

# THE UTILIZATION OF ICT IN ENCOURAGING EDUCATION AND SUSTAINABLE ECONOMIC DEVELOPMENT IN RURAL AREAS

**Sandi Saputra<sup>1</sup>, Prasetyo Yuli Kurniawan<sup>2\*</sup>, Roby Setiadi<sup>3</sup>**

<sup>1,2,3</sup>Indonesian Language and Literature Education, Faculty of Teacher Training and  
Education, Universitas Muhadi Setiabudi, Indonesia

Jl. P. Diponegoro, KM2, Wanasari, kabupaten Brebes, Jawa Tengah, 52252, Indonesia

*\*Corresponding Author: [prasetyoyulikurniawan@gmail.com](mailto:prasetyoyulikurniawan@gmail.com)*

 Orcid id: 0009-0003-3923-4189

## **Abstract**

*This study aims to analyze the utilization of Information and Communication Technology (ICT) in supporting sustainable education and economic development in rural areas, using SMP Negeri 2 Banjarharjo, Brebes Regency, as a case study. Data were collected through observation, interviews, and document analysis using a qualitative descriptive approach. The results show that the integration of ICT tools such as projectors, internet access, and other digital devices enhances students' interest in learning and promotes interactive classroom environments. Teachers also reported increased student participation and understanding when using multimedia-based instruction. Furthermore, early ICT literacy at the junior secondary school level provides students with essential skills relevant to the digital economy, enabling them to access market information, manage digital content, and develop online microenterprises. These skills contribute to improving local economic productivity and open up new digital-based business opportunities. The study also highlights infrastructure challenges and the need for teacher training. In conclusion, ICT utilization in rural schools plays a strategic role in advancing both education and economic sustainability by empowering students with future-ready competencies.*

**Keywords:** *Information and Communication Technology, Continuing Education, Rural Economy, SMP Negeri 2 Banjarharjo*

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## **INTRODUCTION**

Changes in modern transformation, the field of science and technology have made great progress, especially in the Information and Communication Technology (ICT) sector. These technological developments have changed almost every aspect of human life, including education, economics, and the way we interact socially. The presence of ICT as an instrument

of social transformation has a major impact on the structure of society, the role of individuals, and the dynamics of learning in the world of education.

The ICT skills used have a greater positive influence on academic outcomes than the theoretical skills (Lei et al., 2021). The research indicates that students who have practical skills in using ICT have higher levels of academic achievement because they are more exposed to the latest sources of information, independent learning methods, and digital communication that enriches the learning process. The availability of information through the internet that is real-time, interactive, and multilingual opens up the possibility of cross-border and cross-cultural collaboration.

Advances in technology and science have resulted in more information being spread around the world, beyond the limits of time and place. This allows learning to take place anytime and anywhere. However, on the other hand, this transformation has a bad impact if it is not balanced with strong digital literacy. For example, the flood of information without proper filtering can trigger the spread of hoaxes, the degradation of socio-cultural values, and the weakening of social cohesion of society, especially among the younger generation. Changes in norms, values, ethics, and lifestyles become latent risks if the integration of ICT in people's lives is not directed wisely.

In this context, education plays a very central role. Education is not only a forum for formal learning, but also as a social system that shapes the mindset, behavior, and life values of students. To prepare human resources to compete in the global world, education must anticipate these changes. This is where the importance of education reforms that integrate ICT comes in, not only as an aid, but as part of an adaptive, critical, and future-oriented learning ecosystem.

Basically, education serves as a place where teachers and students exchange information, concepts, and knowledge (Maulida & Ridwan, 2022). In the 21st century educational paradigm, the role of teachers has shifted from information centers to facilitators, mentors, and catalysts of active learning. This allows the learning process to be more dynamic and contextual, especially in project-based and collaborative learning systems.

Information technology impacts education in many aspects: from teaching methods, curriculum development, to classroom management and evaluation. Equality in innovative learning is achieved through the development of global networks (Mallillin et al., 2024). The internet allows students from remote areas to access the same teaching materials as students in large urban centers, provided infrastructure is available and digital literacy is adequate.

Students must have the ability to use information technology, which is a new demand for the global education system. In this case, ICT competencies are an integral part of the 21st century competency framework which includes critical thinking, collaboration, communication, and creativity (4C) skills. Education is no longer just about mastering content, but also about the ability to access, evaluate, and utilize digital information effectively.

The use of ICT allows teachers to process data and convey information, as well as enable them to create more innovative learning media. Improving information technology skills is also strongly linked to better learning quality because teaching materials can be packaged in a variety of formats—visual, audio, and multimedia—to suit students' different learning styles. ICT also provides educators with the space to design personalized-based learning, where students' learning needs can be mapped and met individually.

According to (Fannakhosrow et al., 2022), the use of ICT increases students' desire to learn because they feel more involved in the interactive learning process. This not only improves the quality of education delivered, but also strengthens the school's reputation as a modern institution that focuses on technological developments (Anastasha, 2024). This reputation in turn can attract the interest of the public to send their children to the school, as well as open up opportunities for cooperation with other institutions.

(Rivalina & Siahaan, 2020) stated that along with the rapid advancement of information technology, digital devices are starting to enter schools and change the way teachers and students interact. In the education sector, ICT is very important to support learning and assessment activities (Karimah et al., 2022). In many cases, information technology is used to efficiently process, store, and disseminate information through digital methods and processes. This encourages the creation of an adaptive education system that is ready to face future challenges.

In addition, advances in information technology also provide more space for the development of teachers' creativity in compiling digital-based teaching materials (Dalifa et al., 2022). Digitally literate teachers can design interactive learning by utilizing videos, animations, or simulations that not only grab students' attention, but also improve understanding of concepts. However, not all teachers have this capacity, so digital literacy training is absolutely necessary.

This reality also applies in Indonesia. The national education sector needs to carry out a comprehensive transformation due to the pressure of globalization and massive technological development. Many teachers still rely on conventional methods based on lectures and written texts. In fact, the current generation is digital natives who grew up in an environment full of digital devices. If not responded to appropriately, this will create a gap between students' learning styles and teachers' teaching approaches.

This transformation requires teachers to shift their teaching methods from conventional paper-based ones to methods that rely on ICT. Teachers must be able to identify and utilize learning resources outside of textbooks, including educational websites, learning applications, and online learning platforms such as Moodle, Google Classroom, or Kahoot!. According to Musfiquon (Lestari & Pratama, 2020), the use of learning resources will have an impact on time efficiency, increased learning motivation, and student empowerment in the learning process.

Teachers must also try to maximize their skills in expanding knowledge and understanding of ICT. This is important so that students are not only passive users of technology, but also digital creators and innovators. Computers, the internet, and other devices such as smartphones are now a very potential learning medium. Unfortunately, there are still many teachers and schools that have not integrated this device optimally in their daily learning.

In the context of rural areas, the challenges of ICT utilization have become more complex. Uneven internet access, lack of technological devices, and low teacher capacity are the main obstacles. However, this is precisely where the greatest potential for intervention is. ICT literacy in rural areas will not only improve the quality of learning, but also become the foundation for digital-based local economic development.

SMP Negeri 2 Banjarharjo, which is the focus of this study, is a concrete example of how schools in rural areas can utilize ICT to support learning and sustainable economic development. Projectors are used to convey learning materials visually, while the internet is used as a source of reference and material enrichment. Teachers, even though they are in rural areas, are able to use digital devices to create an interactive and fun learning environment.

ICT literacy at the junior high school level is not only about operating devices, but also how to utilize technology to solve problems, find information, and even create digital products that have economic value. For example, students can be taught how to create simple digital content such as digital posters, educational videos, or simple online stores. These skills can be their capital to build a business in the future, especially in the era of the creative economy and the fast-growing gig economy.

Previous research by (Mukaromah, 2020) showed that the use of ICT can increase students' motivation to learn, although its use is still limited to learning media. In other words, if the use of ICT is expanded and its quality is improved, then the impact on learning outcomes

will be more significant. These findings reinforce the urgency of developing ICT integration strategies in rural schools.

In the context of sustainable development, the use of ICT should be seen as a long-term investment. Schools not only educate students to succeed academically, but also equip them with relevant life skills. These skills include critical thinking, collaborative work, and the ability to use and create technology. When students are able to utilize ICT to support economic activities such as local product marketing, business information management, or online-based services, then the contribution of education to economic development becomes real.

Thus, the integration of ICT in education aims not only to create job-ready graduates, but also citizens who are able to adapt, learn for a lifetime, and contribute to the development of their communities. Schools play a role as a center for local innovation that encourages the birth of a technology-based learning ecosystem as well as a digital-based economy.

## **METHODOLOGY**

This study uses descriptive research with a qualitative approach that can be used to study the condition of a natural object. According to (Rahayu & Kartolo, 2022), qualitative research is a research method that produces data in the form of texts, speech, and human behavior that can be analyzed and studied by researchers to obtain data that is in accordance with the real world. Noeng Muhadjir in (Hidayatullah et al., 2022) stated the meaning of data analysis as an effort to systematically find and compile records from observations, interviews, and other actions to improve researchers' understanding of the cases they are studying and to convey these findings to others.

Meanwhile, to deepen understanding, analysis needs to be continued with efforts to find meaning. This research was carried out on February 10, 2025 at SMP Negeri 2 Banjarharjo, Banjarharjo district, Brebes regency. The subjects in this research are ICT Teachers, Indonesian Language Teachers, and IX Grade Students. Data were collected through observation, interview, and documentation study techniques. The purpose of this study is to analyze the use of ICT in supporting sustainable educational and economic development in rural areas at the junior secondary education level.

## **RESULT AND DISCUSSION**

In the field of education, information and communication technology (ICT) is needed. The success of a country's development is determined by the quality of its education, and the quality of education is determined by educators, especially teachers. Teachers are able to provide fresh nuances in the learning process and increase students' enthusiasm for learning. Information and communication technologies such as videos, images, and animations, are able to attract students' interest and convey subject matter in a more interesting and efficient way (Fitri et al., 2022). Information and Communication Technology (ICT) includes various aspects, such as the management, processing, and transfer of information between various media (Fahira, W.R., 2023). ICT is crucial for education because it facilitates the learning process to be more efficient and effective (Kusumawati, 2023).



Figure 1. Indonesian Language Learning SMP N 2 Banjarharjo

In Figure 1, Information and Communication Technology (ICT) is increasingly important in learning because it can maximize the effectiveness and attractiveness of lessons. One of the new innovations at SMP Negeri 2 Banjarharjo is the use of projectors to teach Indonesian, especially advertising text materials. By using a projector, teachers can display various examples of advertisements from various media, both print and digital, so that students can more easily understand the structure and elements contained in the advertising text.

In addition, projectors allow teachers to display more engaging and interactive advertising videos. By looking at visual and audio ads, students can learn how images, sound, and language work together to capture the audience's attention. It also helps students learn the effectiveness of advertising and the persuasive strategies used in the text.

The projector can be used for student discussion and presentation activities. For example, students may be required to create and display advertisements for their own work through digital media. After that, the ads are projected to be analyzed together. In this way, learning becomes more active and creative, and students gain better critical thinking skills to choose and create effective ad text.

In Indonesian learning at SMP Negeri 2 Banjarharjo, teachers can use projectors to create a more interesting and creative learning atmosphere. This technology not only makes the material easier for students to understand, but also makes learning more enjoyable. As a result, students can understand ad text better.



Figure 2. ICT Learning SMP N 2 Banjarharjo

In figure 2, Information and Communication Technology (ICT) at SMP Negeri 2 Banjarharjo is listed in the subject. In learning at SMP Negeri 2 Banjarharjo, the use of Information and Communication Technology (ICT) is very important, especially for ICT teachers because they can deliver material in a more interactive and efficient way. Technological devices such as computers, projectors, and the internet can make Learning more engaging and easier for students to understand. ICT teachers can use projectors to display material in the form of presentations, video tutorials, or simulations, which help students better understand technology concepts.

ICT teachers and Indonesian language teachers at SMP Negeri 2 Banjarharjo are able to make good use of ICT to create a more creative, interesting, and in accordance with the progress of the times. It enhances students' understanding of technology and equips them with digital skills that will be useful in the future. Additionally, information and communication technology (ICT) can help people who speak more effectively and responsively use their language, including teachers who teach their students material (Annabella, 2022). Because information and communication technology facilitates the learning process, information and communication technology (ICT) is very important for society and the education sector. One of the ICT products is the internet, which functions as a large library with various data sources that can be accessed anytime and anywhere. Technology is a field of science, and students must understand ICT as part of it.

The findings of the study revealed that the majority of students like learning methods that utilize Information and Communication Technology (ICT), such as using LCD projectors to convey material, using the internet to complete assignments, and using the internet to make it easier to find materials.





Figure 3. Interview Process for Grade IX Students of SMP N 2 Banjarharjo

In figure 3, the results of interviews at SMP Negeri 2 Banjarharjo show that there are several obstacles that hinder the use of Information and Communication Technology (ICT) for student learning resources. These include limited time, limited teachers and students, and incomplete infrastructure. ICT strategies do not succeed in improving students' learning resources due to a lack of tools. The lack of computers for each student makes students less understanding of the material given in information technology learning. In addition, the lack of LCD projectors in each classroom makes it difficult for teachers to use PowerPoint presentations or learning videos.

The solution to overcome the obstacles that hinder the use of Information and Communication Technology (ICT) is used to increase students' desire to study at SMP Negeri 2 Banjarharjo is to improve infrastructure facilities that support the use of ICT, such as applying for support to the government, other donors, and contributions from parents/guardians of students under the arrangement of the school committee, continuing information technology training programs outside the classroom for students, and providing ICT training for regional teachers and parents.

The findings of this study also show the potential contribution of ICT to sustainable economic development in rural areas. ICT literacy introduced at the junior high school level provides a basis for the younger generation to access market information, utilize social media to promote local products, and support digital-based small business innovation. This opens up opportunities for the development of the village's creative economy, increases access to marketing, and encourages local economic growth. Thus, strengthening ICT infrastructure and skills in rural schools is one of the important strategies in supporting integrated educational and economic development.

## CONCLUSION

Most teachers of SMP Negeri 2 Banjarharjo are used to the use of computer-based learning evaluations, although currently these evaluations are only available for the Computer-Based National Exam program. At SMP Negeri 2 Banjarharjo, computers with internet connections and presentation materials are media and learning resources that are often used in the learning process.

There are a number of obstacles that hinder the use of ICT as a learning resource for students. This includes inadequate facilities, limited student and teacher abilities, and limited time. The Information and Communication Technology (ICT) strategy fails to improve student learning resources due to incomplete infrastructure. One of the obstacles for students in using the internet to find academic information is the limited computer available to each student, so that students have difficulty understanding the material presented during ICT learning. In addition, the lack of enough LCD projectors for each class makes it difficult for teachers to use PowerPoint presentations or learning videos.

The solution to overcome the obstacles that hinder the use of Information and Communication Technology (ICT) is used to increase students' desire to study at SMP Negeri 2 Banjarharjo is to improve infrastructure facilities that support the use of ICT, such as applying for support to the government, other donors, and contributions from parents/guardians of students under the arrangement of the school committee, continuing information technology training programs outside the classroom for students, and providing ICT training for regional teachers and parents.

In addition to supporting more interactive and modern learning, the use of ICT in rural schools has strategic potential to encourage local economic development. Digital literacy built from an early age can help produce a generation that is able to utilize technology to open business opportunities, manage business information, and market local products. Thus, strengthening ICT is an integral part of efforts to develop education and a sustainable economy in rural areas.

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## CONFLICT OF INTEREST

The author declares that there is no conflict of interest related to the writing or publication of this article.

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