applications from teachers. Further improvement suggestions will be used as an evaluation. The results of these consultations was used as a reference for improvements / revisions.

Implementation stage is the stage of digital video applications that are ready to be used in the learning skills of dressmaking make hand wipes for deaf students in extraordinary high school after a revision of the expert judgment. Implementation carried out in Class XI extraordinary high school with a total of 5 students. Implementation was conducted over two days, the first day to carry out the pretest and the second day to carry out the study using digital video media applications and also carry out Posttest. In the video shown material ingredients hand wipes, the equipment needed to make rag hand, preparations sew and how to manufacture or sew cloth hand, students are also given the opportunity to read the paper to be in the digital video display application "Tutorial Clothing Basic Make Lap Hands". After the explanation of material is completed, then the students do the problems posttest and practice making hand wipes.

In the classroom they do the problems post-test in accordance with the same material as the material is in digital video applications. Students work on post-test aims to measure the effectiveness of learning using digital video material application makes hand wipes. When finished using the digital video application is given a questionnaire interview students to obtain a digital video media implementation of the application.

The last stage in this study is the evaluation. Evaluation of the development of digital video applications for deaf students will be more quickly accepted by the students when given a repetitive training, so that students will be familiar though less understood in theory but in practice to master the skills. With the media learning digital video applications can help students to learn the material dressmaking basic make hand wipes because in the medium of digital video of this application shows not only the material alone but there are images that encourage students to practice so that students can try what is in the media of digital video this application therefore students will be easier to understand the material basis dressmaking make hand wipes because students can easily learn by doing hands-on than by studying the course material.

According to the results of research references in his research on the manufacturing lab colloid as a medium of learning for high school students / MA mentioned that testing the use of media in learning shows that learning to use the audio-visual media more successfully than learning without this medium [13]. While in the research that the need for selection and use of instructional media in accordance with the characteristics of deaf students, so we will get results in accordance with the competence to be achieved [14]. Learning media suitable for deaf students in the form of visual media with illustrations by a simple explanatory sentences and describe the events discussed in sequence so that deaf students become familiar. Further references were obtained from Luh based on the results penelitianny it can be concluded that the use of visual media in teaching deaf students more effectively, as compared with conventional learning because of the appreciation of learning and motivation deaf students higher learning with visual media compared to conventional learning it is seen from the concentration and enthusiastic teaching deaf students to follow [15].

4. Conclusion
The results of the needs analysis shows that the digital video media applications designed for deaf students should be able to help the students to gain an understanding in terms of both theory and practice. In addition, the digital video media applications for deaf students should also be able to condition students' needs. The discovery of the development of digital video of this application which has the advantages of a video created to help reduce the limitations of deaf students in obtaining information related to learning materials, inserting the narrative text and sign language into media content so that students can obtain information more clearly through visual, writing and sign language tailored to the needs of deaf students. Assessment expert judgemen performed 3 times indicate that the development of digital video applications for deaf students should pay attention to several aspects, namely, the speed of the not too fast, the selection of materials and objects image, font selection and color to narrative text, and should be in accordance with the material content learning.
Based on the conclusions of these results can be submitted any recommendations or suggestions as follows: (1) To Teachers are advised to add back the skill in making instructional media for deaf students in the classroom so that learning is not only with the conventional method. (2) To study it is suggested to further research to examine the application of digital video media applications for students with other obstacles, such as mental retardation students. (3) For the Party School of the suggested training by bringing in media creation experts in an effort to improve the knowledge and skills of teachers in making learning media.

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