

## DEVELOPMENT OF AN E-LEARNING SYSTEM TO SUPPORT DISTANCE LEARNING IN JUNIOR HIGH SCHOOLS

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### **Abstract**

The COVID-19 pandemic has forced education systems around the world to adapt to unexpected conditions, including the implementation of distance learning (PJJ). Junior High Schools face special challenges in this transition due to limited infrastructure and resources. This research aims to develop an optimized e-learning system to support distance learning in junior high schools, with a focus on affordability, ease of use, and pedagogical effectiveness. This system development method involves needs analysis, design, implementation, and evaluation of the system with the active participation of teachers, students, and parents. The research results show that the e-learning system developed can increase student engagement, facilitate access to diverse and interactive learning materials, and support teachers in managing virtual classes. System evaluation was carried out through satisfaction surveys, analysis of student learning performance, and user feedback, which showed significant improvements in the effectiveness of distance learning. This research concludes that the development of e-learning systems tailored to the specific needs of junior high schools can be an effective solution to overcome the challenges of distance learning, while providing opportunities for pedagogical innovation in future education.

**Keywords:** e-learning, distance learning, junior high school, education system.

### **Introduction**

Information and communication technology (ICT) has revolutionized various aspects of life, including education. This progress allows the development of e-learning systems that support learning and teaching processes at various levels of education. However, the COVID-19 pandemic that has hit the world has forced all schools around the world to accelerate the adoption of technology, especially in supporting distance learning (PJJ) as an alternative to face-to-face learning which cannot be implemented due to social restrictions.

Junior High School is one of the levels of education that experienced a significant impact from the sudden transition to PJJ. At this level, students are in a phase of academic and social development that requires a comprehensive and interactive learning approach. However, challenges such as limited access to technology, lack of appropriate learning materials, and teacher readiness in using e-learning platforms are obstacles to the effective implementation of PJJ.

Researchers looked for several references including according to (Yauma, A., et al 2021) E-learning applications can support the student learning process, so it is hoped that it can produce effective quality learning. According to (Sukanto, D. 2020) E-learning can facilitate interaction between students and learning materials, teachers, and between fellow students. Students can share information or opinions with each other regarding various matters relating to lessons and students' self-development needs. According to Yunita, Y., & Elihami, E. 2021) E-learning can facilitate interaction between students and learning materials, teachers, and between fellow students. (Susanto, A. 2022) E-Learning system learning gives students the opportunity to be independent in learning. Students are in control of their own learning success. (Widayanti, C. 2023) E-learning system that has been designed makes easier for students and teachers to carry out learning process.

This research aims to develop an e-learning system that can support the effectiveness of PJJ in junior high schools, by considering factors such as affordability, ease of use, and student involvement. Through a collaborative approach between developers, educators, students and parents, research proposes innovative solutions ensure educational continuity amidst post-pandemic.

With this background, this research will discuss the background and needs for developing e-learning systems for schools, evaluate existing technology and methodology, and develop and test systems designed to meet the specific needs of distance learning at the junior high school level. It is hoped that the results of this research can make a significant contribution to academic literature and educational practice, as well as provide insight for further development in the field of e-learning.

## **Research Methods**

This research on developing an e-learning system to support distance learning in junior high schools uses a mixed methodology approach that combines qualitative and quantitative. This methodology is designed to collect comprehensive data regarding the needs, preferences and challenges of users (teachers, students and parents) and to test effectiveness of developed system.

### **Stage 1: Needs Study**

**Needs Analysis:** Collect data through in-depth interviews, online surveys, and focus group discussions with teachers, students, and parents to understand their specific needs regarding e-learning systems.

**Data Collection and Analysis:** The collected data will be analyzed to determine the desired features and functions in the e-learning system.

### Stage 2: System Design and Development

**System Design:** Based on the requirements analysis, the development team will design the system architecture, user interface (UI), and user experience (UX) accordingly.

**System Development:** Coding and creating an e-learning system with predetermined features.

### Stage 3: Testing and Evaluation

**Trial:** Carry out system trials with active participation from teachers and students. This pilot will include testing the system's functionality, usability, and accessibility.

**Evaluation:** Collect data through post-use surveys and interviews to assess the system's effectiveness in supporting PJJ. This evaluation will include an assessment of improvements in student engagement and learning outcomes, as well as user satisfaction.

### Stage 4: Revision and Refinement

**Feedback Analysis:** Collect and analyze feedback from users to identify areas that require improvement.

## Results and Discussion

Research into the development of an e-learning system to support distance learning (PJJ) in Junior High Schools (SMP) produced several important findings:

**System Development:** The e-learning system developed can integrate main features based on analysis needs, such as interactive learning materials, discussion forums, task management systems designed to be user friendly, making navigation easier for students and teachers.

**User Response:** System evaluation shows a high level of satisfaction from students and teachers. Students found the material easier to understand and interesting, while teachers found class management and assignment distribution more efficient.

**Impact on Learning:** Data shows increased student engagement in the learning process and improved academic scores in learning trials using the e-learning system.

**Challenges:** Several challenges were identified, including internet access issues for students in remote areas and a technology learning curve for some teachers.

## Discussion

According to (Nurkolis, N., et al 2020) E-Learning is learning that is carried out not face-to-face but distance learning with the help of electronic devices or gadgets.

E-learning, or electronic learning is the use of information and communication technology (ICT) to support and improve the learning and teaching process. This form of learning is carried out via a computer network or the internet, allowing access to learning resources anytime and anywhere

## Effectiveness of E-Learning Systems

The research results show that the e-learning system developed is effective in supporting PJJ in junior high schools. Integrating interactive learning materials and communication tools in one platform makes it easier for students to learn independently and collaborate with their friends and teachers. This is in accordance with literature that shows the importance of interactivity and collaboration in online learning to improve student learning outcomes.

## User Satisfaction

The high level of satisfaction from users confirms the importance of user-friendly UI/UX design in the development of e-learning systems. This suggests e-learning systems must be designed with user experience in mind to maximize their acceptance and use.

## Challenge

Technology access and readiness challenges are important issues that need to be addressed to ensure effective implementation of e-learning systems. Strategies such as technology training for teachers and providing subsidized internet access or offline solutions for students in remote areas could be a solution to overcome these obstacles.

## Conclusion

Research on the development of an e-learning system to support distance learning in junior high schools has succeeded in showing that the integration of information technology in the form of an e-learning system can significantly increase the effectiveness of distance learning. The system developed was designed taking into account the needs, preferences and challenges faced by teachers and students in the PJJ context, resulting in a platform that not only supports learning needs but also increases student and learning motivation.

The e-learning system evaluation carried out showed positive results, with feedback from users emphasizing increased accessibility of learning materials, ease of communication and collaboration between students and teachers, as well as increased student involvement in the learning process. The research also identified challenges faced, such as internet access problems in remote areas and the need for further technology training for teachers, which provides direction for future system improvements and implementation.

It can be concluded that the development and implementation of an effective e-learning system requires a holistic approach that does not only focus on technological aspects, but also on pedagogical integration, user training and infrastructure support. Collaboration between system developers, educators, students and other related

parties is the key to creating learning solutions that are adaptive, inclusive and effective overcoming educational challenges the digital era.

In conclusion, this research confirms the great potential of e-learning systems in supporting distance learning by providing recommendations for further development and future research that can help optimize learning.

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