

THE EFFECT OF INFORMATION AND COMMUNICATION TECHNOLOGY AS A LEARNING RESOURCE ON THE QUALITY OF STUDENT-TEACHER COMMUNICATION AT RIAU VOCATIONAL HIGH SCHOOL FOR INTEGRATED AGRICULTURE

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ABSTRACT. The purpose of this study was to examine the effect of information and communication technology (ICT) as a learning resource on student-teacher communication skills. The research was motivated by the lack of student-teacher communication in the Creative Products and Entrepreneurship subject at Riau Vocational High School for Integrated Agriculture. The study hypothesised that using ICT as a learning resource affects the quality of student-teacher communication in the classroom. This study employed a survey method, with 1,243 students from Riau Vocational High School for Integrated Agriculture located in Pekanbaru City as the research population. Meanwhile, using the Slovin formula, the sample size in this study was 276 students. The data analysis technique employed regression analysis. The study's findings show that: information and communication technology as a learning resource is in the high category; information technology as a learning resource affects the quality of student-teacher communication. While communication quality is considered good, it is influenced by information and communication technology.

KEYWORDS: Information and Communication Technology (ICT), Learning Resource; Communication Quality; Riau Vocational High School for Integrated Agriculture

1 INTRODUCTION

Teachers have a critical role in education. Students need the assistance of a teacher in self-development and the enhancement of their talents and abilities. A student cannot attain his or her life goals without the help of a teacher. This statement is based on the notion that humans are social beings who need the help of others to meet all of their needs (Brekelmans et al., 2011, p.17). According to public opinion, the quality of teachers is a critical component of learning that can help increase educational quality and influence the quality of student communication (Harris & Sass, 2007, p.35).

The teacher is the most important factor in determining the quality of student communication among the various factors that influence it (Muzenda, 2013, p.6). Teachers are an essential school-based determinant because they interact directly with students while at school. Teachers must have quality in carrying out the learning process because they act as educators who have the most contact with students. Qualified teachers can help students communicate effectively. Teachers' quality affects the quality of student communication by designing lessons, influencing students' understanding of the material, implementing behaviors to foster student motivation, encouraging student collaboration, and acting as role models for students (Jennings & Greenberg, 2009, p.515).

According to Law No. 14 of 2005 concerning Teachers and Lecturers, teacher quality encompasses pedagogic quality, professional quality, personality quality, and social quality. Every educator must master these four qualities to become a competent educator. The abilities and skills of teachers' pedagogic qualities are related to teaching and learning interactions between teachers and students. A teacher's ability and personal characteristics represent the quality of the teacher's attitude

and behavior in carrying out their regular duties. Teachers' social quality refers to their capacity to communicate and engage effectively with students, colleagues, parents/guardians, and the community.

In education, the advancement of information and communication technology (ICT) is equally applicable (Trust, 2012, p.133). It should also be emphasized that globalization has prompted a movement in education from traditional face-to-face education to more open education utilizing ICT. The current modern era cannot be separated from ICT. As a learning resource, ICT can bring value to the learning process by influencing the quality of student communication (Selwyn, 2009, p.158).

The development of the times also influences the development of learning theory. For example, consider Cybernetic Learning Theory, which is still relatively young compared to other learning theories. This theory evolves in line with the advancement of communication and information technology (ICT). Learning, according to this view, is the act of processing information. This theory claims that no one-size-fits-all learning strategy is appropriate for all situations because learning style is heavily influenced by the information system (Anwar, 2017, p.388).

The cybernetic theory was developed by Landa (in the form of an algorithmic and Neuristic approach) and Pask and Scott by dividing the types of students, namely the Wholist and Ferialist types (Doering et al., 2009, p.320). The cybernetic theory has been criticized because it emphasizes the information system to be studied. However, it pays less attention to how the learning process occurs, so many people assume that this theory is difficult to put into practice.

The cybernetic theory should be used to draw attention, inform students of learning objectives, stimulate activities on learning prerequisites, present learning stimulants, provide learning guidance, encourage work, provide informative feedback, assess performance, and improve retention and transfer of learning (Winkel, 2005, p.57). As science and information and communication technology (ICT) advance, reform initiatives in the use of ICT outcomes in the learning process become more common than before. Teachers must be competent to use the tools offered by the school, which may or may not be up to date with current advances and demands.

Teachers can, at the very least, employ low-cost, high-efficiency instruments that are simple and unpretentious, and they must be able to meet the intended teaching objectives (Al-Rahmi, Othman, & Musa, 2014, p.540). Apart from being able to use the available tools, teachers must also be able to develop skills in creating learning media that will be used if the media required is not yet available (Kilis, Gülbahar, & Rapp, 2016, p.3). As a result, teachers must have sufficient knowledge and understanding of learning media.

Various learning theories are influential in the subject of information and communication technology (ICT) in education. These learning theories are the cornerstone of educational information and communication technology in enhancing learning. ICT in learning can grasp the description and clarify how the teaching and learning process occurs by studying these various learning theories (Mendiburo, et al., 2014, p.2). ICT in learning can help establish a goal-oriented learning theory that aims to provide suggestions or strategies to create a learning condition that can be achieved (prescriptive) (Doering et al., 2009, p.321).

According to Trust (2012), the advancement of information and communication technology (ICT) in education: "In the information age, students must learn to navigate and evaluate an expanding network of information. Highly effective teachers model this process of information analysis and knowledge acquisition by continually learning through collaboration, professional development, and studying pedagogical techniques and best practices" (Trust, 2012, p.133).

The development of information and communication technology (ICT) requires education to pay attention. Subject teachers today manage information processing using learning innovation approaches known as ICT technology, which will promote the growth of knowledge that occurs in education (Trust, 2012, p.133). It should also be noted that, as a result of globalization, there has been a transition in the

field of education from traditional face-to-face education to more open ICT-based education. ICT in education can bring value to the learning process (Selwyn, 2009, p.158). Sabanci and Urhan (2014) make a similar statement, saying that "Building teacher-student and student-student relationships also becomes important in shaping these classroom communities as safe places where risk-taking and dialogic inquiry take place," demonstrating the greater need for information science and ICT in the classroom and school environment (Sabanci & Urhan, 2014, p. 273).

The use of information and communication technology (ICT) in learning is a systematic effort to design, implement, and evaluate the entire learning process for a specific purpose. Also, the use of ICT in learning is based on research on the learning and communication process in humans, which employs a combination of human and human resources to facilitate effective learning. The term 'special purpose' was added to account for the influence of B.F. Skinner's (one of the founders of Behaviorism Psychology) views on the use of ICT in learning. Similarly, the concept emphasizes the need of study into methods and techniques for achieving specific objectives (Saepudin, 2017, p.529).

In 1970, the Commission on Instruction Technology (CIT) defined information and communication technology (ICT) in learning as media and resources that, in addition to teachers, textbooks, and whiteboards, were born as a result of the communication revolution and can be used for learning purposes. Television, films, Overhead Projector (OHP), computers, and other hardware and software components make up ICT in education. In 1970, Silber defined ICT in learning as the systematic development (research, design, production, evaluation, support-supply, and utilization) of learning system components (messages, people, materials, equipment, techniques, and settings), as well as the management of development efforts (organizational and personal) systematically, with the aim of solving learning problems.). The term 'development' is included in Kenneth Silber's definition above. What is meant by 'development' in the previous definition is properly defined in terms of the development of human potential. The term 'development,' according to Silber's definition, has two meanings: it can refer to the development of human potential, or it can refer to the development of ICT in learning, which includes the design, production, use, and assessment of ICT for learning (Saepudin, 2017, p.529).

The Association for Educational Communication and Technology (AECT) proposes the following formulation to replace the existing definition (1963, 1970, 1971) in Saepudin (2017, p. 530). ICT in learning is a field concerned with assisting human learning by systematic efforts in the identification, development, organization, and utilization of various learning resources and with the administration of the entire process. AECT defined ICT in learning in 1977 as a complex integrated process that includes people, procedures, ideas, tools, and organizations to analyze problems, design, implement, assess, and manage problem-solving in all aspects of human learning. AECT seeks to identify it as a theory, a field, and a profession.

Information and communication technology (ICT) in learning, according to Tom Cutchall in 1999, is research and application of behavioral science and learning theory using a systems approach to analyze, design, develop, implement, evaluate, and manage the use of ICT to help solve learning problems and improve performance. Looking at the contents of the definitions as mentioned above of ICT in learning, it appears that ICT in learning goes through a "metamorphic" process towards perfection from time to time. Initially, ICT was merely considered as a tool inside a larger system, evolving from only practice-oriented to theory and practice, from products to processes and products, and finally, ICT in learning has evolved into a field and a profession (Gall, D., Meredith & Borg, R., 2003, p.78).

Despite the rapid advancement of science and information and communication technology (ICT), particularly in the fields of education, psychology, and communication, it is not implausible that ICT in learning will develop and strengthen into a scientific discipline and profession in the future, providing even more benefits for improving learning effectiveness and efficiency (Hill, W, F, 2009, p.99).

Information and communication technology originally always associated with information and communication, was later known as information and communication technology (ICT).

According to Rubert and Stewart in Liliweri (2010:35), communication includes responses to messages received, which can then create new messages because everyone interacts with others by creating and interpreting messages packaged in a collection of meaningful symbols. According to Everett et al. in Wiryanto (2006:6), communication is a process in which two or more individuals collaborate to form or communicate knowledge, resulting in deep mutual understanding.

'Communication,' according to Miller in Liliweri (2010: 34), is the center of interest in human behavior because it allows the source to consciously pass the message to the recipient to affect the recipient's behavior. 'Quality' can be described as the degree to which anything is good or bad and the level, degree, or level (intelligence, abilities, etc.). (kbbi.web.id, 2020). 'Quality', according to Juran (1962), is the congruence of goals and benefits. The degree to which communication is good or bad between one person and another can be characterized as 'communication quality.' As a result, communication is described as the sharing of information through dialogue and as the process by which dialogue participants learn to understand one another, release tension, and express their perspectives.

One of the abilities that everyone should have is communicating effectively. Joseph De Vito in Hilmi (2019: 6) states that the quality of communication can be measured by employing interpersonal communication. He stated that there are five quality components that can be used as a guideline for developing effective interpersonal communication. The first is 'openness,' which is defined as a willingness to listen to others' ideas and communicate essential information. This openness results from a person's desire to listen and reply honestly to all conversations. Second, 'empathy' refers to a person's ability and tendency to understand and sympathize with the feelings of others. Empathy is beneficial for understanding the other person's internal situation as if the "if conditions" were not ignored. Third, a positive attitude can be defined as a response to one's feelings toward an object; in this situation, a positive attitude is represented by positive thoughts and information transmission. Fourth, 'equality'; by striving to comprehend differences and providing an opportunity for others to be in that environment, one might avoid misunderstandings and conflicts. Fifth, supportive behavior (supportiveness); an unsupportive atmosphere in interpersonal relationships can cause communication not to be open and empathetic. The attitude of support can be displayed by being descriptive, not evaluative, spontaneous, not strategic, temporary, and not very sure.

It is critical to integrate information and communication technology (ICT) in the classroom to allow students to develop and apply 21st-century skills. Therefore, researching the issues and obstacles surrounding the use of ICT in teaching and learning can assist students in improving their communication skills (Ghavifekr et al., 2016, p.41).

2. METHODS

The Explanatory Survey Method was employed in this study. The Explanatory Survey Method is a field research method that uses a questionnaire to collect data to provide an overview or description of the classroom environment on the quality of student communication. This research aimed to gain an overview and test the truth of the impact of information and communication technology (ICT) on the quality of student-teacher communication. The survey method utilized was a descriptive survey, which aimed to explain or document present conditions or attitudes to explain what was going on (Morissan, 2014, p.1).

The descriptive method utilized in this study was designed to produce an image that matched the study's objectives. According to Morissan (2014), a descriptive method is used to describe or analyze a research result but not draw general conclusions (Morissan, 2014, p.1). Test research was used to determine the effect of information and communication technology (ICT) as a source of learning on the quality of student-teacher communication. This research was directed to test the truth of an existing

field. Based on the type of research, namely descriptive and verification carried out through data collection in the field, the research method used is the survey method.

The data was collected by distributing a closed list of questions (questionnaires) with an alternative answer for each question; the respondent just had to choose one alternative answer that was deemed appropriate for the question (Morissan, 2014, p. 192). The questionnaire's results would be presented as numbers, tables, statistical analysis, and descriptions and conclusions of the research findings. The results of the questionnaire were used to analyze quantitative data.

3. DISCUSSION

Information and communication technology (ICT) as a source of learning is an external factor that influences the quality of student communication. The 8-item questionnaire questions include the ICT as a learning resource variable. The average score of ICT as a learning resource variable varies, as shown in the table below, based on data from research questionnaires.

Table 1: Tendency of Average Score of Information and Communication Technology as Learning Resources Variable for Students at Riau Vocational High School for Integrated Agriculture

Indicator	Mean	Category
Gaining knowledge	4.03	High
A means of discussion	4.00	High
Learning creativity	4.04	High
Average	4.02	High

Source: Questionnaire Data, Researcher's Analysis, 2020

According to the statistics in the table, overall, the tendency of students at Riau Vocational High School for Integrated Agriculture to use information and communication technology (ICT) as a source of learning is in the high category, with an average score of 4.02. The high usage of ICT as a source of learning will impact the quality of communication, including gaining knowledge. An average score of 4.03 was achieved based on the average calculation of the trend score of all respondents. The result indicates that Riau Vocational High School for Integrated Agriculture students have a high 'acquiring knowledge' indicator. Furthermore, the 'means of discussion' indicator got an average score of 4.00 based on the average computation of all respondents' trend scores. This score indicates that students at Riau Vocational High School for Integrated Agriculture have a high indicator of the means of discussion. The last indicator is 'learning creativity'. An average score of 4.04 was obtained using all respondents' average trend score computation. This score implies that the indicator of learning creativity in Riau Vocational High School for Integrated Agriculture students is included in the high category.

The average score of the questionnaire on information and communication technology (ICT) as a learning resource for the students of Riau Vocational High School for Integrated Agriculture obtained high results, although the average score for each indicator has not reached the ideal maximum score (5.00). Empirically, existing indicators can be used to explain ICT as a learning resource, implying that indicators of obtaining information, discussion facilities, and learning creativity can be used as suggestions for measuring the variable of ICT as a learning resource.

The indicator of gaining knowledge is in the high category (4.03). This score indicates that Riau Vocational High School for Integrated Agriculture students use information and communication technology (ICT) to acquire knowledge. With the advancement of ICT, this number may rise. Students can receive a lot of information and knowledge that will help to improve the quality of communication between students and their teachers. With an average score of 4.00, the questionnaire that measures the indicators of conversation methods falls into the high category. This score demonstrates how students

in Riau Vocational High School for Integrated Agriculture have used ICT as a means of discussion to improve their understanding, hence improving communication quality.

With an average score of 4.02, the variable information and communication technology (ICT) as a learning resource falls into the high category. This score indicates that students at Riau Vocational High School for Integrated Agriculture have utilised ICT as a learning resource with a high level of intensity. This high level of intensity is ideal for learning activities that will help enhance the communication quality.

Based on the results of research data analysis and significance test, it is known that information and communication technology (ICT) as a learning resource has a positive and significant effect on the communication quality of students at Riau Vocational High School for Integrated Agriculture. The effect's value is $(0.1662)^2$, or 2.75%. This result indicates that ICT as a source of learning has a 2.75% influence on the quality of student communication, with the rest influenced by other factors. The significance test results obtained was 0.000, whose value is smaller than $\alpha=0.05$ ($0.000 < 0.05$). This value indicates that ICT as a learning resource and the quality of student communication has a significant relationship, strengthening this effect.

The use of information and communication technology (ICT) as a learning resource improves students' attitudes towards learning, which will impact the quality of student communication. ICTs can also help teachers and students interact more and make student-centred learning. Students utilize ICT to add insight so that the learning process can be carried out at school and anywhere with the advancement of ICT (Ariyani et al., 2014, p.57).

Table 2: Recapitulation of Communication Quality Variables

Dimension	Average (%)	Remark
Openness	72.4%	Good
Empathy	75.2%	Very Good
Supportive Behavior	73.6%	Good
Positive Attitude	75.8%	Very Good
Equality	69.9%	Good
Average	73.38%	Good

Source: Questionnaire Data Processing, 2020

Based on the answers from respondents to the five dimensions of communication quality, it can be seen that the percentage on the openness dimension is 72.4%, with a very good category. The empathy dimension is 75.2%, with a very good category. The dimension of the attitude of support is 73.6%, with a good category. The positive attitude dimension is 75.8%, with a very good category, and finally, the equality dimension is 69.9%, with a good category.

The dimension with the highest percentage is the positive attitude dimension of 75.8%, with a very good category. The score explains how students become more independent and responsible for their own achievement due to using information and communication technologies, which requires students to complete their assignments independently. Furthermore, because of the usage of multiple ICTs in the classroom, students can immediately observe feedback or corrections from the teacher regarding a project or learning assignment without being limited by space or time, as is the case with face-to-face interactions in class.

While the dimension with the lowest percentage is the dimension of equality, which is 69.9%, with a good category. The percentage illustrates that in using information and communication technology, students do not feel comfortable listening to teachers' explanations during online learning. They still feel reluctant to discuss or respond to material explanations from teachers during learning.

Researchers believe that several factors contribute to this phenomenon, including culture shock. Teachers and students enter a new situation during the teaching and learning process, requiring both teachers and students to adapt to feel comfortable with the online learning process. This adaption process indeed takes a long time. There are also technological barriers such as internet network

disturbances during the learning process. This obstacle may obstruct ongoing communication, resulting in students not receiving the message as a whole.

Students can discover material linked to understanding and knowledge about subjects more easily with the help of information and communication technology (ICT). Much information obtained by students will encourage students to get good quality communication. Students can use ICT to share and explore knowledge on their own. The involvement of students in the search for knowledge through the use of ICT as a learning resource is critical in enhancing communication quality.

Students can use information and communication technology (ICT) as a learning resource to learn more about the lessons they have studied. This action will have an impact on the level of student communication. Students are more enthusiastic about studying when ICT is used as a learning resource. When students use ICT as a learning resource, they become more active and creative. Furthermore, students are becoming more engaged in learning process activities, improving student communication (Huda, 2013, p.84). According to Slameto, using ICT as a learning resource has improved communication quality (Slameto, 2013, p.28). The greater the quality of learning communication will be as the amount of educational information collected through ICT as a learning resource grows.

The findings of this study show that using information and communication technology (ICT) as a learning resource for the Creative Products and Entrepreneurship subject can increase student communication quality. As a learning resource, ICT aids a person's learning. It can assist students in learning and accomplishing their tasks as students use the available learning resources. With the advancement of ICT, limited resources are no longer an issue, and students are no longer solely reliant on the teacher's materials.

The utilization of diverse learning resources, including information and communication technology (ICT) as a learning resource, is an effort to solve learning challenges (Supriadi, 2015, p.135). Using ICT as a learning resource with all of its features will make it simple to access various learning resources, which will immediately improve students' knowledge and help their academic performance. ICT as a learning resource can help students learn more and benefit from other learning tools. The benefits of adopting ICT include the ability to display a variety of sources of material from various perspectives, which will expand students' knowledge, especially in the Creative Products and Entrepreneurship subject. Furthermore, ICT as a learning resource aids in discovering a variety of scientific sources, such as e-books and research journals, and allows for direct interaction between users and sources. All these things help students improve the quality of communication.

4. CONCLUSION

The findings of this study contribute to the subject of Creative Products and Entrepreneurship, where the use of information and communication technology (ICT) as a learning resource allows students to obtain knowledge more quickly and broadly. ICT can also help students be more creative and serve as a forum for discussion. However, the study's findings revealed that students were uncomfortable talking with teachers at school, were still hesitant, and would be forced to communicate if they had problems with the school's system. Several factors can contribute to this phenomenon, including culture shock due to the new online learning atmosphere, as well as technical obstacles such as internet network disruptions during the learning process.

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