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How is the Instructional Video Development Process with Dynamic Drawing Principles?

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ABSTRACT
Technological innovation has led to changes in the teaching and learning process. Advances in computer technology have enabled the development of various learning environments**,** including learning videos. The theories that underlie learning with learning videos are cognitive theories. Cognitive learning theory rooted in information processing theory is the foundation of the development of learning videos. Dynamic drawing is based on the premise that people learn more effectively through video lectures that show the instructor drawing graphics as he or she teaches, rather than by referring to previously made pictures. This is a developing project. Analyses, design, development, implementation, and evaluation are all components of the ADDIE paradigm. The method of creating instructional movies using dynamic drawing concepts is as follows: a) analysis, b) design, c) development, and d) evaluation.

Keywords: *ADDIE, Video, Dynamic Drawing.*

1. INTRODUCTION

The Covid-19 pandemic has changed learning activities that were previously face-to-face to online-based, learning from kindergarten education units to universities transforms the implementation of learning into distance learning (PJJ). Distance learning has become a popular term to describe learning through telecommunications [1].

Online learning is used to describe distance learning that occurred during the Covid-19 epidemic. Online education necessitates the existence of learning media for the purpose of imparting knowledge to pupils. One of the suitable learning media for online learning is video learning. There are many benefits to integrating learning videos into learning. Increased student engagement and motivation is at the top because most students find making videos fun. An additional benefit of using instructional videos is the development of multimodal literacy and problem-solving skills**,** as well as further content knowledge.

Technological innovation has led to changes in the teaching and learning process. Computer technology advancements have permitted the development of a variety of learning settings, including instructional films. Video learning is a type of multimedia. Multimedia allows combinations such as images, text, and sound through channels of different modalities [2].

Learning videos can be a good addition to classroom learning, but you have to weigh their pros and cons. Learning videos can be used in all learning environments with whole classes, small groups, and individually. Learning videos can be used for all learning topics [1]. Objects that are too large to be brought into the classroom, as well as those too small to be seen with the naked eye, can be studied. Events that are too dangerous to observe, such as a solar eclipse, are safely studied.

The science of learning studies how people learn, specifically how their experiences lead to new knowledge. The goal of instructional video learning is to understand how individuals learn through words and images. Text (on a page or screen) is a verbal representation, whereas pictures are visual-spatial representations (including artwork, photos, maps, on pages or screens) (including animations and videos presented on the page or screen).

The theories that underlie learning with learning videos are cognitive theories. Cognitive learning theory rooted in information processing theory is the foundation of the development of learning videos. Working memory capacity is restricted and learning will be hindered if the cognitive load in working memory is

too high. Optimizing the utilization of working memory capacity and minimizing excessive cognitive load is suggested while designing a learning system [3].

According to [4]-[6], humans have information processing channels via which only a tiny quantity of information can be processed in a given length of time and only when they pay close attention to the information. The period of memories is determined by the channel, the restricted capacity, and the meaningfulness of the information.

An educator draws graphics as they are taught in a video lecture rather than using pre-made drawings. A video lecture is a video lecture where an instructor stands next to a projected slide or a whiteboard and writes on the board while teaching [7]. The Social Agency Theory [8] states that students learn better when their teachers draw while teaching. It's possible that witnessing a teacher's hand in action can help students feel self-referential. This may lead to greater hands-on learning. This idea requires drawing-based instructional videos.

According to Mayer [6,] people learn better when external features are addressed. The concept of spatial contiguity suggests that people learn better when text and images are close together. Asynchronous delivery of spoken text and pictures improves learning outcomes. People learn better when difficult lessons are broken down.

2. METHOD

This study is a type of development research. Development research is focused on designing and validating educational materials. The goal of development research is not to produce or test theory, but to build effective products for use in schools. The ADDIE model was used in this development investigation. The ADDIE paradigm consists of the following steps: analysis, design, development, implementation, and evaluation [10].

3. RESULT AND DISCUSSION

3.1. Result

This research produces a product in the form of a learning video with the principle of dynamic drawing for grade III elementary school mathematics. This research was conducted on third grade students of Lab Elementary School. Undiksha. The model used in the development is the ADDIE model which consists of five stages, namely analysis, design, development, implementation, and evaluation. The results obtained in each stage are as follows: a) analysis, at this stage describes the results of the analytical activities that have been carried out, namely analysis of subjects, analysis of student characteristics, and analysis of the environment, as well as facilities that have been owned, b) design, at the design stage carried out several activities, namely making storyboards and designing learning video scripts, c) development, at this stage development was the stage of learning video production. Some product development activities are product validation tests by media experts and material experts, product trials include: individual trials consisting of three students, small group trials consisting of twelve students, and field trials covering all third-grade elementary school students Labs. Undiksha, d) implementation, at this stage it was not carried out due to time constraints faced by researchers, and e) evaluation, at this stage a formative evaluation was carried out. Formative evaluation aims to assess the products that have been developed including expert validation, individual trials, small group trials, and field trials.

3.2. Discussion

A camera records graphics as moving images, while a microphone records words as speech and background sound. According to the dynamic drawing principle, students learn better when instructors draw a graph as they teach rather than refer to a pre-drawn graph.

The learning video development stage that has been carried out refers to the selected model, namely the ADDIE model. The ADDIE model is a system-oriented model, namely a learning design model to produce a learning system with a broad scope, such as the design of a training system, school curriculum, and so on [10].

In addition to conducting trials with material experts and learning media experts, the products developed were tested on test subjects through several stages, namely individual trials, small group trials, and field trials. The purpose of individual trials is to identify and eliminate the most obvious errors in the learning product being developed**,** and to get an indication of initial performance and reactions to the content by learners. The three main criteria and decisions during individual trials were as follows: 1) Clarity: Was the message, or what was presented, clear to the learner? 2) Impact: What is the impact of learning on student attitudes and achievement of learning objectives? 3) Eligibility: How feasible is learning? [11].

Small group trials have two primary goals: 1) to measure the effectiveness of modifications made following individual trials and to discover any lingering learning problems that participants may have; and 2) to establish whether the learner can use the instruction independently of the teacher. Instructional appropriateness is assessed by the learner's performance measurements, the lesson's time requirements, the cost and continuity of delivery, and the learner's attitude toward the lesson [11].

The final stage is a field trial, the developer tries to use a learning context that is very similar to the context intended for the final use of the developed teaching materials. After a small group stage, it was important to see if the learning adjustments that were implemented were beneficial. Another objective is to determine whether or not the knowledge gained can be put to good use in the intended setting [11]. The use of the ADDIE model in the development of learning video products is very effective in producing learning videos that can be used in schools.

4. CONCLUSION

Taking into consideration the foregoing explanation, it can be concluded that the process of generating a learning video based on the principle of dynamic drawing passes through the stages of analysis, design, development, and evaluation.

AUTHORS' CONTRIBUTIONS

The author of this article contributes to the development of instructional video, instructional video evaluation instruments, instructional video trials, and article writing.

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