Journal of Educational Technology, December 2022, 24 (3), 381-388
DOI: https://doi.org/10.21009/jtp.v24i3.31522
p-ISSN: 1411-2744 e-ISSN: 2620-3081
Accredited by the Directorate General of Strengthening Research and Development
Available online at http://journal.unj.ac.id/unj/index.php/jtp

Development of Information and Communication Technology Learning Media

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Received : December 6, 2022
Revised : December 28, 2022
Accepted : December 29, 2022

Abstract

This study aims to produce instructional videos on subjects that are feasible to be implemented as learning media for Postgraduate students and investigate the feasibility of learning videos at the UNJ location so that they are feasible to implement. as a learning medium. The development of learning videos for the State University of Jakarta uses a mix method approach using the Research & Development method by Allesi & Trollip, which consists of three development steps, namely planning: determining needs and goals, gathering resources, and generating ideas; design: making flowcharts and storyboards and drafting scripts; and development: producing video and audio, programming materials, preparing supporting components, evaluating, and revising. The results of development research are in the form of learning videos which are assessed by media experts, material experts, and students as media users. Overall the trial showed good results in the category according to the following details from material experts the average score of 5.55 was included in the appropriate category, from media experts the average score of 3.5 is included in the appropriate category, from small-scale trials involving students, an average score of 3.5 was obtained which was included in the appropriate category; and from large-scale trials involving students, an average score of 3.19 was obtained which was in the appropriate category. Based on the assessment of the feasibility of the media, it can be concluded that learning videos are suitable for use as learning media at UNJ.

Keywords: progress, learning videos, alessi and trollip

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How to Cite: Muslim, S., Puspa Arum, A., & Otto Fajarianto. (2022). Development of Information and Communication Technology Learning Media. JTP - Jurnal Teknologi Pendidikan, 24(3), 381-388. https://doi.org/10.21009/jtp.v24i3.31522

INTRODUCTION

The term industrial revolution 4.0 is used to denote enormous developments in the field of digital technology (Sholihah, 2022). Technology has developed rapidly and affected many aspects, including the education sector, over the last few decades (Cobena, 2022). Learning in the 21st century is changing very quickly and is difficult to predict in all aspects of life such as in the fields of knowledge, economics, transportation, technology, communication, education (teachers and students), and others (Erna, 2020) To achieve employability, the development of skills and competencies such as communication skills, problem-solving, teamwork, and social leadership is necessary (Kurniawati, 2021) The development of information and communication technology (ICT) has had an impact on the world of education, especially in the learning process . Education is a system (Ahmad, 2022) According to Rosenberg in Sutopo, Ariesto Hadi, with the development of the use of ICT, there have been five shifts in the learning process, namely: (1) from

training to performance, (2) from "off line" classrooms to where anywhere and anytime. "on line". , (3) from paper to electronic, (4) from physical facility to network, and (5) from cycle time to real time. The pattern of using ICT in tertiary institutions includes several things, namely as follows: access to the library; access to experts; carry out learning activities online; provision of academic information services for educational units; providing data search engine facilities; provide discussion facilities; provides alumni directory facilities.

In our view, good infrastructure conditions will be very helpful, especially if the location is in an urban area. University support in terms of policy is supported by support from university committees concerned with education as well as government support in education quality improvement programs which are important in the development and management of ICT in universities. Students are also very enthusiastic about ICT-based learning because various models or methods and forms of ICT-based learning will enrich the learning process at the University.

Several factors must be considered in the use of ICT in tertiary institutions so as not to hinder the development being carried out. The most important thing is the lecturer's mastery of the use of ICT in learning so that experts are needed who are still lacking in tertiary institutions. Another thing that is felt to hinder the use of ICT in tertiary institutions is the large amount of investment that must be made available to implement learning programs.

Apart from the mindset that is still not in favor of technology, the reasons are not cheap or other incompetence, such as: 1) careful planning of ICT development programs in tertiary institutions, including aspects of program design, implementation and evaluation; 2) the availability of experts in the field of ICT is absolutely necessary, having competence or qualifications in the field of information technology; 3) the existence of an internet network that can be used as a basis for building networking between colleagues and as an unlimited source of learning, it is hoped that innovation will emerge and increase the creativity of elements at the university; and 4) increasing the ability of lecturers is something that must be done considering the current paradigm does not support technological advances in general and ICT in particular so that the utilization of available facilities is not optimal. Learning materials are one source of learning in the learning process (Ratnaningsih, 2022)

While Communication Technology (TK) is a technology used to transfer various information so that it is effective, on target, and valuable. Although in practice, IT and TK sometimes cannot be separated from each other. ICT is an integral equivalent that contains a broad understanding of all activities related to the processing, manipulation, management and transfer of information between media. According to smaldino in Timothy at all (2011: 120), the media is a carrier of information between those who are sour and those who receive it. That is, the media is a carrier of information between the giver and recipient of information. between TI and TK sometimes cannot be separated from each other.

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According to Munandi (2008: 7-8), learning media can be understood as something that can convey and channel messages from sources in a planned manner so as to create a conducive learning environment where recipients can carry out the learning process efficiently and effectively. Gagne and Briggs (1998: 4) say that learning media includes tools that are physically used to convey the contents of teaching materials or in other words, media is a component of learning resources or physical vehicles that contain teaching materials that can stimulate students to learn. Learning is a multi-dimensional process that is usually considered normal by individuals until they experience difficulties when dealing with complex tasks (Arum, 2020). Visual media plays a very important role in the learning process. Visual media can facilitate understanding (eg through elaboration of structure and organization) and strengthen memory. Visuals can also foster student interest and can provide a relationship between the content of subject matter and the real world. To be effective, visuals must be placed in a meaningful context and students must interact with the visuals (images) to ensure information processing occurs.

According to Timothy (2011: 121), visuals are two-dimensional material designed to communicate messages to students. They usually include verbal elements (text or words) as well as graphic elements (pictures or like pictures). This means that visual is a two-dimensional material design to communicate one message to students. Usually includes verbal elements (text or words) as well as graphic elements (images or the like). Audiovisual media, which is a type of media which, in addition to containing sound elements, also contains image elements that can be seen, for example video recordings, films of various sizes, sound slides, and so on. Video-facilitated education is a technique that is integrated into various educational models (Asrori, 2021).

The capabilities of this media are considered better and more interesting, because they contain elements of the first and second types of media. Visual media that incorporate the use of sound require additional work to produce it. One of the important jobs required in audio visual media is writing scripts and storyboards which require a lot of preparation, design and research. It includes audio and visual media such as television, headphones, video players, radio cassettes and tape recorders. Video technology provides optimal benefits if it is used according to the potential it contains. Video media provides an opportunity for its users to learn through sound (audio) and image (visual) elements simultaneously. Video technology provides optimal benefits if it is used according to the potential it contains.

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(visual) elements simultaneously. Besides that, providing feedback for students is one of the most crucial factors in the teaching and learning process (Hidayat, 2022). This study aims to produce subject learning videos that are feasible to be applied as learning media for Postgraduate students, and investigate the feasibility of learning videos.

METHOD

This research uses mixed method research and is a type of research and development or known as Research and Development (R&D). The research data is all postgraduate program students in August-September 2022. For the definition of research and development is focused on the process, research does not produce objects, while development produces objects that can be seen and touched. Development is an engineering process of a series of integrated elements to form a product (Ranberg, 1974). Research and development methods are research methods used to produce certain products and test the effectiveness of these products. The model is the basis for developing the product to be produced. Development models can be in the form of procedural models, conceptual models, and physical models.

The procedural model is a descriptive model that shows the steps that must be taken to produce a product, namely video as a learning medium that adopts the development model of Alessi & Trollip (2001) with the following stages:

1. Planning (planning)
    a. Determining needs and goals, needs and goals include what students will know or be able to do after completing learning.
    b. a. Gather sources such as reference books, original source material, films and knowledge from others in the field that support video creation.
    c. Generating ideas, this stage is brainstorming to generate creative ideas in development.
2. Design (purpose)
    a. Making flowcharts, making flowcharts to make it easier to run programs, especially executing operations on a computer.
    b. Writing a storyboard, this stage includes planning (drafting) writing and revising the storyboard along with its appearance, animation, graphics and music, then validating it.
    c. Preparing the script, this stage includes planning the narrative, instruments, animation on the video.
3. Development (development)
    a. Producing video and audio, at this stage creating views, animations, graphics, music, narration, and instruments that can support development.
    b. Preparing supporting components and programming materials, this stage is the stage of combining all the materials developed including the application programs to be used.
    c. Evaluating and reviewing (testing and validating).

RESULT & DISCUSSION

The results of the trial of this research product obtained the average score of the experts as follows: the average score of the material experts was 3.55, which means the product was declared feasible and from media experts it was 3.50 which meant the product was very feasible. Then at the small-scale field trial stage, namely 5 students, an average score of 3.46 was obtained, which means the product was considered very feasible, and at the large-scale field trial stage, namely students in one class obtained an average score of 3.19, which means the product is considered very feasible. Therefore, it can be concluded that product videos from this study are suitable for use as learning media.

Observation activities carried out in the process of learning activities in ICT courses are known that student learning achievement is still relatively low, media aids in the practicum learning process are only in the form of worksheets, lecturers teach by reading worksheets and giving power points which are less able to attract students' attention, so students tend to be passive and get bored quickly. For this reason, appropriate learning media is needed in order to be able to convey practical material clearly and completely.

The right media to meet these needs is learning videos, so it is necessary to develop learning videos. After the results of the needs analysis are complete and clear, the next step is to collect sources as references that support the development of learning videos. After the sources are complete, the researcher consults with several material and media experts, exchanges opinions with lecturers and colleagues so as to produce ideas for further development into learning video media. The next step is to make a flowchart and then proceed with writing a storyboard. Storyboards are made to make it easier to visualize your ideas so that they are more organized, followed by the development or production of learning videos.

The audio and video production process includes video shooting, downloading video footage on YouTube, and sound recording according to the demands of the storyboard and script that have been made before. The initial stage is to take pictures or record videos. Taking pictures is the stage that translates the script into the actual appearance. After taking the video then proceed with downloading video clips and pictures about ICT on YouTube. Then the next stage is recording the narrator's voice which is done by dubbing technique. Video and audio are adapted to existing supporting devices to make it easier for anyone to use. For videos using mpeg format, photos using jpg format while for audio using wav. After producing a product in the form of a learning video, before the trial is carried out, the media expert validates and revises if there is advice from the expert.

Determining the feasibility of dynamic promotional learning video media is measured based on expert judgment, namely material experts, media experts, and lecturers. The data obtained shows the validity level of video feasibility as a learning resource. The suggestions contained in the instrument are used as material for consideration for further video improvements. Following are the test results of each validator. The data obtained shows the validity level of video feasibility as a learning resource. The suggestions contained in the instrument are used as material for consideration for further video improvements. Following are the test results of each validator. The data obtained shows the validity level of video feasibility as a

learning resource. The suggestions contained in the instrument are used as material for consideration for further video improvements. Following are the test results of each validator.

Table 1. Material Expert Feasibility Test Results

Category	Score
Very good	64 %
Well	35 %
Pretty good	1 %
Not good	0 %

The results of the due diligence from material experts have an average value of 3.55 with a percentage of 63.85% which is included in the Eligible criteria. Likewise, the due diligence results from media experts have a value of 3.51 with a percentage of 60.95% which is categorized as Eligible. Based on these results it can be concluded that learning video media in ICT subjects is included in the Eligible criteria.

Table 2. Media Expert Due Diligence Results

Category	Score
Very good	61 %
Well	37 %
Pretty good	2 %
Not good	0 %

Then a small-scale trial was carried out to find out the opinions of students as users as well as to measure the eligibility of the media from the user's point of view, obtaining an average value of 3.46 with a percentage of 67.5% which was categorized in the Eligible criteria.

Table. 3 Results of Small-Scale Trials

Category	Score
Very good	67 %
Well	30 %
Pretty good	4 %
Not good	0 %

After carrying out a small-scale test, a large-scale test was carried out and the result was an average value of 3.19 with a percentage of 38.05% which is also included in the Eligible criteria.

Table 4. Results of Large-Scale Field Tests

Category	Score
Very good	55 %
Well	38 %
Pretty good	7 %
Not good	0 %

Based on the results of data analysis, it can be concluded that the learning video products from this study are suitable for use as learning media for information and communication technology (ICT) courses at the Jakarta State University (UNJ) postgraduate.

CONCLUSION

The test results of material experts and media experts in measuring the feasibility of the quality of learning video media in ICT courses obtained the appropriate category. Meanwhile, from the opinion of users, namely the learning videos of students in ICT courses also get the appropriate category, this can be seen from the research results obtained in measuring the feasibility of media from the user's point of view by students in small-scale fields. trials and large-scale field trials. Conveying knowledge about making learning videos to students can increase knowledge as well as a stimulant so that students can be more creative in making interactive teaching materials that can be used in the learning process.

Based on the results of data analysis, it can be concluded that learning video products are suitable for use as learning media for information and communication technology (ICT) courses at the Jakarta State University (UNJ) postgraduate.

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