Interactive Multimedia with a Scientific Approach to Craft Subjects, Material for Processing Livestock and Fishery Products

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ABSTRAK

Pembelajaran pada mata pelajaran Prakarya masih berpusat pada guru dengan metode ceramah mengakibatkan siswa kurang aktif dan tidak dapat belajar secara mandiri. Dengan pembelajaran seperti itu hasil belajar siswa terus menurun daripada menunjukkan peningkatan. Penelitian ini bertujuan untuk mengembangkan multimedia interaktif berpendekatan saintifik pada mata pelajaran Prakarya. Penelitian menggunakan model ADDIE dengan subjek penelitian yaitu ahli isi, ahli desain, dan ahli media pembelajaran, tiga orang siswa uji coba perorangan, dan enam siswa uji coba kelompok kecil. Metode pengumpulan data yang digunakan yaitu kuesioner, pre-test dan post-test. Hasil penelitian divalidasi ahli media dikategorikan kualifikasi sangat baik, ahli desain media dengan kualifikasi sangat baik, ahli isi dengan kualifikasi sangat baik. Hasil validasi melalui uji coba perorangan memiliki kualifikasi sangat baik, dan uji coba kelompok kecil memiliki kualifikasi sangat baik. Multimedia interaktif ini dinyatakan efektif, karena dilihat dari hasil rata-rata pre-test dan post-test. Berdasarkan hasil uji efektivitas multimedia interaktif prakarya berpendekatan saintifik terdapat perbedaan yang signifikan pada hasil belajar siswa sebelum dan sesudah menggunakan multimedia interaktif berpendekatan saintifik.

ABSTRACT

Learning in Crafts subjects is still teacher-centered with the lecture method, resulting in students needing to be more active and able to learn independently. With such learning, student learning outcomes continue to decline rather than show improvement. This research aims to develop interactive multimedia with a scientific approach to craft subjects. The research used the ADDIE model with research subjects, namely content experts, design experts, and learning media experts, three individual trial students, and six small group trial students. The data collection methods used were questionnaires, pre-tests, and post-tests. The research results were validated by media experts categorized as very good qualifications, media design experts with very good qualifications, content experts with very good qualifications. The validation results through individual trials have very good qualifications and small group trials have very good qualifications. This interactive multimedia was declared effective because it was seen from the average results of the pre-test and post-test. Based on the results of the effectiveness test of interactive multimedia crafts with a scientific approach, there are significant differences in student learning outcomes before and after using interactive multimedia with a scientific approach.

1. INTRODUCTION

Education will continue to develop according to the times and science and technology (IPTEK) with an effort to make the nation's life more intelligent. Science and Technology has a lot of influence on life with the aim of providing benefits and helping to make work easier. Curriculum is a set of plans and arrangements regarding objectives, content, and learning materials as well as methods used as guidelines for implementing learning activities to achieve certain educational goals. (Nursalam et al., 2023; Zulaiha et al., 2022). In the application and implementation of the 2013 Curriculum, a scientific approach is used, this scientific approach is a priority or mandatory to be implemented in the learning activities contained in the 2013 Curriculum, this scientific approach is a learning approach whose center is in the student. The scientific approach can be carried out sequentially or non-sequentially, These steps can be carried out

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according to the knowledge to be learned (Megawati, 2016; Nurmansyah, 2020).One of the subjects studied by students is Crafts.

Craft subjects, especially when discussing livestock and fishery product processing material, are an integral part of the educational curriculum which aims to develop students' skills and knowledge in managing and utilizing natural resources sustainably (Prayoga, 2017; Priono, 2016). In the context of processing livestock and fishery products, students are taught about the process of raising livestock, fish hatchery techniques, as well as aspects of management and production techniques related to the agricultural and fisheries sectors. They will also understand the importance of product quality and safety in this industry and learn how to process these raw materials into products of economic value. Craft subjects in the processing of livestock and fisheries products also encourage student creativity in producing innovative processed products, promote the wise use of resources, and understand the importance of sustainability in the development of the livestock and fisheries industry in the future. Thus, this subject provides an important basis for students to develop insight and skills in the agricultural and fisheries sectors which are very relevant in meeting global food needs and contributing to local economic development. (Christantyawati et al., 2018; Prayoga, 2017).

Based on the results of interviews and needs analysis conducted on October 13 2022 with the craft subject teacher for class simple ones, such as printed teaching materials (package books, learning modules) and simple presentation media. This is supported by several factors, none other than the teacher's lack of knowledge about how to create digital learning media. With learning media that are still conventional and simple, students easily feel bored, less interested, and less enthusiastic about participating in ongoing learning, thus causing a decrease in student learning motivation which can be seen from the overall average of student learning outcomes from the results of the general examination scores for the odd semester of the year. 2022 is still less than the KKM (Aryani & Ambara, 2021; Hafidhlatil Kiromi & Yanti Fauziah, 2016).This is proven by what happened in class IX C of SMPN 93 Jakarta, there were 12 students or 60% of the 20 students, who still got low scores in the Crafts subject. The overall average score of students can be seen in the following table.

Based on the results of observations at SMPN 93 Jakarta itself, it has been accredited A with complete facilities (LCD projector, screen and loudspeakers) which can support learning that takes place in class, but in reality, when learning takes place teachers and students are still rarely not even using digital interactive learning media in implementing the craft learning process. Based on the results of interviews and observations, it can be concluded that students have difficulty understanding the material in the Crafts subject, especially the material on Animal Husbandry and Fishery Product Processing. This material contains information about how to process livestock and fishery products into food, into semi-finished food preparations, understanding, types and benefits, processing methods, processing stages, as well as packaging and presentation of processed products. Based on data provided by subject teachers, it was found that the average overall student score in this chapter was 62.9, while the minimum completion criteria (KKM) for the Craft subject was 75. The conclusion that can be drawn is that the overall average score has not can reach KKM. Teachers have difficulty explaining material only verbally, and are still hindered by the lack of use of relevant and supportive learning media in craft subjects, thus making students less motivated in carrying out learning activities.

Based on this description, to help students understand the craft subject matter, especially regarding the processing of livestock and fishery products, it is very necessary to develop interactive multimedia. With interactive multimedia, students can experience learning directly, making it easier for students to understand concepts, and the learning carried out becomes clearer (no longer abstract). One way to increase students' interest and motivation in learning can be realized by progress in the development of science and technology, namely by using computers which are widely used in the learning process, one of which is the use of digital-based learning media which can be called multimedia. (HA Kurniawan & Soenarto, 2022; Siddik & Kholisho, 2019). Media is a means of conveying messages. Explains that the principle of multimedia is that students can learn better from words and pictures than from words alone. In multimedia principles, words and images are two different systems for representing knowledge. Language is indeed one of the most important cognitive tools ever created by humans, but using images can be used as an original model for representing knowledge in the human brain. (Carolin et al., 2020; Wulandari et al., 2023).By using pictures, we can translate material that is still abstract into material that is more instinctive and closer to sensory experience. To maximize learning media, an appropriate approach model is needed, one of which is a scientific approach.

The scientific approach is a method or way of thinking used in various scientific disciplines to understand the world and solve complex problems (Megawati, 2016; Nurmansyah, 2020). This approach is based on scientific principles involving observation, data collection, analysis, and hypothesis testing. In a scientific approach, the knowledge gained is based on empirical evidence that can be verified and retested

by others. This approach also encourages critical thinking processes, teamwork, and the ability to formulate relevant research questions (Juniar et al., 2023; Nurmansyah, 2020). By using a scientific approach, scientists, researchers, and practitioners in various fields can achieve a deeper understanding of natural, social, or scientific phenomena, and develop more effective solutions to various challenges faced by humans.

Previous research findings state that the positive impact of media is used as an important part of learning carried out in class or as the main medium for carrying out learning (Fitriyah et al., 2022; Rosihah & Pamungkas, 2018). Multimedia can be used to present material so that it can improve student learning outcomes (HA Kurniawan & Soenarto, 2022; Putra & Ishartiwi, 2015). The scientific approach is also very good to use to create meaningful learning experiences (Istiqomah & Prastowo, 2022; Lestari et al., 2018; Rahardjo, 2014). Interactive multimedia with a scientific approach is suitable media to be applied in learning (Megawati, 2016; Nurmansyah, 2020). Based on this, the Scientific Approach Interactive Multimedia can be used to improve student learning outcomes. This research aims to develop interactive multimedia with a scientific approach to craft subjects.

2. METHOD

The research model chosen in this development research is the research and development (R&D) model, using the ADDIE (Analysis, Design, Development, Implementation, Evaluation) model as the guideline that was developed (Cahyadi, 2019; Rustandi & Rismayanti., 2021). The ADDIE model is a simple but complex and systematic model, apart from that, each stage is interactive because the evaluation results from each phase can be used to develop learning to the next phase. The development research procedure goes through five stages, Stage 1 is Analysis, Stage 2 is Design, Stage 3 is Development, Stage 4 is Implementation, Stage 5 is Evaluation. (Purnamasari, 2020; Tegeh, & Kirna, 2013). After this stage, product trials are carried out, the trials carried out aim to prove the suitability of the media from which data will later be obtained to determine the level of effectiveness and efficiency of the product being developed. The subjects of this trial were (1) Experts, which was carried out by 1 learning design expert, 1 learning media expert (with minimum specifications of having a Master's degree), and 1 learning content expert, namely the Class IX Craft Teacher at SMPN 93 Jakarta, (2) Individual Trials carried out by 3 students, (3) Small Group Trials carried out by 6 students.

The type of data obtained in the development of Interactive Multimedia is a type of quantitative data and a data collection instrument method. The data collection methods used in this research are the questionnaire method and test method (Pratiwi & Tirtayani, 2021; Wahyuningtyas & Sulasmono, 2020).The test method was carried out with the aim of determining the effectiveness of using interactive multimedia learning by conducting statistical tests. WhereasThe questionnaire method is a way of collecting data by sending a list of questions to respondents and research subjects (Hasanah, 2017; Pratiwi & Tirtayani, 2021). This development research uses two data analysis techniques, namely (1) quantitative descriptive analysis techniques, (2) inferential statistical analysis (T-Test).

3. RESULT AND DISCUSSION

Result

The interactive learning multimedia development process was carried out using the ADDIE development model. The choice of the ADDIE model was based on considerations because the ADDIE model has a flexible but systematic nature so that it can minimize errors during development. (Afifah et al., 2022; Larashati et al., 2021).The ADDIE model has five stagespdevelopment, namely (1) analysis (analysis), (2) design (design), (3) developmnet (development), (4) implementation (implementation), (5) evaluation (evaluation). After the module is developed, the next step is to carry out validation or review carried out by experts, namely, (1) learning content experts, (2) learning design experts, and (3) learning media experts. This aims to determine the feasibility and perfect the interactive learning media that has been developed. Based on the data that has been analyzed, the results obtained are: (1) the results of the learning design expert test are in very good qualifications. (2) learning media expert test results with very good qualifications. (3) the results of the qualification learning content expert test are very good. Based on the results of the three expert tests above, it can be concluded that the interactive learning media that has been developed has very good feasibility and quality.

There are three parts to the presentation of the results of this development research, namely, (1) describing the design and development of interactive learning multimedia, (2) product validity which was carried out through expert testing and trials on students, and (3) the effectiveness of developing interactive learning multimedia in Craft subjects in class IX SMPN 93 Jakarta Based on the results of the assessment and review of expert tests, namely learning content experts obtained a score with a percentage of 94.00%

which is very well qualified. The score obtained from the results of the learning design expert test was with a percentage of 91.40% which very well qualified. The score was obtained from the results of the learning media expert test with a percentage of 92.20% which was very well qualified. The results of the individual trials obtained a score percentage of 90.83% with very good qualifications. The results of the small group trial obtained a score percentage of 92.08% with very good qualifications. Based on the results of the overall trial assessment, it can be concluded that this interactive learning multimedia is in the very good category and is suitable for use in the learning process in Craft subjects. The appearance of the interactive learning multimedia product being developed is presented in Figure 1.

Figure 1. Learning Multimedia Display

The effectiveness of the interactive learning multimedia that has been developed is measured by an effectiveness test which includes a pre-test and post-test to determine student learning outcomes before and after using interactive learning multimedia. The average value produced during the pre-test was 46.7 and the average post-test value was 85. Based on the results of the t-test statistical analysis that was carried out, the calculated t-value was 12.235 which is greater than t -table which is 2.043. So it can be concluded that t-count > t-table so that it can be stated that H0 is rejected and H1 is accepted. This means that there is a significant difference in student learning outcomes after using interactive learning multimedia in craft learning. So it can be concluded that interactive learning multimedia is effectively used to improve the learning outcomes of class X students at SMPN 93 Jakarta.

Discussion

Based on the research results and data that have been analyzed, it is proven that interactive learning multimedia is declared valid for use in the learning process with very good and feasible quality. The use of interactive multimedia has been proven to be an effective tool in improving student learning outcomes (Husein et al., 2017; Patriani & Kusumaningrum, 2020; Qistina et al., 2019). By combining various visual, audio and interactive elements, interactive multimedia allows students to be more actively involved in the learning process. Students can learn through videos, images, animations, and simulations that make it easier to understand difficult concepts (Margarita et al., 2018; Pravitasari & Yulianto, 2018; Rofiq et al., 2019). Interactive features such as quizzes, games, and simulations allow students to practice hands-on and test their understanding, making learning more engaging and fun. With easy access to a variety of online learning resources, interactive multimedia also allows students to learn independently and overcome geographical barriers in gaining access to information (Patriani & Kusumaningrum, 2020; Pravitasari & Yulianto, 2018). In this digital era, interactive multimedia plays a key role in creating more engaging and effective learning experiences, which ultimately contributes to improving student learning outcomes. This is supported by previous research which states that interactive multimedia improves student learning outcomes (Anggraeni et al., 2021; Irwanto et al., 2019).

The importance of interactive multimedia in improving cognitive learning outcomes lies in its ability to build a strong and deep understanding of the subject matter. Students not only remember information, but they are also able to apply it in real situations. This contributes to the development of cognitive skills such as problem solving, analysis, and critical thinking. Thus, interactive multimedia is a very effective tool in improving students' cognitive learning outcomes and helping them become more independent and skilled learners. Other findings were also found in research on the development of interactive multimedia to improve students' cognitive learning outcomes (Aryani & Ambara, 2021; Ayu & Manuaba, 2021). The use of interactive multimedia significantly increases student learning motivation. Interactive multimedia creates an engaging and participating learning environment that changes the way students interact with course material. In this context, visual elements, audio, animation, and interactive

features such as quizzes and games present the learning material in a more interesting and easy to digest way. (Havizul, 2020; Irwanto et al., 2019; Suyitno, 2016).

Students tend to feel more engaged in learning, experience higher levels of engagement, and are naturally eager to understand the concepts presented. Interactive multimedia allows students to choose the way of learning that best suits their individual learning style (Patriani & Kusumaningrum, 2020; Pravitasari & Yulianto, 2018). In this environment, students can explore material more independently, follow their personal learning pace, and get instant feedback through interaction with multimedia devices. All of these factors have a positive impact on learning motivation, because students feel more ownership of the learning process and feel included in the formation of their own understanding. Interactive multimedia also provides a more contextual learning experience, connecting learning material with real world and practical situations (Dwiqi et al., 2020; Khamzawi & Wiyono, 2015; Kurniawan et al., 2020). In this way, students see the relevance of what they are learning, and this significantly increases their learning motivation because they can see how the knowledge they gain can be applied in everyday life. In this case, interactive multimedia is a powerful tool in stimulating students' interest to engage in their learning and achieve better learning outcomes. Apart from that, other similar research also states that interactive multimedia can increase students' learning motivation (Panjaitan et al., 2020; Pratiwi & Tirtayani, 2021).

The implications of research on the development of Interactive Learning Multimedia Model ADDIE in Craft Subjects Material for Processing Animal Husbandry and Fishery Products is that research on the development of interactive learning multimedia can increase student motivation in learning and also help teachers in delivering learning material in a more effective, innovative way. , and efficient. With this research on the development of interactive learning multimedia, it can provide motivation to teachers as moderators in learning activities to utilize technology in learning so that they can improve the quality of learning in education, as well as obtain new innovations in carrying out teaching and learning activities. With this research on the development of interactive learning multimedia, it can have a positive impact other than on teachers, namely on students by increasing students' interest and interest in participating in learning activities in class using interactive learning multimedia.

4. CONCLUSION

Based on the research results, it was concluded that through the application of interactive multimedia learning based on a scientific approach in the learning process, it was able to improve student learning outcomes and help teachers facilitate students during the learning process so as to produce a good impact. With this research on the development of interactive learning multimedia, it can provide motivation to teachers as moderators in learning activities to utilize technology in learning so that they can improve the quality of learning in education, as well as obtain new innovations in carrying out teaching and learning activities.

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