



THE EFFECTIVENESS OF EDUCATIONAL VIDEO MEDIA AND INTERACTIVE APPLICATIONS IN INCREASING STUDENT MOTIVATION IN THE DIGITAL ERA

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ABSTRACT

This study is motivated by the low learning motivation of vocational high school (SMK) students who still rely on conventional teaching methods amid the rapid development of the digital era. This study aims to describe the effectiveness of educational videos and interactive applications in improving students' learning motivation. The research employed a descriptive method with a qualitative approach, using data collection techniques including interviews, observations, and document analysis. Data analysis was conducted using an interactive model consisting of data reduction, data display, and conclusion drawing. The results indicate that the implementation of educational video media and interactive applications is effective in enhancing students' learning motivation, improving their understanding of the learning materials, and increasing their engagement, enthusiasm, and learning independence. In addition, digital media provide more engaging, enjoyable, interactive, and contextual learning experiences. The findings conclude that the integration of educational videos and interactive applications is an effective strategy for improving vocational students' learning motivation in the digital era. This study is expected to contribute theoretically as a reference for future research and practically for educators in developing innovative digital-based learning.

Keywords: digital era, educational video, interactive application, learning motivation, SMK

INTRODUCTION

In the current digital era, various aspects of human life have become technology-based, including in the field of education, necessitating technology-based learning. The development of digital technology has revolutionized various aspects of life, demanding a transformation of teaching methods to be more innovative, interactive, and enjoyable, centered around the students. This is implemented so that students can keep up with the times and be optimally accepted according to the characteristics of students in the current era, so that learning can be received and understood by students, because learning remains relevant and effective in attracting students' attention, thereby increasing their motivation to learn. The use of digital learning media such as educational videos and interactive applications is increasingly becoming a necessity in creating learning experiences that are relevant to the characteristics of students in the current digital generation. Various studies show that digital media can enhance students' interest, participation, and motivation to learn thru the presentation of more visual and interactive materials, as well as by providing real-life experiences. The implementation of the program combines contextual learning



with environmental collaboration to gain real experiences (Handayani Fitri, 2026). The importance of digital literacy and the strategy of selecting appropriate media by educators, so that it functions optimally (Tobing et al., 2025). However, the effectiveness of digital media is not automatic; it highly depends on how the media is integrated into the learning process and the pedagogical skills of the teacher in managing it.

Conceptually, learning motivation is a key factor in determining the success of education because it plays a role in encouraging student engagement, perseverance, and achievement. However, the reality on the ground shows a paradox in the digital era, where high access to technology for students does not always correlate with an increase in learning motivation. This motivation can be facilitated by teachers, thru collaboration between teachers and parents, in order to motivate students' learning enthusiasm and achieve learning objectives. As Zedan in Wayem stated, teachers can encourage parents to participate in learning activities conducted at home, such as helping children complete assignments, reading together, or practicing social skills. Teachers can provide guidance and resources that parents can use at home. For example, providing additional worksheets, recommended books, or educational videos relevant to the material the child is currently studying at school (I Wayern Suryerto, 2024). Some students actually make more use of technology for non-academic activities such as playing games, entertainment, and social media, so the potential of technology as a learning tool has not been optimally utilized. This condition indicates a gap between the availability of technology and its utilization in meaningful learning, which in the context of education is often associated with the phenomenon of digital misuse or learning disengagement.

Regarding motivation, Hamzah Uno stated that motivation is a force both within oneself and from external sources that drives a person to achieve their goals. Motivation is also defined as a mental drive for someone to engage in a process. Motivation can also be achieved by influencing the people they lead to perform the desired tasks, in accordance with the established goals (Uno, 2011). The theoretical foundation of this research is based on three established theories of motivation and learning. First, the ARCS Model by Keller (Attention, Relevance, Confidence, Satisfaction), which provides a systematic framework for designing motivational learning environments (Keller, 2010), states that effective learning design must be able to capture learners' attention, establish relevance to students' goals and experiences, build confidence thru achievable challenges, and provide satisfaction thru intrinsic and extrinsic rewards. Educational videos effectively accommodate the attention component thru visual and auditory stimuli, while interactive applications enhance confidence thru structured exercises and immediate feedback. Second, the Self-Determination Theory (SDT) by Ryan and Deci, which emphasizes three basic psychological needs that can foster intrinsic motivation: autonomy (sense of control), competence (feeling capable), and relatedness (social connections) (Ryan & Deci, 2020). Interactive applications particularly meet the need for competence thru progressive challenges and immediate feedback mechanisms. Third, Mayer's Cognitive Theory of Multimedia Learning (CTML), which explains how multimedia instruction enhances learning thru dual-channel processing (visual and auditory), the assumption of limited capacity, and the requirement for active processing (Mayer, 2020). This theory supports the design of educational videos that integrate narration with visuals.



The learning approach used is also tailored to the characteristics and needs of students, as students today grow up in a technology-dominated environment, using digital devices that enable easy access to achieve learning objectives. This means that teachers should manage learning by choosing effective teaching approaches in the 21st century, which can accommodate the characteristics of students growing up in this digital era, known as "digital natives." These students, as digital youth, have preferences and learning needs using digital media, which differ from previous generations, thus requiring a paradigm shift in the design and implementation of digital-based learning delivered by their teachers. Vocational high school students, although already accustomed to using technology, are still not fully motivated to use it for learning. In the use of technology, many students still use it for entertainment or playing online games and social media. In the context of education, this phenomenon is known as the digital divide, which occurs when students have access to technology, but in reality, they do not use it effectively for learning. This phenomenon of the "digital divide," in the context of education, occurs when students have access to technology but fail to use it effectively for meaningful learning (Selwyn, 2016).

Based on this, teachers who can manage learning as optimally as possible are needed. As stated in the research by Nasrodin et al., the implementation of learning media in the form of animated videos involves the stages of planning, execution, and evaluation. The planning stage involves material preparation, lesson plan development, and student motivation. The execution stage includes the use of learning media by preparing materials and facilitating interaction with students. The evaluation stage is conducted thru the provision of questions or exercises to students.

Previous research has generally proven that the use of digital media, including educational videos and interactive applications, positively contributes to the increase in student learning motivation. Video-based media can enhance attention and understanding thru concept visualization, while interactive applications encourage active participation and practical-based learning experiences (Rahmawati, 2025).

The research results also show an improvement in students' understanding of the material being taught. It is hoped that the results of this research can provide concrete and relevant recommendations for curriculum development as well as innovative and effective teaching strategies in learning (Nasrodin et al., 2023). Nevertheless, most research remains partial by examining one type of media separately, and it places more emphasis on a quantitative approach that focuses on learning outcomes without deeply exploring students' learning experiences and the dynamics of classroom implementation. As a result, the understanding of how the combination of digital media works contextually to enhance learning motivation is still limited.

Then, Amelia et al.'s research states that the use of interactive learning media, such as educational games, videos, and digital applications, significantly increases students' learning motivation. This is because these media make lessons more interesting and enjoyable, leading to more active student participation in learning activities. The importance of implementing a more focused approach to digital learning management so that technology can function as a tool and means to continuously strengthen students' academic interest and motivation (Risqianto et al., 2025). The use of technology helps students better understand Islamic concepts thru visualization and simulation (Rakhma et



al., 2024). Personalization of learning, which means adjusting teaching methods and curriculum to individual needs, can enhance student motivation and learning outcomes (Yusuf, 2024). Science and Technology improve the quality of education, particularly the learning process (Cholik & Umaroh, 2023).

Video-based media greatly assist the learning process. Video-based learning media are effective in increasing students' learning motivation (Nur Amalia & Yuliansah, 2024). In addition, interactive media makes lessons easier for students to understand (Amelia Naimung et al., 2024). Similarly, another study conducted by Dewi & Korompis found that the use of digital media in the X grade at SMK Negeri 1 Busungbiu can enhance the learning process (Rakhma et al., 2024). Therefore, schools must pay greater attention to the development of digital media used in learning. To maximize the use of digital media in learning, teachers and students must collaborate (Dewi & Korompis, 2023).

Based on this, this research aims to fill that gap by examining, understanding, and analyzing the effectiveness of using educational video media and interactive applications to enhance the learning motivation of vocational high school students. After the analysis, this research is also expected to contribute to the body of knowledge, helping to develop more creative and student-centered learning strategies that succeed in the digital era, so that every student can be motivated to learn, making it easier to achieve learning objectives. Learning motivation is an important component in the success of students participating and actively engaging in learning. By increasing learning motivation, it is hoped that students can be more active, effective, and involved in learning and achieve optimal learning outcomes so that learning objectives can be easily achieved, because the effectiveness of learning is partly influenced by the motivation within the students themselves. As Susanti L stated: "The effectiveness of learning is influenced by several factors, and the most influential is the behavior of students, especially their motivation (Susanti, 2019)." Therefore, this research will focus on the development of innovative and effective learning media, analyzing student motivation and engagement. Thru a qualitative approach, with a descriptive method, it is expected that the researcher can describe the findings, so that the benefits of this research can be obtained according to its final goal after understanding and analyzing the use of educational video media and interactive applications in vocational schools, aiming to describe the effectiveness of implementing learning using educational video media and interactive applications in increasing the learning motivation of vocational school students in the digital era.

METHOD

This research uses a descriptive method with a qualitative approach to provide a comprehensive and contextual understanding of the implementation of digital media in vocational education. This qualitative approach was chosen because it allows researchers to explore complex educational phenomena, understand participants' perspectives, and capture the nuanced dynamics of technology integration in the classroom context. The qualitative descriptive design focuses on describing the effectiveness of the implementation of educational videos and interactive applications as observed in the research setting. This design allows for systematic documentation of the implementation process in the field, participant responses, and contextual factors that influence learning motivation (Sugiyono, 2023).



The data collection techniques used include interviews, observations, and documentation studies. Interviews in this study include interviews with the principal, vice principal, teachers, educational staff, and students. The interviews explore participants' experiences, perceptions, and challenges regarding the implementation of digital media. The interview protocol is designed based on the dimensions of the ARCS Keller model (Attention, Relevance, Confidence, Satisfaction) to ensure comprehensive coverage of motivational aspects. Thru attention: Interview questions are designed to explore whether the method/material successfully attracts and maintains the curiosity or interest of the respondents. Relevance: Questions focus on whether respondents feel the learning material is meaningful, aligns with their needs, and life goals. Confidence: Questions aim to understand whether respondents feel capable of succeeding and comprehend the requirements to succeed in the learning process. Satisfaction: Questions are explored to determine the sense of achievement or satisfaction respondents feel after completing the learning, thus aiming to systematically evaluate or enhance learning motivation, rather than merely asking about understanding of the learning material. Observation is conducted by observing the learning environment, student motivation, and participation in the learning process according to their characteristics. According to Arikunto, "observation is an activity that involves focusing attention on an object using all the senses" (Arikunto, 2021).

Then the required documents include curriculum and lesson planning documents, teaching modules, photos, materials, and student learning outcomes in the quality of student project tasks that use digital media. The reason the researcher uses the documentation study technique in this research, among others, is that the documentation study is used as a triangulation material to check the consistency of the data with reality. The aim is to refine the data obtained thru interviews and observations. Next, the data sources in this research use two types of data sources, namely primary data sources and secondary data sources. According to Sugiyono, who states that research data sources are divided into two, namely primary data sources and secondary data sources (Sugiyono, 2023). In this research, the primary data sources include 1) the principal, 2) the vice principal, 3) teachers, 4) educational staff, and 5) students. Meanwhile, the secondary data sources (supporting data sources) in this research include 1) documents at the school as supporting primary data, which can complement and strengthen the results of this research, and 2) other research supporters, including parents and the community.

All data collection techniques that have been gathered will be analyzed to produce relevant information that supports this research. The data analysis technique used in this research is qualitative data analysis. This qualitative data analysis begins with collecting the necessary data for the research and gathering information obtained from observations, interviews, and documentation studies, which is then processed according to the principles of data processing relevance in qualitative research. Data analysis in this research involves working with data, organizing data, sorting thru data, and then the researcher manages the data, synthesizes it, looks for and finds patterns, determines important data, and decides on the data or research information that can be shared with others. As stated by Bogdan & Biklen in Moleong, "Qualitative Data Analysis is an effort carried out by working with data, organizing data, sorting it, synthesizing it, looking for and finding patterns, determining what is important and what is learned, and deciding what can be told to others" (Moleong, 2019).



The data analysis applied in this research consists of three steps that occur simultaneously, namely thru the process of data reduction, data display, and data verification. As per the stages of data analysis techniques according to Miles & Huberman, "analysis consists of three streams of activities that occur simultaneously, namely: data reduction, data display, and conclusion drawing/verification" (Miles and Huberman, 1992).

Data reduction is a process of data analysis by summarizing the research results on matters deemed important by the author, covering all data related to this research problem, regarding the effectiveness of implementing learning using educational video media and interactive applications in enhancing the learning motivation of vocational high school students in the digital era. Then, in the presentation of data, the obtained data is categorized according to the main issues. Next, the data is drawn into a conclusion from the highly relevant data as the answer to the research. To ensure the credibility of the research, triangulation techniques were used, combining various data sources (interviews, observations, documents) and member checking techniques with key informants to verify the accuracy of their perspective representations.

RESULTS AND DISCUSSION

Based on the research results obtained thru interviews, document studies, and observations, research data was obtained, indicating that the use of digital-based learning media is focused on vocational high school students. The development of learning media includes various types of media. This is pursued with the aim of improving the quality of the teaching and learning process (PBM) and achieving learning objectives, even educational goals. Among these media are educational videos, interactive applications, and visual aids. According to Purnami and Putu Budi Utami, the results of the study showed that students were very happy when learning using video media, and the increase in student learning before and after watching learning videos was significantly greater. The results of this study indicate that the application of video-based learning media in grade 1 of Bali Bilingual School Elementary School significantly increases student learning motivation. Students show great enthusiasm for learning using videos; children feel more interested and participate actively in learning activities. (Purnami, 2024).

Thru digital media in educational videos, designed to present basic concepts in an engaging and easily understandable way, it can increase students' interest in the material. Meanwhile, interactive applications provide students with opportunities to conduct simulations and virtual practices, allowing them to hone their skills without the need for expensive equipment. Additionally, visual aids such as posters and infographics serve as supplementary references that reinforce students' understanding of the material being taught. Digital media in learning provides many benefits, including increasing students' interest in learning, reducing boredom, and creating a positive learning atmosphere that can strengthen the relationship between teachers and students. In the development of learning media, there are several important aspects that must be fulfilled, namely first, the type of learning media, second, the design and content development, third, implementation and training, and fourth, the evaluation and improvement aspect. The researcher will present the four aspects of its development as follows:

Types of Learning Media In the aspect of types of learning media, this research identifies and implements two main types of learning media, namely educational videos and



interactive applications. Learning media are tools to enhance the teaching and learning process. Learning media are also known by the terms instructional material, audio-visual communication, visual education, and explanatory media (Kustandi & Darmawan, 2020). Digital games have a significant impact on intrinsic motivation, game features, and the learning process as a whole, and they also yield empirically good results (Ishak et al., 2023).

Educational video media and interactive applications. This is based on the fact that students prefer visual and interactive content, as it is evident that both media are implemented directly, practically, participatively, and collaboratively. This was chosen because today's generation of students is more interested in content that includes images and can be used directly. As the research conducted by Yudiatmoko et al. shows, the developed interactive learning multimedia (ILM) is deemed suitable for teaching the Algorithm and Programming material for 11th-grade students. The advantage of this Interactive Learning Multimedia (ILM) lies in the availability of online-designed learning materials that provide a realistic overview to help students understand the Algorithm and Programming (AP) material, complemented by Ice Breaking, learning materials, videos, and evaluations that can motivate students and foster a learning spirit, thereby increasing student interactivity in the teaching and learning activities (Yudiatmoko et al., 2024).

The first learning media is educational videos, which are utilized to explain complex concepts and techniques in an engaging manner. In other words, educational video media are designed to convey complex theoretical and technical concepts visually and attractively. These educational videos are designed to explain complex concepts and techniques. Educational videos present complex concepts and techniques for audio-video production that are difficult to understand thru conventional methods. Students gain a more specific understanding of the material thru the use of animations, graphics, and practical demonstrations. This video shows the basic ways to create audio-visual content, such as shooting, video editing, and voice recording. This practical demonstration allows students to see and visually imitate the production process.

First, in the educational video, the school developed educational videos as a learning medium to convey complex theoretical and technical concepts visually and engagingly. The educational video in this vocational school is designed to explain complex concepts and techniques. Thru the educational video, efforts are made to visualize complex concepts and techniques for audio-video production that are difficult to understand using conventional methods. However, students gain a more specific understanding of the material thru the use of animations, graphics, and practical demonstrations. Then, thru the educational video, practical demonstrations are presented. This video showcases the basic methods for creating audio-video, such as shooting, video editing, and sound recording. These practical demonstrations allow students to see and visually imitate the production process. For vocational school education, the use of educational videos has great potential to enhance students' understanding of the subject matter. These interactive and visual educational videos can capture students' attention and help them learn more optimally, making the learning experience more meaningful and enjoyable.

It can be said that educational videos are designed to explain complex theoretical and technical concepts thru engaging and easily understandable visual presentations. Based on Mayer's Cognitive Theory of Multimedia Learning (Mayer, 2020), these videos are developed following multimedia principles including coherence (eliminating irrelevant



information), signaling (highlighting essential content), and modality (combining narration with relevant visuals). These videos effectively accommodate the Attention component in Keller's ARCS model (Keller, 2010) thru dynamic visual presentations that integrate animations, graphics, and practical demonstrations. For the subject of Audio Video Engineering, the videos demonstrate fundamental production techniques including cinematography, video editing, and sound recording—concepts that are difficult to convey thru conventional methods. Students gain a specific understanding of the material thru visualized demonstrations, allowing them to observe and visually imitate the production process. In line with Purnami's research findings, students' enthusiasm is high when learning with video media, as reflected in increased motivation and active participation (Purnami, 2024). This multimedia approach aligns with vocational high school students' preference for visual content, making learning more meaningful and enjoyable while reducing cognitive load thru dual-channel processing (Mayer, 2020).

Interactive applications are developed to provide a deeper learning experience and integrate simulation features that allow virtual practice for vocational high school students. These interactive applications are designed to offer learning simulations, enabling students to practice virtually. The applications can include tools for designing electronic circuits, editing videos, or assembling audio systems, with direct interaction within the application, helping students better understand concepts thru experience. In practical learning simulations, various aspects of audio-visual production, such as designing electronic circuits, editing videos, and creating audio systems, are simulated in the interactive application. The interactive application provides simulations that allow students to practice technical skills virtually. These simulations cover various aspects of audio-visual production, such as electronic circuit design, video editing, and audio system assembly. In comprehensive virtual practice, this application allows students to experiment with various tools and techniques without the constraints of space or time. Students can design and test electronic circuits, use various effects to edit videos, and create audio systems with different configurations.

Furthermore, this application is designed to facilitate students in direct interaction for concept understanding: The application allows students to interact directly with abstract concepts thru practical experiences. By directly observing the results of their observations, students can gain a better and stronger understanding of the relationship between theory and practice.

Then, this application is also designed as a reinforcement of understanding thru experience. Students can gain a better understanding of the ideas being studied thru the experiences obtained from learning with the interactive application; the instant feedback provided by the application allows students to correct their past mistakes, which implies that students are capable of learning from their own errors. Students can gain a better understanding of the ideas being studied thru the experiences provided by the interactive application.

Based on the perspective of self-determination theory, this application effectively supports students' psychological needs, first in achieving competence, allowing students to develop technical skills and self-efficacy. Second, autonomy, which includes self-directed learning features, enabling students to control their learning progression. Third, relatedness, where collaborative features facilitate interaction among students and



knowledge sharing (Deci, E. L., & Ryan, 2000). This interactive application provides comprehensive virtual practice opportunities, allowing students to experiment with various tools and techniques without the limitations of physical equipment or time. Students can design and test electronic circuits, apply video editing effects, and create audio systems with various configurations. Immediate feedback allows students to learn from mistakes and improve their understanding, supporting the confidence component in the Keller ARCS model thru structured learning experiences. Thru this feedback, students can learn from mistakes and enhance their understanding. Added with visual aids, such as posters, infographics, and printed modules, which serve to simplify information and provide visual references that help students in understanding a subject. As shown by the research of Mohammad et al. (2024), educational applications significantly increase student motivation with an effect size of $\beta = 0.716$ ($p < 0.001$), confirming the motivational impact of interactive digital tools. Similarly, the study by Yudiatmoko et al. found that interactive learning multimedia effectively enhances student interactivity and enthusiasm in vocational contexts (Yudiatmoko et al., 2024).

Design and Development of Content

In the aspect of design and development of content, the development of learning media is carried out in line with the project-based curriculum approach. Media content is designed to support real projects undertaken by students, so they can apply the knowledge and skills acquired from the learning media.

In the aspect of content design and development in the creation of videos and interactive applications for learning in vocational schools, this research shows that the design and development of project-based learning media content in vocational schools is a primary focus in the creation of educational videos and interactive applications. This is done to ensure that the media is relevant and effective in enhancing students' learning motivation. These learning media are created using a project-based curriculum approach and aim for integration with students' real projects, application of knowledge and skills, relevance to industry needs, and contextual learning.

In vocational high school education, the project-based curriculum approach for the design and development of learning media content provides a more authentic and meaningful learning experience for students. By incorporating digital media into real projects, students not only acquire technical skills and knowledge but also enhance their critical thinking, collaboration, and creativity abilities, which are crucial for success in the modern era to realize the implementation of active and innovative student learning digitalization. As per the research findings of Azzah Risti Meliyani et al., which recommend an informal learning media as a contribution to the realization of active and innovative student learning digitization (Meliyani et al., 2022).

The development of the media follows a project-based curriculum approach where the content supports real student projects, allowing for the application of knowledge and skills acquired from media sources. This approach aligns with the principles of constructivist learning toward an autonomous learning environment that supports competence (Ryan & Deci, 2017). Digital-based innovation in Islamic Religious Education (PAI) instructional management helps teachers create learning experiences that are more effective, adaptive, and engaging. Successful implementation depends on teachers' digital



competencies, school infrastructure support, and students' readiness to utilize learning technologies (Natsir, 2026).

The design process ensures industry relevance, with content developed in collaboration with industry partners to guaranty alignment with workplace competencies and the latest technological trends. Then contextual learning, where the material is presented in an authentic vocational context, enhancing relevance and transferability, as well as progressive complexity, where the content is sequenced according to Mayer's pre-training and segmenting principles, presenting information in manageable parts with the introduction of prerequisite concepts (Mayer, 2021). This is in line with Meliyani et al., who state that this informal learning media approach contributes to the realization of active and innovative student learning digitization, preparing students for the demands of the modern industry while maintaining engagement thru meaningful and applicable content (Meliyani et al., 2022).

Implementation and Training

In the aspect of implementation and training, teachers have been provided with training and practice using educational video learning media and interactive applications. The training provided includes efficient teaching strategies, the use of technology, and ways to integrate media into the learning process. In the implementation of Integration in the Learning Process, teachers play a crucial role in meticulously preparing the integrated learning media, which is included in the teaching plan. The use of this media is adjusted to the learning objectives and can be applied in various teaching methods, including PBL, PJBL, discussion, and practice methods.

Based on this, teachers play an important role in successfully facilitating learning in an easy and directed manner, in accordance with the teacher's learning strategy according to Sukartono in Muhammad Sururuddin et al., that there are three important things that teachers must do in the era of the 4.0 industrial revolution, namely preparing students to be able to create jobs that do not yet exist, preparing students to solve problems that do not yet exist, and preparing children to be able to use technology (Sururuddin et al., 2021). Teacher autonomy support by providing meaningful rationales, acknowledging students' perspectives, and offering choices within a structured environment significantly predicts students' engagement and autonomous motivation (Chen & Jang, 2010). This training program emphasizes teaching behaviors that support autonomy alongside technical skills. The use of quiz-based applications like Quizizz and Kahoot, and the integration of social media platforms such as Instagram and TikTok significantly influence student engagement levels. LMS facilitates the synchronization of learning and gamification, while social media enables the delivery of content in creative and relevant ways. These results indicate that integrating technology into Islamic Religious Education (PAI) can help address the challenges of the digital era and meet the needs of Generation Z, ultimately fostering a learning environment that is more dynamic, interactive, and student-centered (Supriadi et al, 2025).

Evaluation and Improvement

Evaluation is essentially the process of making decisions about the value of an object (Basari & Handayani, 2025). In the development of educational video learning media and



interactive applications in vocational schools, it can be applied as an effort to ensure that both media are effective and relevant in achieving learning objectives. Continuous evaluation and improvement are very important to be carried out periodically to assess the extent to which the learning media meet the targets in implementing teaching and education. This aspect includes the periodic evaluation of media effectiveness, the use of formative and summative assessments, and continuous improvement.

It can be said that the evaluation results can be assured, that educational video media and interactive applications remain effective tools for increasing motivation and learning outcomes for vocational high school students. By implementing continuous evaluation and improvement, thru formative and summative assessments, they can be used to measure students' understanding in learning and the achievement of learning objectives, because these learning media are used as teachers' efforts to transfer learning material more effectively and efficiently to achieve learning objectives easily and enjoyably for students. As stated by Arsyad in Fadeli and Hafidz, learning media functions as an auxiliary tool used to convey learning messages more effectively and efficiently. In the context of digital learning, this media utilizes information and communication technology to create a more conducive learning environment (Fadeli, 2024). Understanding students' perspectives on AR and VR technologies, as well as their impact on intrinsic motivation, interest, and enthusiasm for course material, is a key component (Algerafi et al., 2023).

Formative assessments are used to monitor students' progress during the learning process and provide constructive feedback. Meanwhile, summative assessments are used to measure students' understanding of the subject matter and evaluate the effectiveness of learning media on students' learning outcomes. The data obtained from these assessments are used to assess the effectiveness of educational video media and interactive applications in improving students' understanding and learning outcomes.

Furthermore, continuous improvement based on evaluation results is necessary, ensuring that learning media is regularly updated and enhanced to remain relevant and effective. The improvement process in this enhancement can be adjusted to the characteristics and needs of students, technological advancements, and aligned with current and future industry trends. According to Fadeli, in the context of digital learning media, its effectiveness can be measured thru learning outcomes, which include the improvement of scores or student understanding after using digital media, student engagement, which refers to the level of active participation of students during the digital-based learning process, and learning motivation, which relates to the interest and enthusiasm of students in following the learning process using digital media (Fadeli, 2024). Technologies dramatically increase student engagement, and its application enhances learning outcomes by boosting student motivation and enabling a better comprehension of difficult ideas. Employability-wise, the incorporation of digital tools into BE education gives students the necessary skills that are becoming more and more important in today's workplace (Ghanbaripour et al., 2024).

Based on research, the implementation of technology-based learning media in vocational schools significantly increases student participation and facilitates the understanding of the material presented by teachers during lessons. Students also show greater interest, creating a more enjoyable, substantial, and active learning experience, and



becoming more engaged in the learning process, thereby creating a more productive and enjoyable learning atmosphere.

This continuous improvement includes content revision, where lesson materials are updated and adjusted to be relevant and accurate, technology updates, where the latest technology is used to enhance the quality and functionality of learning media, and adjustments based on feedback, where the opinions of students and teachers are considered to improve the design, content, and use of media in learning.

In the implementation of this media, there are challenges, including limited infrastructure in schools and insufficient training for teachers in using the latest technology, which become significant obstacles. Without adequate support from various sources, including human resources, infrastructure, and funding, the effectiveness of the developed learning media can be hindered, thereby reducing the potential for improving the quality of learning and education. Moreover, the lack of access to the necessary devices to support the use of modern media presents an additional challenge that the school must address.

The recommendations that can be provided, among others, to address the existing challenges, this research suggests the implementation of continuous training for vocational school teachers in the use of innovative learning media. Thru this training, it is expected that teachers' ability to use educational technology can significantly improve. In addition, close cooperation with the industry is essential to ensure that the developed learning media aligns with labor market needs and the relevance of the teaching materials. Industry involvement in curriculum development can also provide valuable insights into the competencies required in the workforce. Thus, each vocational school can continue to improve the quality of education and the relevance of the curriculum in facing the challenges of the ever-evolving multimedia industry to further enhance students' learning motivation. Based on this, it can be said that challenges still exist, including limited infrastructure and inadequate teacher training in the latest technology, obstacles that require systematic handling thru resource allocation and professional development.

These implementation challenges include infrastructure limitations, such as inadequate hardware, software, and internet connectivity within the school environment. Then it includes the digital competence of teachers, which is pursued thru inadequate training in the use of innovative media and pedagogical integration. Next, the challenge of resource limitations, namely thru limited funding for technology maintenance and updates. Meanwhile, recommendations that can be provided include Continuous Teacher Training: a continuous professional development program focusing on Technological Pedagogical Content Knowledge (TPACK), industry collaboration, partnerships that ensure curriculum relevance and provide insights into the competencies needed in the workplace, infrastructure investment, systematic resource allocation for procurement, maintenance, and technical support of technology, as well as institutional policy support by promoting digital innovation and providing an implementation framework.

CONCLUSION

The development of learning media in vocational high school education has shown a significant contribution in enhancing student motivation and engagement. This innovative media facilitates optimal and enjoyable material comprehension while creating a student-centered learning environment. The integration of educational videos and interactive



applications is an effective strategy to enhance the learning motivation of vocational high school students in the digital era. Educational videos effectively capture attention and convey complex concepts thru visual demonstrations, while interactive applications build confidence and competence thru structured virtual exercises. When designed according to established multimedia principles and motivation theories, these digital tools create engaging, contextual, and autonomous learning experiences that prepare students for the demands of the modern industry. This research recommends: (1) continuous professional development for teachers in digital pedagogy, (2) strengthening industry collaboration for curriculum relevance, (3) systematic infrastructure investment, and (4) institutional policy support for sustainable digital innovation.

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