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Communication Interfacing Devices And Media

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Abstract

PC innovation is as of now generally utilized as a learning medium instruction specialists. This research aims to develop a medium for learning about computer hardware based on Adobe Flash CS5 in order to determine the quality of learning media, the appeal of learning media based on responses from teachers, the appeal of learning media based on observations, and the effectiveness of learning media. It aims to attract students to learn the material, particularly material that is thought to be difficult for students. Three D Model) techniques are utilized in the development model. The term "developmental" research refers to this kind of research. Methodologies for gathering data: study of the literature, interviews, and observation The restatement of item quality evaluation of media specialists and informed authorities show that the items created included the two standards by any means. The average attractiveness of the research, as measured by observations, was 0.81, or 81%, meeting the good criteria. This indicates that there are differences in the average post-test score between the experimental class and the control class, indicating that the experimental class's average post-test score is higher than the value. The typical control class after the test. It is possible to draw the conclusion that learning how to use the computer-based instructional media hardware known as Adobe Flash CS5 was able to support the process of teaching and learning more effectively.

Keywords: Development Of Media, Computer Hardware, Learning, Adobe Flash Cs5, 3d Model

Introduction

Students actively develop their potential to have religious spiritual strength, self-control, personality, intelligence, noble character, and skills needed by themselves, society, and the state through education, which is an intentional effort to create a learning atmosphere and process.

One of the responsibilities of a teacher's ethical code is to foster a learning environment that encourages students' success in the classroom so that they can better and achieve their learning objectives. Information and communication technology is expanding at a breakneck pace right now. This also has an effect on education, including the selection of media. one of the programs for learning with computers, also known as computer-assisted instruction (CAI). The attractiveness of computer learning attracts children's interest, among other benefits. A learning program can be created using a computer. It will have an effect on the child's ability to use a computer later, preventing children from becoming obsolete through computer education. Based on this issue, researchers want to create learning media with the help of computers. Learning media are expected to enhance students' abilities and make learning interesting and enjoyable. A lecturer and students met in person according to a scheduled meeting and utilized a blackboard, whiteboard, and chalk/marker for many years. However, voice, audio, video, and animation are currently utilized as teaching aids, and the internet may be their classroom. One of the visual technologies that combines two or three-dimensional virtual objects with real ones is augmented reality (AR). By making information more interactive and properly conveyed, applications based on augmented reality (AR) can aid in the teaching and dissemination processes. Other than that, it permits clients to cooperate normally with 3D impression and gives self learning schooling to turn out to be more intelligent. Gadget utilized for carrying out AR innovation is a web-cam, to catch pictures. As a result, self-learning processes known as ICHAR (Introduction of Computer Hardware by Augmented Reality) will be developed as part of this study to visualize computer hardware using augmented reality technology and a webcam.

Media

Media is a tool or method of communication, also known as audio-visual equipment. This means that it can be seen and heard and is used in a learning process to improve communication. According to Allen (1975), the relationship between the goal of learning and media is depicted in table 1.

Note: L stands for low, M for middle, and H for high. 1: facts about learning; 2: a visual introduction to learning; 3: rules about learning; 4: the process of learning; 5: delivery; 6: forming attitudes and motivations

Application Of Computer

Due to its high speed of calculation, diligence, accuracy, dependability, and versatility, computers have become an integral part of our lives and of businesses. Almost every aspect of life involves the use of computers.

• Computers for education are frequently used as a tool and an aid in education. Computers are used by educators to prepare lecture notes and presentations. Computers are used to create computer-based training programs, offer distance education through e-learning software, and administer online tests. Computers are used by researchers to gain global access to research materials and to quickly access details about conferences and journals.

• The entertainment industry has greatly benefited from entertainment computers. The user is able to download and watch movies, play games, chat, buy movie tickets, use multimedia to make movies, use computers to add visual and sound effects, and more. The users can also use computers to make music, download and share music, and listen to music.

• Sports Using a computer, you can watch a game, check the scores, improve your game, and play games like chess. and make video games. Additionally, they are used for player training.

• The advertising medium known as advertising computer is potent. Different websites can display advertisements, emails can be sent, and product reviews written by different customers can be posted. Visual and audio effects for advertisements are also created using computers. The computer is a channel through which the advertisements can be seen worldwide for the advertisers. Nearly all businesses now incorporate web advertising into their marketing strategies. In point of fact, the primary source of revenue for Google's business model is web advertising.

• Medicine Computers are utilized by medical practitioners and researchers to obtain information about recent advancements in medical research and to solicit physician opinions around the world. The computers store the patients' medical records. Additionally, computers are an essential component of a variety of high-tech medical devices like ultrasound machines, CAT scan machines, MRI scan machines, and so on. PCs additionally give help to the clinical specialists during basic medical procedure activities like laparoscopic tasks, and so on.

• Science and engineering Scientists and engineers use computers for simulating and testing designs, designing and drawing (CAD/CAM applications), and complex scientific calculations. Complex data is stored, complex calculations are performed, and three-dimensional objects are

visualized on computers. Complex scientific applications, such as rocket launches and space exploration, are impractical without the use of computers.

• Government The government uses computers for e-governance and internal operations. Users can find information on the websites of various government agencies. The filing of income tax returns, the payment of taxes, the online submission of water and electricity bills, access to land record details, and other tasks all require computers. The police use computers to look for criminals by matching fingerprints, among other methods.

• Computers at home are now standard household equipment. People use computers at home to play games, manage their home accounts, communicate with friends and family over the Internet, pay their bills, learn, etc. Appliances like washing machines, televisions, food processors, home theaters, and security systems all contain microprocessors.

Design And Implementation Learning Media

Through a variety of media, the development of technology makes learning easier. It can be used to make the learning process more meaningful by designing various resources and facilities. This is based on the experience with triangles below.

One of the visual technologies known as augmented reality (AR) combines a two- or three-dimensional virtual object with a real three-dimensional environment and then projects the virtual object in real time. The following are some of the benefits of AR technology that have led to its selection: ready to expand the client's view of the item and give a client experience on a 3D article showed; enables interaction between users that is impossible in the real world; It is possible to utilize a variety of tools and devices depending on requirements and availability [1].

Interacting With Real And Virtual Objects

A mixed reality modeling, IRVO is modeling the interaction, which aims to model the interaction between one or more users. System models and the phases of life cycle design are included in IRVO. An object that can be distinguished from other objects is represented by the entity. In IRVO, there are three types of entities: User (U), user entities in the augmented reality application; a physical thing that a user can hold or manipulate. Comprises of a space object (O) and devices (T). Tools are objects that can be used to manipulate domain objects, while a domain object is an object that is manipulated by the user. Model Internal, a computer program's application entity [2].

Methods

Location, Time, and Subjects of the Study This study was carried out in Pontianak, West Kalimantan, at the Vocational High School Negeri 6. between May 3 and June 11 One teacher and a multimedia-majoring class X student from Vocational High School were the study's participants. Procedure for Development When employing the ADDIE design model, this interactive multimedia product was developed. Branch (2009) says that ADDIE has five stages, each of which can be explained in detail as follows:

Phase of Analysis

Researchers gather data that can aid in the creation of interactive multimedia at this stage of analysis. This is important because at this point in the analysis, a library study that includes (Literature Review, Curriculum Study, Relevant Research) is necessary to understand the issues that teachers and students face with learning. then instructional analysis and character analysis of students. The validation of the gap between ideal and actual abilities, the number of students participating in the study, the location of the research subject, data on the distribution of students' abilities or research subjects, the curriculum's content, the technology that can be used, and the facilities must all be included in the three stages of the analysis. claimed by understudies and schools.

Phase of Design

A lesson plan for the product and the design of computer hardware maintenance materials are at this stage. by establishing objectives to be met through interactive multimedia. The initial interactive multimedia product's design begins with the storyboard's initial concept, which is then turned into a visual prototype, also known as a conceptual product. The initial product development stage, in which experts will validate this concept design, is now complete.

Phase of Development

Stages of development as the initial product evolves into the final interactive multimedia product. The creation of the initial product, expert validation and revision, as well as three trial stages and subsequent revisions to produce the final product, constitute the development stage. A portion of the subtleties of the means did include:

Initial Product Creation

The interactive multimedia product design that was created in the previous stage is realized during the development stage, where an initial product is produced. Review by experts The interactive multimedia product concept that has been designed is subjected to expert validation in

order to ascertain whether it is attainable. In order to validate the developed materials, media, and product designs, validation involves a number of professional and seasoned experts in their respective fields. The first version and the revision. Revisions based on expert feedback are made following expert validation. The consequences of the correction made the item as the underlying item joined by guidelines for utilizing intuitive sight and sound. This is done to improve the quality of the product and make it suitable for individual trial use.

Test One-On-One

One student with average ability was the subject of individual trials. The purpose of this experiment is to ascertain the initial reaction that results from using the revised initial product, which has undergone expert validation tests. One-to-one trial revision. The initial product was changed after individual trials. Product development takes into account the opinions of individual trial students. Small-Group Study Six (six) students with high, average, and low abilities participated in small group or class trials. The students' experiences with the initial product have contributed to the complexity of this trial.

Small Group Trial Revision

A second revision to the initial product was made following a small group trial. Product enhancement takes into account the opinions of students participating in small-group trials. Field Test Twenty students participated in large classes and field trials. This trial is more extensive, and the students' experiences with the initial product play a significant role in shaping the final product. Improvements to Field Try. In the wake of leading an enormous gathering preliminary, the item was reexamined once more. In order to produce interactive multimedia finished products, product improvement is carried out by taking into consideration the opinions of large group trial students.

The Finished Goods

Throughout the trial, the researcher revised and enhanced each and every input until the final interactive multimedia product was produced for computer hardware maintenance instruction at Vocational High School.

The Design System ICHAR is made for self-learning the basics of computer hardware. Users can interact directly by utilizing augmented reality technology. After presenting the components of the computer hardware to the webcam, a description of the components captured by the webcam appears on the speaker and display.

Result And Discussion

Result Analysis Phase

According to the findings, one of the learning materials for computer hardware maintenance lacks learning media, which discourages students from participating in learning and prevents some students' learning outcomes from meeting the minimum completeness criteria score of 70. According to the findings of this study, some students who have a favorable attitude toward the process of learning how to maintain computer hardware achieve learning outcomes that meet the minimum completeness criteria, while others who have a negative attitude toward the process of learning how to maintain computer hardware achieve learning outcomes that do not meet the minimum completeness criteria. The materials in the multimedia department of class X were developed in accordance with the 2013 Curriculum, and even the maintenance of computer hardware was included in the development of interactive multimedia. The findings from the field show that students in class X, who are in the operational stage of the format and are between the ages of 14 and 15, tend to be fairly curious about the use of interactive multimedia, which allows students to think abstractly and logically by using possible thinking patterns. interactive can enhance student outcomes. Currently, 82% (49 students) of Class X state Vocational High School students are enrolled in online and online learning processes via devices and laptops, while 18% (11 students) of the 60 students majoring in multimedia are enrolled in offline and online learning processes. Google Classroom, Google Meet, and Google Form are the most commonly used learning media at the moment. There is an adequate internet network and a computer labtop/PC facility at Vocational High School Negeri 6 Pontianak to support distance learning. Students who do not have access to study facilities may use school facilities provided they adhere to the health protocol. Phase of Design. At this stage, activities include creating product maintenance plans and computer hardware learning plans. by establishing objectives to be met through interactive multimedia. There are several stages involved in the design of teaching materials for computer hardware maintenance materials. These stages include selecting instructional materials and taking care of computer hardware, one of the materials in the multimedia department's class X even semesters, where blended learning is used as an instructional strategy. The media utilized in the educational experience is web media, in particular site pages https://multimediainteraktif.haiterigas.com/, The time distribution in the educational experience is 2 gatherings, with each gathering 2 x 45 minutes, and the standards for

the test things utilized are various decision inquiries with a sum of 20 inquiries that are acclimated to the learning goals. Create an interactive multimedia storyboard landscape as the initial stage of product concept design. The following are the views, both general and specific:

Phase of development. At this point, product development begins with the initial product. Three experts will validate the instrument, three experts will validate the product, and each expert will validate the three aspects—design, material, and media—then revise and carry out the trial phase. modified once more to become the final product. A portion of the subtleties of the consequences of the improvement stage completed incorporate (item show):

Review by experts At this point, interactive multimedia is validated by three experts who are knowledgeable in all three areas of learning design—material, media, and From May 3, 2021 to May 7, 2021, this product will be validated using the following data:

Discussion

The Pontianak 6 State Vocational High School's 2013 curriculum was identified as the one used during the analysis stage of the curriculum study. One of the topics covered in class X Multimedia major in even semesters is computer hardware maintenance. The minimum completeness criteria, also known as the minimum completeness criteria, is based on the class minimum completeness criteria, which states that each subject in class X Vocational High School must meet a minimum completeness requirement of 70. Dwi Ariyanti's (2020) research on the development of interactive multimedia showed that the learning media met the criteria and that students achieved completeness scores, according to a relevant study. Moreover, the discoveries from Suyitno (2016), research results demonstrate the way that this mixed media item can be utilized as a medium to work on comprehension of specialized estimation material. In addition, Purwosiwi Pandansari's (2016) findings demonstrated an improvement in learning outcomes both before and after the use of interactive multimedia. Additionally, Oktavia Hardiyantari (2017)'s research demonstrates that the developed interactive multimedia products are suitable for use as instructional aids. Additionally, the findings of the research conducted by Dian Puspita Eka Putri (2018) demonstrate that interactive multimedia products are very user-friendly. The planning stage, the product design stage, and the initial product design in the form of a storyboard make up the design stage. According to Rusman (2018), a good storyboard consists of images that have been prepared with clear explanations. The first stage of product development involves the creation of interactive multimedia products following the design of the

storyboard. The product was created using ispring 9 and powerpoint 2019. After designing the product, purchase hosting and a domain with the link address http://multimediainteraktif.haiterigas.com/. The whatshap group publishes instructional materials for computer hardware maintenance. The following development phase is product validation by experts, which follows the initial product development phase. Before being tested in the field, this product validation aims to determine whether the initial product is feasible in terms of material, media, and design. The method involved with carrying out the utilization of intelligent mixed media was done on 10 and 11 June 2021 for two gatherings. After explaining the product to the students, a link to the cognitive attitude questionnaire was provided to them on the Google form at the first meeting to gauge their attitudes prior to using interactive multimedia. Following that, a Google Form-based pretest was administered to students to gauge their prior proficiency with interactive multimedia. executed in accordance with the previously prepared Learning Implementation Plan (RPP) 1. Following that, the learning process was also carried out in accordance with the Learning Implementation Plan (RPP) 2 for the second meeting. The researcher administered a google form-based posttest at the activity's conclusion to gauge students' proficiency with interactive multimedia. Then, at that point, understudies were approached to fill in the emotional conative demeanor survey connect on the google structure that had been arranged to decide understudy mentalities in the wake of utilizing the item. The acquisition of a total student attitude score of 311.1 out of a total score of 343 with 49 items demonstrates changes in student attitudes. This implies that an all out score of 311.1 has a typical score of 6.3, so that understudies' mentalities are extremely content with the utilization of intuitive media for figuring out how to really focus on PC equipment in Professional Secondary Schools. This adjustment of gaining disposition is indistinguishable from the utilization of intelligent interactive media utilized by understudies which gives an opportunity for growth to understudies. According to Khalid, Alias, Razally, Yamin, and Herawan (2010), students are motivated to learn and happy. Examining the cognitive aspects of the learning process reveals how these learning outcomes are obtained. An increase in students' comprehension of the learning process facilitated by interactive multimedia is a sign of success in improving student learning outcomes. The comparison of the results of the students' pre- and post-tests demonstrates this. The obtained results indicate that the minimum completeness requirement, which is set by the school, is 70, with an average pretest score of 53.1 and a posttest score of

78.6. As a result, the data from the pretest score show that eight students met the minimum completeness criteria and 22 students did not meet the minimum completeness criteria. In the meantime, the posttest results indicate that 27 students have met the minimum completeness requirement and 3 students have not met the minimum completeness requirement. It is possible to state that there was a significant increase based on the data from the pre- and post-tests. Ttable = 2.045 is obtained with df 29 (degrees of freedom = N – 1 or 30 – 1 = 29) and an error rate of 5% (0.05) or a confidence level of 95% (0.95). If to=-13.507 or 13.507 and ttable=2.045, then to is greater than ttable. With the condition that if tottable, H0 is rejected, this indicates that student learning outcomes were significantly different before and after using interactive multimedia to learn computer hardware maintenance. The results of measuring the attitudes of students who are very happy with the use of interactive multimedia and the very significant difference in results between the pretest and posttest students indicate that interactive multimedia website-based instruction for computer hardware maintenance in vocational high schools is very effective. This is also evident from Caesariani's (2018) findings, which demonstrate the following advantages of interactive multimedia: understudies can advance autonomously and have a good time, understudies' mentalities are energetic and excited, and further develop understudy learning results. The findings of Parata & Zawawi's (2018) study also emphasized the potential for interactive multimedia to boost students' motivation and cognitive learning outcomes. This means that interactive multimedia learning is a useful tool for increasing student achievement or learning outcomes (Rajendra & Sudana, 2018; 2015 Batubara; 2014 (Ayda & Widjajanti).

Conclusion

The following can be said about the findings of the research that was carried out: The students' happiness with the final product was evaluated to determine its efficacy, and there was a significant difference between before and after using interactive multimedia. A semantic differential technique (semantic differential technique) is used in the scale for assessing student attitudes. On a scale of 1 to 7, the average score for students' attitudes is 6.3, which indicates that students are very pleased with the use of interactive multimedia. The t-test, which was obtained as t_ot_table and has a score of 13,507 2,045, was used to test the acquisition of scores from the use of the multimedia created by students. Student scores were significantly different before and after the use of interactive multimedia, according to the t-test results. The effectiveness of using

interactive multimedia, as determined by assessing students' attitudes and values regarding learning outcomes, was found to be very effective.

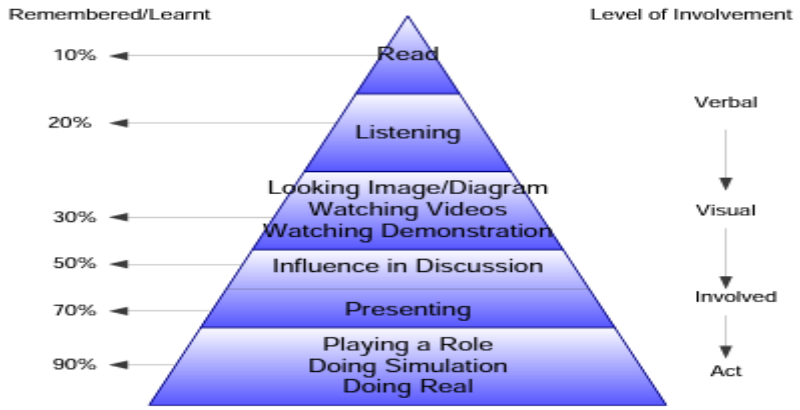

Figure 1. Triangle Experience.

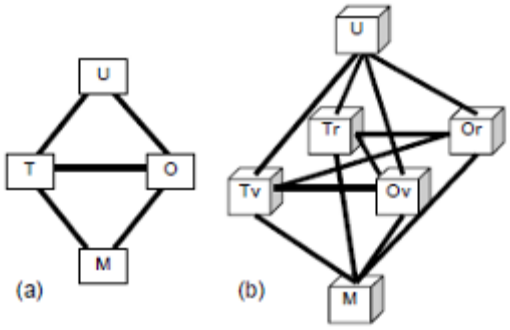

Figure 2. Entity and relationship in IRVO

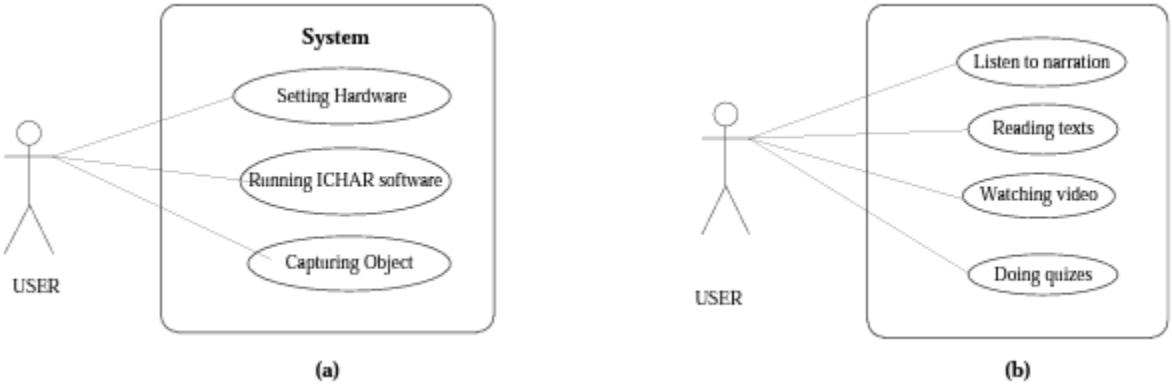

Figure 3. Global Use Case of ICHAR And Use Case of ICHAR

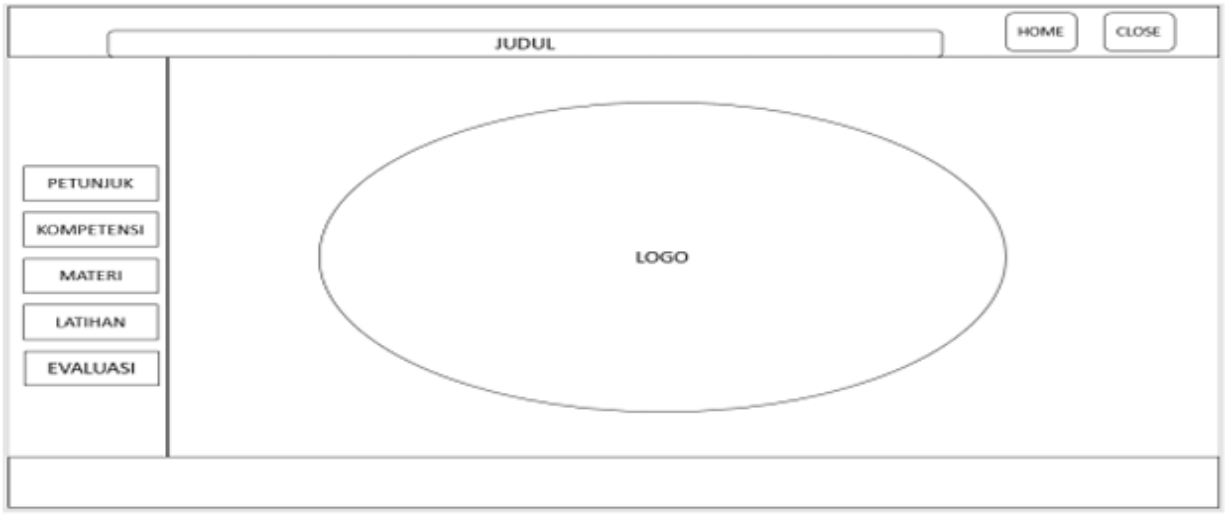

Figure 4: Display Storyboard Section Home Menu

Figure 5: Main Menu Display

Figure 6: Exercise Menu Display

Table 1. Relationship media and aim of learning

Type of Media	1	2	3	4	5	6
Static Image	M	H	M	M	L	L
Motion Image	M	H	H	H	M	M
Television	M	M	H	M	L	M
3-dimension Object	L	H	L	L	L	L
Audio Record	M	L	L	M	L	M
Programmed Instruction	M	M	M	H	L	M
Demonstration	L	M	L	H	M	M
Printed Text Book	M	L	M	M	L	M

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