Multimedia development of carved slippers to improve student skills in craft and entrepreneurship subjects

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Abstract. This study aims to develop learning media for craft and entrepreneurship subjects. After undergoing preliminary research on students needs for this particular subject, the authors consider technology-based learning media to needed in the process of learning carved sandals. This research was developed based on Borg and Gall research model as the main design, and ASSUREs instructional design as a sub-design in developing instructional media in the form of DVD (Digital Versatile Disc) entitled Tutorial Carved Sandals. Based on the results of the expert validation test it was concluded that the product was feasible to be used as a medium with a yield of 3.55 or 88.75%, and was very well used as a learning medium in large group trials with a return of 3.43 or 86%. This DVD has tested in 3 secondary schools in Central Jakarta in learning Crafts and Entrepreneurship in making handicraft products with the inspiration of non-objects culture.

1. Introduction
The 2013 curriculum provides direction for teachers to develop life skills that include personal, social, vocational, and academic skills. The emphasis on the type of skills chosen by the education unit needs to consider teacher interests and talents as well as local potential, cultural environment, economic conditions, and local needs. One of the competencies in life skills is understanding the craft production system by inspiring the local culture of non-objects and materials around the area based on the carrying capacity of the local area and producing crafts with the inspiration of the local culture of non-objects and elements based on the carrying capacity of the local. One of the subjects in this curriculum is craft and Entrepreneurship (PKWU) because it requires expertise, thoroughness, thoroughness, discipline, an independent attitude, and personal calm, and high creativity.

The skill competence of PKWU's is to make hand carved sandal. The data obtained in the last three years of learning show impairment. Therefore, teachers of PKWY require finding alternative learning to increase and maximize learning outcomes for students. From the experimental results and Q & A questions to the students, the PKWU teachers eventually decided to train students outside the lesson and assign additional tasks at home by providing tutorials through DVD (Digital Versatile Disc) as an innovative development of instructional media.

Multimedia has a lot of potentials to create a high-quality learning environment. Many key media elements are controls in learning. User control over information delivery and interactivity can be used to improve the learning process by creating an integrated learning environment. Media users can easily explain by combining illustrative examples. Active learning can initiate the design of user-centered
interactive media. This approach must have based on the principles of human-computer interaction in general and educational theory [1]. Multimedia developed must be easily accessible and used by students. The features contained in the media application are easy to understand.

Many of these theories have revealed the complexity of multimedia learning, and generally, indicate that students tend to perform better when receiving information based on two senses (most often visual and auditory). However, several empirical studies using this theory are usually carried out in the practice of learning in traditional classes that have not used e-learning based media. Also, this empirical study does not consider a variety of media choices in their exploration [2].

Lots of research in the field of teaching that discusses learning media. Different learning media such as images, animations, and videos successfully reduce the visual difficulties experienced by students [3]. This research will develop video media as a tutorial for students in making measuring sandals. The model developed adopts a model using the ASSURE method (Character analysis of students, Learning objectives, Utilizing Materials, Requires student participation, Evaluating and revising). In this model the teacher will re-analyze, practice, evaluate and review the results that have not been understood by students.

It is not yet known with certainty how media has processed in cognitive learning such as several theories that have been put forward by previous researchers such as Mayer's Cognitive Theory of Multimedia Learning [4] and Sweller's Cognitive Load theory [5]. Thus, there are many high needs to research the media in learning and teaching and evaluation of media use. There needs to be a lot of proof empirically the effectiveness of using media to optimize learning by using multimedia in educational practices [6,7].

The study by Mayer et al. found that static illustrations, when combined with printed text, can reduce cognitive load that is irrelevant and promote better processing compared to the animation told [8]. However, Ayres et al. state through experiments that learning animation is superior to static representation in teaching [9].

Procedural content can be well studied when the video-plus-static-image method has applied in learning [10]. The material on the video has also compared with only audio equipment; Baggett found that video material was better able to bring up long-term retention ranges for students than just the audio version [11]. Experts like Baggett [11], Believe that the critical attribute of video lies in its ability to use auditory and visual symbol systems, and when audio and visual information has combined into videos, each source will provide additional and complementary information.

Heinich et al. introduced the ASSURE model. This model is applied to guide teachers in planning and delivering lessons that effectively integrate technology, media, and material into classroom teaching [12]. This model consists of a six-step learning system design process:

- Analysis of students,
- State standards, and objectives;
- Choose strategy, technology, media and material;
- Utilizing technology, media and material;
- Requires student participation; and
- Evaluating and revising [13].

For decades, many studies have been carried out on ASSURE models from various fields. Lee and Lee examined the effect of the ASSURE model on teacher efficacy related to technology skills [14]. The purpose of using ASSURE is for reasons (1) to be transparent and easy to use; (2) to allow the incorporation of conditions specific to the city under consideration; (3) have relatively low data requirements [15]. Animations and videos are often designed to present information that involves changes over time and in such a way as to help facilitate the understanding of students and facilitate learning. Moving / dynamic image presentations are superior to static image modes, and displaying fewer (lower frequency) images is more useful [10].
2. Method

This quantitative experimental research utilized 60 sample data from students grade 10th from 3 Madrasah in Central Jakarta, with sample distribution of 30 students for the innovative class, 30 students for the control class. Data was obtain from February 2017 until November 2017. The data was calculated using Taking True Experiment-Post-test Only Control Design method in terms of data retrieval. The effectiveness of instructional media has calculated through the T-Test method. The tabulation used SPSS ver.21. T-Test was conducted to show the differences between the two study groups. If the result (sig. 2-tailed) with SPSS calculation <0.05 then it is said that both data have different effect obtained. However, before the T-Test data is executed, homogeneity and normality should be calculated in advance.

Homogeneity and normality tests had also performed with SPSS application. Both of these tests were performed to ensure that both groups have normal variants and distributions so that they are feasible to be compared or through comparative analysis. After the comparative test has obtained through the results of the product assessment data, then it proceeded to the questionnaire data processing as a reinforcement of the effectiveness of the media provided. The result data from the questionnaire consisting of 15 items of statement from 30 students of the experimental group proceeded to the validity test using SPSS in advance. After that, it was processed to become descriptive data using the same application.

3. Results and discussion

Evaluation is carried out by analyzing the value of students' carved sandal products after conducting the learning process assisted by learning media. Product evaluation aspects consist of 5 (five) issues with the lowest weight 1 and highest weight 4. The five elements are (1) design work, (2) carving techniques, (3) work safety and cleanliness (K3), (4) final form of motives, (5) originality. The number of scores obtained in each aspect is multiplied by five so that the maximum rating is 100.

The analysis was conducted to see differences in learning outcomes in the form of product values between groups or experimental classes with the control group. Respondents in the innovative group/class and the control group were 30 students each. The number of students who get a score below the Minimum Completion Criteria (KKM) or <75 is 28 people, while the same as 75 is one person and the one above the KKM is only one person. Data shows that the average grade score is only 62. This experiment illustrates that the average value of the control class under the KKM and learning completeness is only 7% of the number of students.

The acquisition of product value in the control class with the number of respondents 30 people applying conventional learning without media assistance, the results obtained with the two lowest values are in the aspects of work design and carving characters. For the average score per point for the design work of 2.43, the carving element averaged 2.27; the K3 factor averaged 2.6, the form aspects 2.57 and the originality aspect after the 2.6 rope so that the average - average score.
Figure 1. Product assessment of the control class.

From the picture above, it can see that the results of the evaluation of post-test carved sandal products in the experimental class with the number of respondents 30 students through the use of multimedia received a significant increase. Students who score under KKM (<75) are four students while scores of 75 are 4 and above are KKM 22 students. Multimedia use is quite effective in learning.

The average value of the experimental class is 82%, which means that the average cost of the course is at the predicate B or right according to the table of criteria for interpretation of the score of the report on the results of the study. Learning to carve sandals in the experimental class by providing multimedia tutorials on cut sandals is in the right criteria. The product rating graph of the innovative level can see in figure 2:

Figure 2. Product assessment of the experiment class.

This product assessment has shown from the comparative test on product values between different significant control classes. This assessment can see from the percentage of the number of students who complete and the class average compared to the interpretation criteria of the learning outcome report score. The total completeness of learning in the control class is only 7% of the number of students while in the experimental class is 86.6% of the entire students. The average value of the control class is 62, or categorized as D or less, while the innovative level has a value of 82 so that it has classified as B or right on the criteria for the results of the report on the report score interpretation. Results from the data of the two class groups can be seen from the following graph:
Figure 3. Comparison of the value of the product of the control class and the experimental class.

The use of software in teaching has a positive impact on improving student achievement [7]. The ASSURE model is practical and easy to implement an approach to integrating technology into classroom instruction [12]. In addition to the value of product learning outcomes, the effectiveness of multimedia learning carved sandals can see from the results of processing questionnaire data through rigorous and valid tests. The results obtained showed that the average questionnaire score was 85.9% rounded up to 86%. Interpretation of the rating of the questionnaire suggests that medial instructional criteria are very good or useful as multimedia. Multimedia learning for carved sandals meets the principle of choosing an excellent learning media, which includes clear and relevant goals with student learning needs by not ignoring the level of knowledge and number of students and scope of learning. All of these principles have elaborated through statement items on the questionnaire used during the experiment. From the description above it can be stated that the use of static videos and images to improve the learning of procedural content. From the report above it can note that the use of static videos and pictures to enhance the teaching of procedural content [10].

4. Conclusion
Active learning can do through multimedia. Some of the skills that can achieve through multimedia include design work, engraving techniques, work safety and cleanliness (K3), the final form of motives, and originality. The industry can adapt training to improve employee knowledge and skills with multimedia use. Better and more appropriate media used in practice will further enhance employee knowledge and skills.

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