



The Use of Video Tutorial in Increasing Understanding of Ceramic Tiles Installation for Walls and Floors in the Subjects of Building Construction

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Abstract

The building construction basics include the installation of ceramic tiles for walls and floors as the primary topic. However, using conventional methods as instructional media has caused a lack of understanding for some students, especially for beginner students, as they will face difficulty imagining the material presented. Moreover, the students would hardly see the detailed installation demonstrations and tend to get bored with explanations through whiteboards. Creating video tutorials is one alternative to make it easier for students to understand and know the technique of installing wall and floor tiles. This study employed a Research and Development (R&D) approach, and a Four-D model was utilized in the video tutorial making. The feasibility test phase involved student respondents and expert instructors, including three instructors from P4TK VEDC of Malang and 98 tenth-grade students of SMK 2 State Vocational High School in Pati. The results of the analysis of the students' material needs found 64.3% or more than half of the students did not understand the topic of ceramic installation. Further, the test results from content experts and media experts obtained percentages of 93.5% (very feasible) and 83% (feasible), respectively. The test of understanding the material by students obtained a percentage of 77% (good). The study concluded that the video tutorials for installing wall and floor tiles are suitable for use in learning activities as the learning outcomes have proven that students have good understanding skills in ceramic installation. The innovation of instructional media becomes the novelty of this research. The study has applied video tutorials demonstrated by international experts by adopting the World Skills International ceramic installation competency standard, namely the paste system.

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INTRODUCTION

According to Article 1 of the National Education System Law Number 20 of 2003, the National Education System is all components of education that are interrelated in an integrated manner with national education goals. Thus, education in vocational high school has referred to the 2013 curriculum (K-13). Moreover, improving the quality of education can be achieved with various breakthroughs, including curriculum development, learning innovation, and fulfillment of educational infrastructure (Eko Suprpto, 2017)

Vocational High School (VHS) is a national educational institution that prepares its students to be ready for work in a particular field after graduation. Hence, the teaching and learning system in this school is more centered on students, while teachers only facilitators. Instructional media as one of the learning supports during the teaching and learning processes need to be well-prepared by the teacher. However, inadequate use of instructional media in schools has made students less interested in learning (Windayani and Novita, 2018). Therefore, instructional media is very important to use as it makes students more enthusiastic, happier, and more interested during the learning process so that learning outcomes can be obtained optimally. (Kurniawan and Trisharsiwi, 2016).

Based on the circumstances, an educator must be able to choose and use instructional media that will be applied in the teaching and learning process to achieve the learning goals. Nevertheless, the use of media is still less effective in delivering material to students, especially in the subject of building construction basics. This subject is a compulsory subject for the tenth-grade students of the Department of Building Modeling and Information Design at SMK 2 State Vocational High School in Pati.

A survey has been conducted at SMK 2 State Vocational High School in Pati on the subject of building construction basics with basic competence in applying stone installation procedures, especially on the installation of ceramic tiles for walls and floors as the primary topic. The results revealed that there were still some problems encountered during the learning process. Further, according to the interviews with the ceramic installation practice teacher and twelfth-grade students of the Department of Building Modeling and Information Design (who have already practiced installing wall and floor tiles), the media used for practical learning was carried out conventionally; the teacher explained the material using a whiteboard and read from the textbook without any realistic illustrations.

As a result of the conventional method, students have no interest in learning the material.

Some problems also occur in the teaching and learning process in the classroom, including (1) The teacher must rewrite the explanation and draw illustrations when moving to another class so that it takes up a lot of learning time and students tend to feel bored. (2) The beginners' students feel that they do not understand the teacher's explanation through the whiteboard because only illustrations using manual images are presented so that students do not know the original form. (3) When the teacher demonstrates the installation method and the steps, the students who sit at the back feel less clear because there is only one demonstration medium, and it is fully surrounded by other students in the front so that the demonstration media is only visible to those students. (4) There is no video tutorial on the installation of the ceramic tiles for walls and floors in the subject of building construction basics.

In some literature, video tutorial has a significant effect on learning as it can present information that is carried out directly by experts so that the process can be understood just by watching the video (Utomo and Ratnawati, 2018; Yana, et al., 2018). Video tutorials could trigger students to generate images with the learning material so that they could easily understand the material presented. Moreover, video tutorials could deliver how to do a certain task or how to practice it can be done. (Firdaus as cited in Pramudito, 2013: 4-5).

Various similar studies on the development of instructional media were carried out by (Reynold, 2017) has revealed that the use of Adobe Flash Player as instructional media on brick construction installations obtained a percentage of 90% in test validation, 94% in device validation, and an average student skill of 80.17%. The findings reinforce previous research on instructional videos that demonstrating the ability to provide useful and engaging content. This study shows that investing in innovation and learner-focused approaches to training can increase the effectiveness and flexibility of training materials. (Luke Belinda and Hogarth Kate, 2011)

Further, the novelty of this research is that the innovation of instructional media, in which the use of video tutorials demonstrated by international experts by adopting the World Skills International ceramic installation competency standard, namely the paste system. In addition, audio-visual learning media has shown a positive and significant influence on student learning outcomes in subtheme 1, entitled *Keberagaman Budaya Bangsaku*. (Novita Lina et al., 2019).

From the various descriptions of these problems, instructional media that can provide complete information in delivering ceramics installation practicum is needed. The media should be a solution to simplify and expedite the teaching

and learning processes so that the quality of the ceramic installation practicum could be improved as well. One of the media that can be used is a video tutorial for installing ceramics.

The purpose of this research is to develop a tutorial video that will be used in increasing students' understanding of installing wall and floor tiles. The significance obtained from this research is that it can help students increase their knowledge before the practice of the installation of the ceramic tiles for walls and floors.

METHOD

This research was carried out in the Department of Building Modeling and Information Design, precisely at the Stone and Concrete workshop of SMK 2 State Vocational High School in Pati. The data on material needs analysis was collected from 23 twelfth-grade students of 2016 class majoring in Building Modeling and Information Design. Further, the sample was taken from tenth-grade students of 2018 class majoring in Building Modeling and Information Design.

This study employed Research and Development methods with a quantitative approach. Research and Development (R&D) is a research method used to produce certain products and test the effectiveness of these products (Sugiyono, 2015: 407). The R&D research procedure carried out was only up to the design revision stage. Further, the stages of the research, including; 1) potential and problem stage, 2) data collection stage, 3) product design stage, 4) design validation stage, 5) design revision stage, and 6) product trial stage. Additionally, the study utilized a Four-D model for making the instructional media. The stages of making video tutorial media comprised: define, design, develop, and disseminate.

In this development research, the research instrument used consisted of a closed questionnaire by content experts and media experts. The study also used student response questionnaires. The data analysis technique was carried out using quantitative descriptive, and the results obtained were used as a reference for making improvements to the video tutorial developed. A Likert scale with a value range of 1-5 was performed in the score calculation. The results of the score on the questionnaire will be interpreted according to the criteria (Akbar, 2013: 81). Based on the table below, the developed video tutorial can be declared feasible or not feasible according to the validation of experts.

RESULTS AND DISCUSSION

This section explains the feasibility test results to determine the assessments obtained from content

experts, media experts, and testing the usefulness of the video tutorial that has been developed. The results will indicate whether the media is following the expected uses or not.

The results of the video tutorial of the installation of the ceramic tiles for walls and floors that have been developed can be accessed on the following link

<https://www.youtube.com/watch?v=dmgwvwhxSups>.

This video tutorial contains material for all things that must be fulfilled and implementation techniques in installing wall and floor tiles. This video is according to the curriculum of vocational high schools for the basics of building construction subjects with basic competencies applying stone installation procedures, especially on the installation of the ceramic tiles for walls and floors as the primary topic.

Based on the material needs analysis of students, 63% of students are still lacking in understanding the material for installing wall and floor tiles using the thin tile method. This is due to the use of conventional methods, i.e., stories and manual drawing, in delivering the material so that students tend to be passive in receiving the material. In addition, during the practice, many questions still arise as the students' knowledge about the material is still very minimal. Therefore, video tutorials that are able to explain the material systematically, communicatively, and according to competence are important for the students. They expect the material to be presented in a systematic, complete, detailed, simple, communicative manner, and easy to understand. In the delivery of steps, explanations of the tool, and installation performances, the videos provide more detailed simulations in each process. It helps the students directly interact so that they can learn independently without the help of teachers or instructors.

The Test Results of Video Tutorials by Experts

The assessment of the feasibility of the video tutorial was carried out by two instructors of Stone and Concrete Technology of PPPPTK VEDC of Malang. These two instructors are experts in the field of ceramic installation at the international level. Thus, they act as the content experts in this research. Content experts assess the aspects of tools and materials for ceramic installation, ceramic cutting techniques, ceramic tiles installation for wall and floor, ceramic installation finishing techniques, the types and functions of tools used for thin tiles method installation, types and methods of processing materials for installation thin tiles method, straight ceramic cutting technique, curved ceramic cutting technique, steps and techniques for installing wall tiles, steps and techniques for installing floor tiles, spacer removal techniques,

grouting techniques (filling grout), and cleaning techniques. The results of the questionnaire are shown in the following Table 1:

Table 1. Percentage of Feasibility by Content Experts on Video Tutorials for Wall and Floor Ceramic Installation

No	Experts' Codes	Score	Percentage	Feasibility Category	Explanation
1	Expert 1	78	93%	Very Feasible	Very suitable for use in learning
2	Expert 2	79	94%	Very Feasible	
Average		78.5	93.5%	Very Feasible	

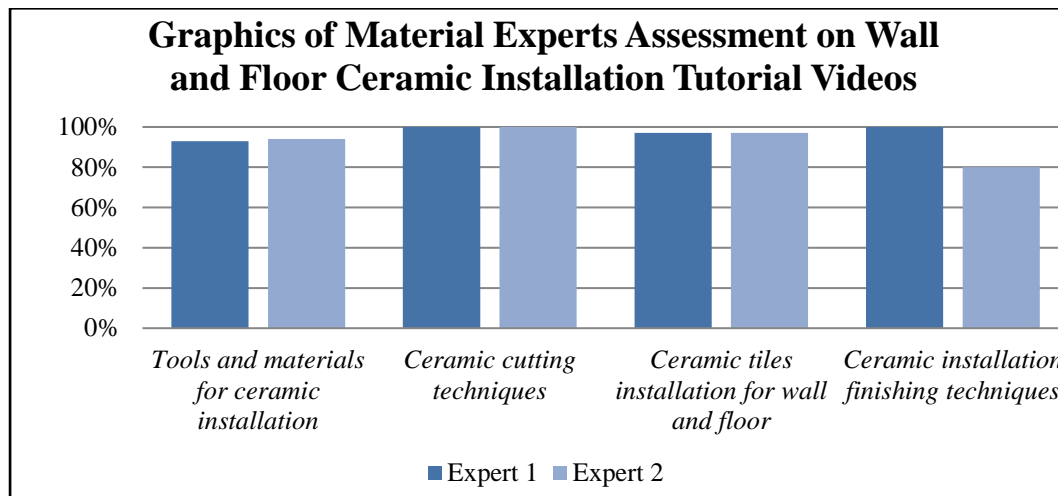


Figure 1. Graphics of Content Experts Assessment on Wall and Floor Ceramic Installation Tutorial Videos

According to the data obtained from questionnaires given to content experts, the video tutorial has reached an average score of 78.5, with a percentage of 93.5%. This score can be interpreted that based on the content experts, the material in the video tutorial for installing wall and floor ceramics using the thin method is in the very feasible category for use in learning. The suggestions and inputs from the two experts are:

- a. Improving to indicators and objectives
- b. The application should be done for two layers or more
- c. Correcting the way of grouting and color application.
- d. Adding scoring criteria
- e. Techniques and methods of measurement and tools used
- f. List of tools used for ceramic installation

Assessment of the feasibility of video tutorial is carried out by one instructor of PPPPTK VEDC of Malang. As a media expert, the instructor is proficient in making and developing book and video tutorials for Vocational High Schools. Media experts assess media quality and layout, which consists of the quality of the video displayed, ease of use, clarity of voice and text, video presentation, and layout. The results of the questionnaire are shown in Table 2 as follows:

Tabel 2. Percentage of Feasibility by Media Expert on Video Tutorials for Wall and Floor Ceramic Installation

No	Expert' Code	Score	Percentage	Feasibility Category	Explanation
1	Expert 1	50	83%	Feasible	Suitable for use in learning.
Average		50	83%	Feasible	

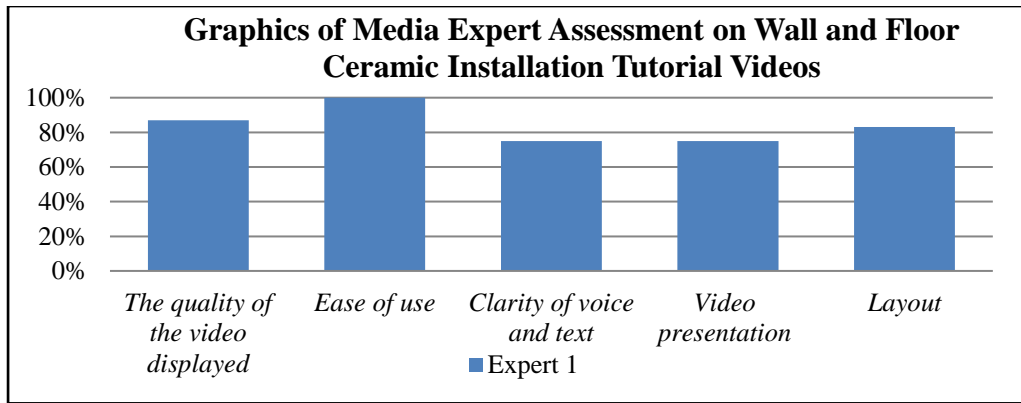


Figure 2. Graphics of Media Expert Assessment on Wall and Floor Ceramic Installation Tutorial Videos

The obtained questionnaires data from media expert shows that the video tutorial has reached an average value of 50 with a percentage of 83%. This score can be interpreted that the material on the video tutorial media for installing wall and floor tiles using the thin method is in the feasible category for use in learning. The suggestions and inputs from the expert are:

- a. Information display should be longer
- b. Point 9: the sentence "the rest of the pieces" should be replaced with "pieces trimmed."
- c. Point 13,14: The sentence "put the first tile on the mortar mixture" should be replaced with "the mortar that has been spread."

- d. Pont 15: flatness, not plains
- e. Point 16: misspelled 'ceranic.' It should be 'ceramic.'
- f. Point 25: clean the ceramic surface with a dry cloth

Results on Students

The assessment of understanding the video tutorial is carried out by the tenth-grade students' class 2018 of SMK 2 State Vocational School in Pati. The results of the average score assessment of each aspect can be depicted in the following graphic.

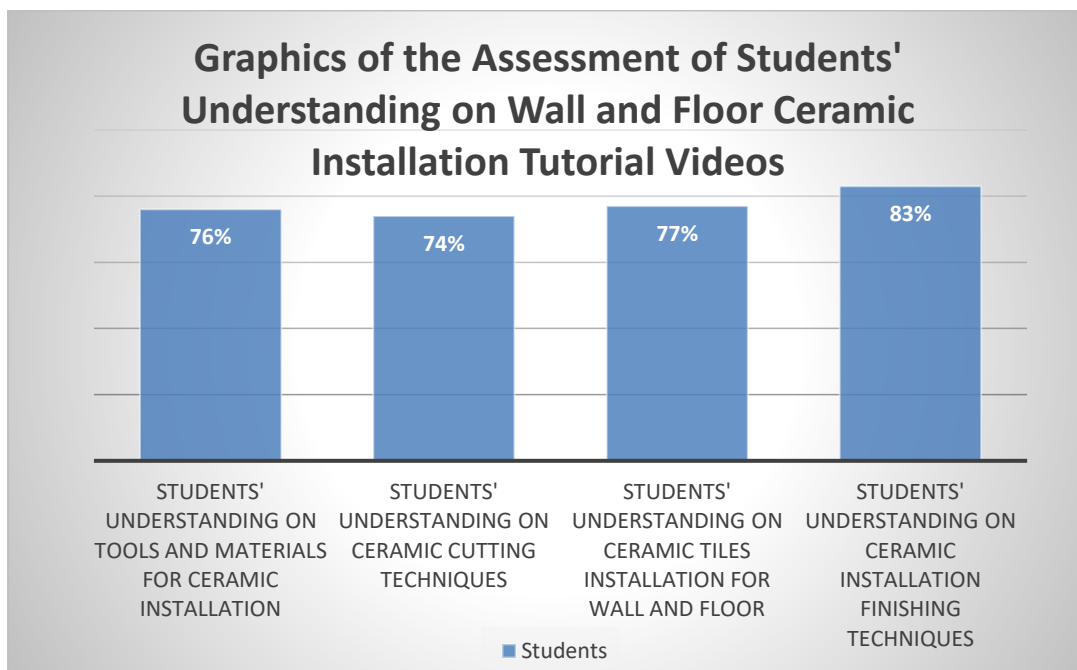


Figure 3. Graphics of the Assessment of Students' Understanding on Wall and Floor Ceramic Installation Tutorial Videos

Based on the analysis of the questionnaire scores obtained from 98 students, the product feasibility assessment by students focuses on four main aspects. There are 76% of students understand the tools and materials for installing ceramics; 74% of students understand the ceramic cutting techniques, 77% of students understand wall and floor ceramic installation, and 83% of students

understand ceramic finishing techniques. From these results, it can be stated that the video tutorial on the installation of wall and floor tiles is very helpful for the students.

From the results of the data obtained from this study, it can be concluded that the video tutorial for installing wall and floor ceramics is feasible to use and increases the attractiveness of students' desire to

learn wall and floor ceramic installation techniques in basic building construction subjects in the research site. Further, data from the results of the closed-ended questionnaire show advantages and disadvantages of video tutorials as instructional media in schools.

The advantages of this learning media include: 1) Video tutorial for installing wall and floor tiles is very easy and fast to be distributed to students, 2) This media can be accessed for learning with cellphone or laptop, 3) It can be learned anytime and anywhere, 4) It has been published on Youtube for everyone to access.

Meanwhile, the disadvantages of this learning media are: 1) The material presented has a narrow scope because it is only limited to knowledge of ceramic installation, 2) This media can only be accessed via an electronic device as it cannot be opened without help of mobile phone or laptop.

CONCLUSION

The study concludes that based on a feasibility test in questionnaires and judgment statements from content and media experts of PPPPTK VEDC of Malang, the video tutorial for installing wall and floor ceramics is feasible for use in the subjects of building construction basics.

In assessing the feasibility of the video tutorial by content experts, the video has obtained average scores of 78.5 (93.5%), indicating that the media is very feasible to use in learning.

Further, feasibility assessment conducted by media expert, the video has obtained average scores of 50 (83%), indicating that the media is feasible to use in learning,

The student responses to the video tutorial have received a positive response with an average score of 40 (77%), indicating that the media is in the 'Good' criteria.

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