



Learning Based on Information and Communication Technology (ICT) in Remote Regions Study of SMAN 3 Tungal Jaya

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Abstract. Information and Communication Technology (ICT)-Based Learning in Remote Areas Study of SMAN 3 Tungal Jaya, Musi Banyuasin district. The writing of this paper aims to explain the benefits of Information and Communication Technology-Based Learning in explaining the concept of learning, so that the delivery of information, in the teaching and learning process is more detailed, so that it is hoped that it can help students understand the material presented more optimally and pleasantly. The purpose of Information and Communication Technology, as a solution for, is to grow and develop the creativity of both educators and students. Information and communication technology-based learning is an effort to take advantage of advances in Information and Communication Technology for the learning process, and serves as a tool not as the main subject,

Keywords: Learning · Information and communication technology · Remote area

1 Introduction

Learning is a process of transferring knowledge through a medium. Media in learning is diverse, such as teachers, books, or even sophisticated media such as electronic media (computers, internet, LCD, television, ebooks, and others). Both student achievement and student learning motivation are influenced by various things such as educators, infrastructure, individual willingness and ability of each and the school environment. The school environment, including the location of students' schools and infrastructure, has a major influence on student learning achievement. From the statement it is clear that the infrastructure in the teaching and learning process will affect the student's learning achievement.

One of the visible changes in the modern world is the role technology has played in our lives. The development of technology or ICT (Information Communication and Technology) is growing rapidly in all fields, including in the field of education. The world of education has moved from traditional learning to modern learning, and the use of technology can be considered as one of its characteristics. According to [1], ICT which stands for Information Communication and Technology are various tools and technology resources used to create, communicate, store, manage, and share information. ICT consists of the use of computer technology, including hardware, peripheral devices, media, and software [2].

Information and Communication Technology (ICT) has developed very rapidly and has had a real impact on improving the quality of education in schools, especially learning. Utilization and development of Information and Communication Technology (ICT) in learning activities in schools is known as Information and Communication Technology-Based Learning. Through the facilities provided by the system, teachers and students can explore and elaborate learning and teaching activities effectively and efficiently [3].

According to [4] Individual abilities and skills in dealing with change need to be addressed as the main action in developing a teacher's career process and developing the quality of character education. Another thing that needs to be developed is the ability of a teacher or student. In this aspect, the abilities and skills of a learner become dominant along with the pace of development which further reduces the independence and ability of individuals and the environment. In this case, the skill of an individual is closely related to the ability of the individual to be able to adapt to the environment.

The study was guided by the authors' proposed model which shows how rural information services are provided. The usage of rural information services depends on the perceived usefulness of the services provided. If rural communities acknowledge that the services provided are helpful and may lead to transformed livelihood such services may be used frequently. Rural information services must provide information needed at that time [5].

The computer is one of the tools in ICT that has many advantages, including when used in learning. The use of computers in learning allows students to interact directly with information sources, process learning outcomes, and even create learning outcomes to make them more interesting and fun so that with ICT-based learning, learning activities will continue to develop. Formal education, both in big cities and in remote areas, should have the same quality, because the purpose of education, whether in schools located in remote areas or in cities, is the same, namely the intellectual life of the nation. So, it is a big problem when education in cities is more advanced than education (schools) in remote areas. Education which has the aim of educating the nation, of course, must be created regardless of the existing problems. The thing that is often a big obstacle in the problem of educational equity is the gap (distance) between education in cities and education in rural areas (remote areas) both in terms of quality, quality of educational output, learning process or infrastructure.

Basically, every school certainly has its own way to improve the quality of education in its schools, as well as the government. The government plays a big role in the quality of education, therefore both between the government and schools there must be synergistic

cooperation to create quality education and eliminate the gap between schools in remote areas and schools in urban areas. The existence of marginality or inequality in education between schools in remote areas and schools in urban areas must of course be eliminated.

Government programs that are currently starting to pay attention to the world of education through work programs such as increasing the education budget, providing facilities and infrastructure so that education can be evenly distributed both for city schools and village schools, improving the quality of teachers and others. It is expected to be able to eliminate the gap between urban and rural education. Through this program the procurement of more modern technology-based learning media is very important to eliminate the difference in knowledge between students who study in remote schools and those in urban schools.

2 Methods

This study uses ethnographic research methods. The object of data collection is SMAN 3 Tungal Jaya, which is located in Musi Banyuasin Regency, South Sumatra Province, Indonesia. This study uses a participatory observation method, which means interviewing students of SMAN 3 Tungal Jaya to take opinions about ICT in each area the children come from. The parameter to determine the furthest distance is 45 km from the school which is surrounded by oil palm plantations and peat forest.

3 Results and Discussion

1) Information Technology Infrastructure in Senior High Schools in Remote Areas

In addition, although it is claimed to have the ability in the field of self-management, it is useful in improving the quality of self and the organization of thinking possessed by students. Tseng argues that the development of character education, although based on the principle of prioritizing the development of communication and information technology. (Tseng, YM, & Wu, 2018)

This is in line with the view that independence and skills in designing information and communication technology are needed in the process of developing the identity and personality insight of students. Hillier argues, the process of ICT development, although directed at the development of information and communication technology that leads to the development of skills in processing information systems is supported by the existence of data and facts that encourage the independence of an individual to learn [7].

Information and communication technology has become a basic need today. Recently, various useful activities have been found in developing ICT-based educational activities in elementary schools. In elementary school activities, the existence of ICT infrastructure supports community economic activities.

The points and points developed in ICT-based learning in elementary schools are the infrastructure that supports ICT-based learning. Hillier believes that Information and Communication Technology requires Infrastructure Development in remote areas to be developed with satellite insights [7].

The development of ICT learning certainly has a relationship with the development of integrated learning that occurs in elementary schools [8]. Argues that the process of forming insight into character education becomes important and strategic in the midst of the current changing times that require the development of ideas and ideas. In this case, the development of ICT infrastructure is based on the formation of adequate human resources.

With the development of ICT-based infrastructure, it is hoped that the development of learning process activities will increase. To develop information and communication technology, it is necessary to develop adequate capabilities. On that basis, infrastructure plays a dominant role in developing ideas and structures for the orientation of ICT development. To develop the potential of ICT, it is necessary to develop adequate basic principles such as infrastructure network development and satellite phone development. Based on the opinion above, it is necessary to develop adequate information and communication technology. The development of satellite-based telephone is needed to develop the potential of ICT.

Information services may be provided through various models which include service station, farmer's home and the association model. Service station refers to an information service center providing services to information to rural communities. To access information services from service stations, people must pay physical visits to information centers. Telecentres and rural information resource centers are examples of information service stations. Moreover, farmers may access information as they acquire agricultural inputs as well as from farmers' associations [9].

To develop ICT, it is necessary to develop adequate character education insights. It is on this basis that infrastructure must be built on the principle that developing ideas requires adequate performance. In addition, infrastructure also plays an active role in developing human culture. In this case, the development of an ICT center is closely related to the development of an adequate information structure. The development of ICT cannot be separated from the development of acting skills in everyday life, in a high school environment.

2) Information and communication technology

Information and Communication Technology is place that accommodates all technical equipment used in the process of delivering information. In more detail, information and communication technology is divided into two parts, including information technology and communication technology. Information Technology includes a variety of things that have a relationship with a process, the use of tools, manipulating to the results of managing information.

[10] assessing how rural communities access various types of information. It was found that rural communities use various sources of information to access the information they need for their daily activities. Rural communities access information from friends and relatives; radio and internet services provided by the telecentre. Most likely, rural communities use radio, newspapers and magazines; television; cellphone; and face-to-face communication to access information.

While communication technology is something that is closely related to how to use tools to carry out file or data transfer procedures from one device to another. To find

out more about the definition of ICT, below are some definitions of information and communication technology according to experts: 1. [11] states that information and communication technology is a means or media used for file transfer needs, both in the form of information and data. In addition, it also becomes a means of communication in one direction or two directions. 2. According to Martinez, this information technology is not only about software and hardware which incidentally functions as processing, processing and storing information. More than that, this technology also includes communication that has a role as a sender of information [12].

Therefore, it can be concluded that this information and communication technology is interconnected with each other. In the world of education, information and communication technology has three vital functions which are always used in teaching and learning activities. Among them are: 1. Technology has a function as a medium or tool. In the world of learning, it will be used as a means of assisting students in understanding the lessons delivered by the teacher. A light example is to process numbers, words, create graphic design elements, administrative programs, databases, create financial data and so on. 2. Technology has a function as science. In this section, technology is positioned as one of the disciplines that must be mastered by students. An example is some majors in universities that specialize in studying information and communication technology such as the department of informatics and many others. Even in the latest learning curriculum, students from all levels and majors are required to master this field. 3. In addition to being a learning tool, technology also has a function and role as material. Where technology plays a role as a learning theory that must be studied and also used to master certain materials (with the help of technology such as computers). Generally, the computer that will be used by students will be arranged in such a way and students will be guided step by step until they can understand material. In this context, the role of technology is as a mentor for students.

However, skill and competent teachers to utilize ICT in the learning process are not enough without the role of policy makers. Although the government has serious intentions to include ICT in the national curriculum, economic problems limit the government's efforts to provide sufficient ICT resources for each school as the government must prioritize education funding such as teacher welfare and student poverty [13].

Where the purpose of information and communication technology is as a solution to a problem, opening the door to a wider creativity, building effectiveness and increasing efficiency in work activities. In other words, because it is very solution, creativity, effectiveness and efficiency are needed in a work system, this information technology was then created.

Talking about the development of information technology can be said to be very long. Example of Technology: In the past, for example, the public was treated to the invention of cable telephones, radio, television, cameras and so on. In Indonesia itself, the rapid progress of this information technology only started in 1994 ago. Since then, technology has continued to develop rapidly, one of which is the use of the internet. Aspects that influence technological developments include adequate infrastructure. Until now, technological developments in Indonesia are still in a period of development that continues to progress. So it is certain that in the coming years the public will continue to be surprised by the presence of new technological structures. In the 1970s, Technological

developments in Indonesia have begun to develop to a higher level. Although it cannot be equated with developed countries such as the United States, the creation and use of technology in Indonesia has been running in a more focused manner. Today, the results of these developments can be seen for themselves in various aspects of life, both individually and in groups.

In this era of information technology, teachers usually spend more time facilitating students than simply transmitting knowledge. As a result, the learning process tends to be student-centred rather than teacher-centred; In other words, the teacher is not a source of knowledge but a facilitator who facilitates them to learn. In the traditional language teaching methodology, the teacher teaches facts from books. In comparison, current teaching methodologies focus on teaching strategies to decide what knowledge is needed. The teacher's role serves as a guide to help students to be good at choosing, accessing, evaluating, organizing, and storing information [14].

The urgency of using ICT in Indonesian education is stated in government regulation number 32 of 2013 concerning national education standards that ICT is one of the infrastructure standards to assist the learning process in schools (Government Regulation, 2013). Furthermore, based on the Regulation of the Minister of National Education Number 37 of 2018, to meet the needs of students to develop their skills in the digital era, ICT must be added and integrated into the main competencies and structure of the 2013 curriculum in primary and secondary schools. Level (Permendikbud, 2018). Thus, all teachers in Indonesia must be able to implement ICT in the learning process.

Even so, in addition to bringing a positive impact in the form of life or activities that are all easy and practical. However, this development also has a negative impact, such as the younger generation, especially children who become autistic with a focus on gadgets. Therefore, in the midst this increasingly rapid technological development, you should react wisely. This is done order to avoid unwanted effects.

3) Application of ICT-Based Learning in Remote Area Schools

ICT-based learning is learning that combines a learning process with the use of learning media. The media is technological, whether it is the internet, the use of video, LCD (in focus) and others. An ICT-based learning process really allows students to be able to explore, be creative, adapt to the times, and of course add insight and knowledge [15].

Mobile-based learning is never separated from the current topic of conversation. In the discussion process based on mobile learning, a learner even has sufficient ability and competence to create creativity in the teaching and learning process. Mobile-based learning needs to be developed in elementary schools that have insight into information and communication technology (ICT) [16].

ICT-based learning which is currently widely used in schools, especially in cities, has a very large influence on student achievement. The teaching and learning process that uses learning media will be able to facilitate the teaching and learning process, besides that it makes the teaching and learning process more effective and efficient. The use of media, especially IT-based media, in addition to helping students in learning also adds knowledge to students about how to use technology in learning. This allows students to keep up with the times. There are so many media in the environment around us that can

be used in the learning process, for that we need to choose. This selection is important in order to

The use of ICT in the classroom to provide students with rich learning experiences also needs to be pursued, because students need insight into how technology can help humans in solving various problems in the real world, which are currently the focus of the world of work. Simple use of ICT in the classroom can be started by using a computer (owned by the teacher or school) and an LCD projector in any learning, and its activities are integrated in all subjects.

So, what are the appropriate ICT tools for use in a class with limited electricity with minimal background for ICT skills? Of course, teachers and schools must think about computing devices that are energy efficient, robust but inexpensive in terms of cost and cost. The use of a laptop is highly recommended, as well as the use of a mini-LCD projector with LED technology because this technology is more energy efficient than conventional LCD projectors. In addition, schools should have an independent power source (such as a solar power plant) if possible so that the ICT learning process can be carried out even if there is a power outage. Students in remote areas should have the same opportunity to get a rich learning experience with the use of ICT even though it is limited, so that they have the skills to face global challenges in the future. The average school in remote areas is still full of limitations, sometimes electricity is sometimes not available, not to mention talking about limited human resources (teachers) in the regions, because most of them only use the community as educators with minimal teaching skills. That is why it is our challenge to be able to open the horizons of school principals and teachers about learning innovation by utilizing ICT and 21st century skills behind all existing limitations. Because most of them only use the community as educators with modest teaching skills. That is why it is our challenge to be able to open the horizons of school principals and teachers about learning innovation by utilizing ICT and 21st century skills behind all existing limitations. Because most of them only use the community as educators with modest teaching skills. That is why it is our challenge to be able to open the horizons of school principals and teachers about learning innovation by utilizing ICT and 21st century skills behind all existing limitations.

The development of national identity and nationalism is ensured from a process of balance. To develop this process, even though the concepts of information and communication technology are taught in high school. Furthermore, participants who attended high school though developed proficiency incertain information processing areas. Learning ICT for students has the principle of equality of access throughout Indonesia, if there is only one problem, it will be less effective [17].

To advance the teaching and learning process, a learner even though being taught must have sufficient understanding of the development of information and communication technology. This is a prerequisite for developing proficiency in the development of abilities to create further communication.

The government's role in this case is very influential, with policies and budgets that are evenly distributed between schools in remote areas and in urban areas, so that even though the school is located in a remote area, it has the same infrastructure facilities so that there is no difference in knowledge between students who study in remote areas.

City with students who study in the village. But in reality, the application of ICT in education in Indonesia is still in its early stages and has not been fully utilized.

Information is the raw material for development for both urban and rural residents. The prosperity, progress and development of a country depend on the country's ability to acquire, produce, access, and use related information technology [18].

Constraints to the application of ICT in education, among others, are caused by the uneven distribution of infrastructure that supports the application of technology throughout Indonesia and the unpreparedness of human resources to support the application of ICT. The uneven distribution of infrastructure that supports the application of ICT in education is an initial problem that must be resolved by the authorities, because without a supporting infrastructure, the application of ICT in education will only be a dream. Infrastructure is a very important component that serves as the initial and main capital in the application of ICT in education.

At present, there is a tendency that only certain areas have access to ICT. This is because there are still many areas that don't even have access to a telephone, let alone access to the Internet. In fact, the region has a lot of superior human resource potential. If this continues like this, it is feared that the potential of human resources in the area will be wasted and cannot be utilized for the progress of the Indonesian nation in general.

Accessibility of information services in rural areas is limited by various factors. The technical language used during information repackaging limits the accessibility of information in rural areas. Other factors include inadequate funding; information becomes obsolete; high illiteracy rate; lack of reading culture; and the inadequate number of extension workers and lack of awareness of information sources also limit rural communities from accessing information. In addition, the distance from rural residential areas to information sources, costs associated with using information, limited information services and poor rural roads and information infrastructure affect the accessibility of information services in rural areas as well [19].

To overcome these obstacles, it is necessary to take steps to solve it which also serves as a prerequisite for the successful application of ICT in learning. According to [20], there are several requirements in order to apply information and communication technology-based learning, namely the availability of infrastructure that supports ICT-based learning. Further explained in (<http://ict.dinpendikpkp.go.id>) some of the requirements that must be met in implementing ICT-based learning are:

- a. Learners and Teachers must have access to digital technology and the Internet in classrooms, schools and educational institutions. This means that schools must have adequate infrastructure related to information and communication technology, such as the availability of computers/laptops, computer networks, internet, computer laboratories, multimedia equipment such as CDs, DVDs, Web Cameras and others.
- b. There must be quality, meaningful, and culturally support materials available for learners and teachers. These materials can be in the form of computer-assisted interactive learning materials, such as CDs, Interactive Learning DVDs.
- c. Teachers must have knowledge and skills in using digital tools and resources to help students achieve academic standards.
- d. There must be sufficient budget or funds to develop and maintain the Information and Communication Technology infrastructure.

- e. And what is no less important is the willingness of all parties, in this case teachers and students to implement learning with the support of the communication and information technology.

ICT-based learning media has its own advantages when compared to other learning media. [15] reveal the advantages possessed by ICT-based learning media as follows:

- a. Can provide a deeper understanding of the learning material being discussed, because it can explain difficult or complicated concepts to be easier or simpler.
- b. Can explain learning material or objects that are abstract (not real, cannot be seen directly) into concrete (real can be seen, felt, or touched), such as explaining blood circulation and human organs in science subjects.
- c. Helping teachers present learning material more easily and quickly, so that students are easy to understand, long to remember and easy to rephrase.
- d. Attract and arouse the attention, interest, motivation, activities, and creativity of students' learning, and can entertain students.
- e. Encouraging student participation in the learning process and giving a deep impression in the minds of students.
- f. Learning material that has been learned can be repeated (playback). For example, using video recordings, compact disks (solid discs), tape recorders or television.
- g. Can form the right equation of opinion and perception of an object, but in real form using learning media.
- h. Creating a conducive learning environment, so that students can communicate and interact with the environment in which they study, thus providing real and direct experience. For example, students learn about the types of plants. They immediately see, touch, or feel the plant.
- i. Shaping students' attitudes (affective aspect), improving skills (psychomotor).
- j. Learners learn according to their characteristics, needs, interests, and gifts, either individually, in groups, or classically.
- k. Save time, effort and cost.

ICT-based learning is an effort to utilize ICT advances to support the learning process. ICT acts as a tool not as the main subject. In ICT-based learning, it acts as a liaison medium to convey the transfer of knowledge from educators to students. Two important elements in the knowledge transfer process are elements of the media and the message conveyed through the media. The media element describes ICT as an infrastructure network that connects educators with students, while the message element describes digital learning content.

4 Conclusion

Learning is a process of thinking, changes in both attitudes and behavior that can form knowledge, habits of intelligence or will form an experience, while learning is a learning process built by teachers to develop creative thinking that can improve students' thinking skills, and can improve students' abilities. Constructing new knowledge as an effort to improve good mastery of the subject matter. Information and communication technology is a means or media used for file transfer needs, both in the form of information and data.

In addition, it also becomes a means of communication in one direction or two directions. In the world of learning, it is used as a means of assisting students in understanding the lessons delivered by the teacher.

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