

## TECHNOLOGY-BASED LEARNING MANAGEMENT AT STATE VOCATIONAL SCHOOLS IN MINAHASA SELATAN

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### ABSTRACT

*The purpose of this study was to analyze and describe technology-based learning management at SMKs in South Minahasa Regency. Technology-based learning management is a form of learning management that utilizes technological learning instruments to support the teaching and learning process to obtain optimal learning outcomes. The results of the study indicate that the management of technology-based learning has begun to be carried out by the three SMKs which are the current research locations, namely through planning, implementation and evaluation. These three schools already have sufficient supporting facilities for the implementation of technology-based learning management, however, there are still weaknesses and deficiencies that need to be addressed, especially by the Education Office and especially school principals so that the use of technology can be more optimized to support optimal learning outcomes.*

**KEYWORDS** Management, Learning, Technology, Education



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### INTRODUCTION

Education is the determinant of the future of a nation, with education the progress and decline of a nation will be very determined. According to SISDIKNAS Law No. 20 of 2003, education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have religious spiritual strength, self-control, personality, intelligence, noble character, and the skills needed himself and society. Thus the aspect of education is always the subject of discussion which continuously changes according to the dynamics of developments that occur in society (Syahira, 2021). The society is so dynamic that the mindset and patterns of interaction and adaptation are increasingly

**How to cite:** Vidlina Lie, Deitje A Kauutuk, Ronny Palilingan, Henny N Tambingon (2022). Technology-Based Learning Management at State Vocational Schools In Minahasa Selatan. Journal Eduvest. Vol 2 (11): 2316-2329  
**E-ISSN:** 2775-3727  
**Published by:** <https://greenpublisher.id/>

unpredictable resulting in changes that occur more quickly and cannot be predicted as to what form and direction these changes will take. The education system in Indonesia is currently experiencing major challenges regarding the changes in question (Aryana, 2021). Entering the 4.0 era, society is required to be able to match global changes marked by the massive use of technology, both information and telecommunications, so the world of education is also affected by these conditions so that skills, skills and technological literacy are a must for all elements involved in the world of education, both school leaders and tertiary institutions, teaching staff both lecturers and teachers, education staff and students or students. According to (Sutabri, 2014) Information Technology is: "Information Technology is a technology that is used to manage data so as to produce high-quality and useful-value information including processing, obtaining, compiling, storing, manipulating data to obtain quality information.

In the past, this technology was limited to the use of computers as the only data processing instrument, but now data processing instruments have developed to become more diverse and easier to operate and use more broadly and easily, such as smartphones, Ipads, and notebooks equipped with various supporting applications (Yusuf, 2018).

The demands of global progress encourage the world of education to always adapt to technological developments to improve the quality of education, especially adjustments to the use of information and communication technology for the world of education, especially in the learning process and educational services. This requires the readiness of all elements in increasing competence in mastering both information and telecommunications technology (Hennessy et al., 2016). This condition will support the success of education, especially in learning. Learning requires optimal management which includes planning, organizing, implementing and controlling, this is needed to create order, communication and utilization of existing resources in order to achieve learning objectives effectively and efficiently. Learning is an activity carried out in the classroom which is controlled by the teacher as the person in charge. In simple terms, learning can be defined as a plan that is carried out to activate students' learning activities in the learning process. (Kurniawan et al., 2021). In line with (Gasong, 2018) states that learning can be interpreted by the process of organizing, organizing the surrounding environment and providing guidance or assistance to students so that they can grow and encourage students to be able to achieve goals in the learning process. The teacher is responsible for achieving the quality of the educational product produced, so that in carrying out the process, the teacher must seriously build and create an image of himself as a facilitator, initiator, mediator, motivator and evaluator for the work he does with this role the teacher also has a managerial function in learning management in the classroom. The fulfillment of these elements will show the quality of a teacher's performance. (Tambingon, 2018)

“Performance is part of a universal concept which is the operational effectiveness of an organization and employees based on predetermined standards and criteria. It underlies the idea that organizations are run by humans, so performance is actually part of established human behavior and has an effect on desired actions and outcomes.”

This statement indicates that teachers who have good performance will be able to achieve learning objectives well too. Learning management is very important in order to increase the effectiveness of the teaching and learning process, various efforts have been made to improve the quality of education (Alsunbul, 2002). Various obstacles, difficulties, and limitations are encountered in the teaching and learning process, starting from the factors of students, families of students, as well as facilities and infrastructure that are less representative, but the Ministry of Education and Culture (Kemendikbud) continues to instruct all educators at all levels of education to be able to create fun learning for students and students. Therefore, the role of the teacher is needed in managing or managing learning starting from planning, organizing, actuating and evaluating in order to increase the effectiveness of the current teaching and learning process, both the implementation of distance learning (PJJ) within the network (online) or outside the network (offline).

Entering the 21st century, the world is growing rapidly, technology is developing massively. This development touches and influences various aspects of human life, from economic, legal, transportation, to educational aspects (Wang, 2012). Education is now increasingly advanced with the presence of modern learning concepts or methods, of course, with a variety of distinctive approaches from each of these methods. Some of them are cooperative learning, inquiry learning, discovery learning, e-learning, to learning methods that combine the two, namely hybrid learning. All of these learning methods essentially aim to help the learner in the process of absorbing new information or gaining new knowledge for himself, but there is no absolute or most perfect method so that whatever method is used will depend heavily on the ability to manage all the elements involved in it. . In line with what was stated by (Mokoginta et al., 2022) that:

“ The use of appropriate media will increase attention to the material to be studied, with the help of media students will concentrate more and the learning process will be better so that in the end students' understanding of learning material can be improved”

Learning becomes a very important thing in educational activities. Facilitating learning for students is a noble task for a teacher. For this reason, the teacher is not only required to make the learning atmosphere comfortable and interesting, but the teacher must also understand and master the knowledge of learning management both inside and outside the classroom (Adisel & Pranansa, 2020). Teachers must be able to choose and apply learning methods that are appropriate to the complexity of the material and the character of each student. So that the methods and approaches applied are truly in accordance with the self-development of students because students are subjects and not as objects in teaching and learning activities. Therefore, teachers must be able to use methods and approaches as well as use appropriate facilities and infrastructure so that the teaching and learning process becomes interesting and fun. As stated by. (Tangkowit et al., 2021) :

The use of technology can be a connecting medium to improve the level of education. Not only in teacher-student relationships, but also in making teachers

and students have information about the outside world, so they can find more learning materials. In addition, schools can also create more schools

technologically systemized in order to facilitate access for teachers and students.

By utilizing technology, teachers must be able to provide the widest possible space for students to be active and actively involved throughout the learning process. So that cognitive, affective and psychomotor learners can grow and develop optimally and at the same time without experiencing stunting (Budiman, 2017).

In learning interactions, it is strongly influenced by several components, namely: students, teachers, principals, curriculum, school facilities (library), milu and several other facilities needed in the learning process so that they will support the quality of learning.

Thus, learning activities can bring changes to students, both changes in knowledge, behavior, and skills. With these changes, of course students will be trained in solving life's problems and can adapt to their environment.

Seeing the facts stated above, this research is interesting, important, and very necessary to be carried out as an effort to prepare learning that is innovative and sensitive to changes and developments of the times. Researchers also want to show that the Covid-19 pandemic actually only acts as a gateway to changing learning to be sensitive to the times, science and technology, and contextual. It is also possible that online, offline and hybrid learning models will continue to be used as an alternative to conventional learning models. Of course, the constraints of each of these models must be minimized and the advantages must be utilized. The results of a deeper analysis of the learning model by utilizing technology applied during the Covid-19 pandemic can be used as material for consideration in future policy making. Whether we admit it or not, even though we hope that the Covid-19 pandemic will end soon, education, technology and science will continue to develop and require humans to make use of it by following these developments wisely.

The presence of scientific and technological developments can be used as a way to improve the quality of learning conducted by a teacher. To be able to make this happen, a teacher needs to understand and have Technological Pedagogical Content Knowledge (TPACK) abilities in him. Talking about Pedagogical Content Knowledge (PCK), there are two major parts that make up Pedagogical Content Knowledge (PCK), namely content knowledge and pedagogical knowledge. According to Shulman (1986:6), content knowledge includes knowledge of concepts, theories, ideas, frameworks, methods of proof and evidence. Meanwhile, pedagogical knowledge relates to teaching methods and processes which include knowledge about class management, assignments, learning planning and student learning.

Based on preliminary interviews, data was obtained that the obstacles encountered during online learning at SMK schools in South Minahasa Regency included a lack of technological facilities that support student learning such as the unavailability of cellphones or electronic devices that support and low digital skills for both teachers and students. Even though cellphones are available, there are still limited human resources in managing technology for online purposes. This causes

less optimal learning material delivered to students. Other obstacles are felt by parents of students who live in areas where the network is not good. Apart from that, they also complained that the quota price was starting to feel heavy because it exceeded their usual needs. The busyness of student guardians is also an obstacle. Those who work as traders, especially online traders, must always use their cellphones, because online learning requires them to share it with their children. Discussing the explanation above, this shows that State Vocational Schools in South Minahasa have carried out learning by utilizing technology. Referring to this, the researcher is interested in carrying out research that focuses on learning management in SMK, what and how learning management is by utilizing technology focusing on the research title "Technology-Based Learning Management at SMK Negeri Minahasa Selatan Regency"

## **RESEARCH METHOD**

This research is a qualitative research, as stated by (Sugiyono, 2015) that qualitative research is a research method based on the philosophy of positivism, used to research on natural object conditions, (as opposed to experiments) where the researcher is the key instrument, data collection techniques are carried out by triangulation (combined), data analysis is inductive/qualitative and the results of qualitative research emphasize meaning rather than generalization (Zuriani, 2016: 42). According to (Herdiansyah, 2019), Qualitative research is methods for exploring and understanding the meanings that a number of individuals or groups of people ascribe to social or humanitarian issues. Researchers use qualitative research so that it is easier for researchers to determine the formulation of problems and preparation of reports. Furthermore, the descriptive method was chosen because the data sought was in the form of a statement. In addition, the descriptive method was chosen to make it easier for researchers to collect data and to describe the data obtained from the field in the form of descriptive data (not numbers or statistics). So this research seeks to describe a research which is a phenomenon or relationship related to how hybrid learning management improves the effectiveness of the teaching and learning process at State Vocational Schools in South Minahasa Regency.

The location chosen by the author for this study was a Vocational School in South Minahasa Regency consisting of State Vocational School I Amurang, Tenga State Vocational School and Tumpaan State Vocational School where previously the author had conducted an initial survey of the problems the author observed related to technology-based learning management. The author feels interested in researching this matter, for this reason, these three schools were chosen as the location of this research where the three schools already have internet access and have implemented technology-based learning.

This research is a qualitative research so that the key instrument is the researcher himself and supporting instruments in the form of interviews and documentation.

The data sources of this research consist of two kinds of sources, namely primary and secondary data sources. Primary data sources come from interviews with the Head of the SMK, Curriculum Coordinator, IT Operator, Facilities and

Infrastructure Coordinator and Class Teacher (homeroom teacher), and head of the student representative class at SMK Negeri I Amurang, SMK Negeri Tenga and SMK Negeri Tumpaan, South Minahasa Regency. Primary data sources also come from observations of the learning process carried out in these schools. Secondary data sources in this study were obtained from various documents related to technology-based learning management carried out at SMK Negeri I Amurang, SMK Negeri Tenga and SMK Negeri Tumpaan. These documents include learning tools, assessment sheets, documentation of learning activities, school profiles, circulars, and include learning videos.

## **RESULT AND DISCUSSION**

This section will discuss based on the data collected on how to manage technology-based learning at the South Minahasa District Vocational School starting from the planning, implementation and evaluation stages so that it clearly describes the posture or pattern of technology-based learning management at the Minahasa District Vocational School.

Technology-based learning management is a form of regulation or management of learning by combining a learning process with the use of learning media. The media is technological in nature, be it the internet, the use of video, LCD and other ICT tools

### **1. Technology-Based Learning Planning**

Referring to the research results as previously described, there were several aspects that were the focus of attention from the three sites that were the subject of the study. It was found that all of them already had readiness in technology-based learning management, both HR readiness, namely teachers and infrastructure or facilities readiness. SMK Negeri I Amurang as a driving school has more mature readiness than SMK Negeri I Tumpaan and SMK Negeri I Tenga, this is indicated by the lack of supporting facilities in the two schools compared to those owned by SMK Negeri I Amurang. The implementation of learning that utilizes technology by teachers has been carried out but in terms of learning planning the teachers find it difficult in terms of preparing class administration such as designing syllabus and lesson plans. If it is associated with the effectiveness of learning management carried out in the two SMKs, namely SMK Negeri I Tumpaan and SMK Negeri I Tenga, it can be assessed that it has not been maximized. Based on the facts on the ground, most of the teachers in the two SMKs interviewed had not prepared lesson plans that were integrated with technology as a guide for lesson planning. Though according (Bafadal et al., 2019) good planning accompanied by careful details must be done as well as possible.

With regard to facilities and infrastructure, SMK Negeri I Tumpaan and SMK Negeri I Tenga in terms of infrastructure pay enough attention to meeting the needs for ongoing learning. This was stated in interviews with teachers and the Sarpras Coordinator that schools have made every effort to procure infrastructure as much as possible according to the budget. The problem is the maintenance of existing infrastructure. The data that the researchers obtained regarding the facilities and infrastructure at the two SMKs were corroborated by

interviews, observation and documentation. With regard to ICT machines/equipment, the two SMKs have been trying to procure ICT equipment. The problem that has been an obstacle related to ICT devices owned by schools is in terms of maintenance. As revealed from the interviews with the IT Coordinator and teachers that the computer laboratory:

Most of them are damaged, only a few computers can be used, the others, even though they have been repaired, are still damaged again, so this hinders learning using computer laboratories. The summarized data has been verified by the latest data from the Sarpras Coordinator.

With regard to the funding allocated for the integration of ICT in learning, more specifically the allocation of funds for the integration of ICT in learning already exists but is limited and is still the main obstacle. This was stated by the Principal in an interview regarding the management of ICT infrastructure in schools and the constraints of ICT integration in learning as quoted as follows:

“...The need for funding with a limit of five hundred thousand rupiah, above this value the procurement of infrastructure with the permission of the school principal but below this value is directly with the Sarpras Coordinator. ...The main obstacle is cost, for example regarding the provision of a computer laboratory, LCD maintenance, special ICT room settings do not yet exist, funds for the need for photocopies of student activity sheets are quite large, approximately two million per month.”  
(Principal)

Interview data regarding funds with school principals was corroborated by data from the Sarpras Coordinator and Head of Administration.

The key to the success of the Technology-based learning management model lies in the planning stage of Technology-based learning that is carried out by the teacher involving parties directly related to Technology-based learning. According to the function of learning planning, it is as a guide or guide in preparing learning programs, preparing learning processes, preparing learning materials/media/resources, and preparing assessment tools so as to facilitate the preparation of PAIKEM learning preparations and learning development. (Triwiyanto, 2015). Through lesson plans, preparations for ICT integration in lesson plans are prepared with consideration in such a way as to suit the situation and conditions of the school. The difficulties faced by teachers in developing lesson plans can be overcome by collaborating with other teachers who hold the same grade level with facilitation and supervision by the designated principal or senior teacher. Further according to the principal's statement that:

In terms of completing technology-based learning plans, schools also pay attention to the readiness of resources or teacher potential in integrating technology in the development of syllabus and lesson plans so that they are in accordance with real conditions in schools, including by carrying out in-house training and offline training for all teachers to make equal distribution of human resources in schools concerned. level of mastery of technology.

Training is ideally carried out on a scheduled basis and the frequency of implementation is more or more often, for example it is carried out every 3

months or 4 months so that there is always updating of information and proficiency skills.

## **2. Implementation of Technology-Based Learning**

In management, one of the stages that requires a lot of involvement from school components is the implementation stage. Implementation of learning is a process of ongoing teaching and learning in the classroom which is the core of activities in schools. So the implementation of teaching is teacher interaction with students in order to convey lesson material to students and to achieve teaching goals. In this implementation function includes learning management and leadership activities carried out by teachers in class and management of students. In addition, it also contains organizing activities carried out by the principal such as the division of work into various special tasks that must be carried out by the teacher, as well as regarding other management functions. Therefore, in terms of the implementation of learning, it includes two things, namely, class and student management and teacher management. The two types of management will be described in detail as follows:

### **a) Management of classes and students**

Classroom management is an effort to optimize the potential of existing classes as optimally as possible to support the process of educative interaction to achieve learning goals. With regard to classroom management there are at least nine things that must be considered, namely :

1. study room,
2. arrangement of learning facilities,
3. seating arrangement,
4. study room,
5. arrangement of learning facilities,
6. seating arrangement,
7. lighting, temperature,
8. warm-up before entering into the material to be studied (formation and development of competencies) and
9. build an atmosphere in learning

The teacher can arrange and manipulate everything, the situation that exists when the teaching and learning process takes place. According to Nana Sudjana quoted by Suryobroto the implementation of the teaching and learning process includes the following stages:

#### **1. Pre-instructional stage**

That is the stage taken when starting a teaching and learning process: The teacher asks for student attendance and records students who are not present; Ask students how far the discussion went before; Provide opportunities for students to ask about lesson material that they have not mastered from the lessons that have been delivered; Briefly review other lesson material.

#### **2. Instructional stage**

Namely the stage of providing learning materials which can be identified by several activities as follows: Explaining to students the teaching objectives that must be achieved by students; Explain the subject



matter to be discussed; Discuss the main material that has been written; For each subject matter discussed, concrete examples, questions, assignments should be given; Use of teaching aids to clarify the discussion on each subject matter; Summarize the results of the discussion of all the subject matter.

### **3. Evaluation and follow-up stage**

This stage aims to determine the success of the instructional stage, the activities carried out at this stage are: Asking questions to the class or to several students regarding all the main aspects of the material that has been discussed at the instructional stage; If the questions asked cannot be answered by students (less than 70%), the teacher must repeat the lesson; To enrich students' knowledge of the material discussed, the teacher can give assignments or homework; End the lesson by explaining or telling the subject matter to be discussed in the next lesson.

#### **b) Teacher management**

The teacher as one of the components in teaching and learning activities (KBM), has a very important position in determining the success of learning, because the main function of the teacher is to design, manage, implement and evaluate learning. Teachers must be able to position themselves and create a conducive atmosphere, which is responsible for the growth and development of the child's soul. In order to encourage teacher professionalism, implicitly the National Education System Law no. 20 of 2003 article 35 paragraph 1 lists national education standards including: content, process, graduate competence, educational staff, facilities and infrastructure, management, financing and assessment. The standard referred to in this case is a criterion that has been developed and determined by the program based on effective resources, procedures and management, while the criterion is something that describes the desired condition. The competence possessed by each teacher will show the actual quality of the teacher, this competency will be manifested in the form of mastery of knowledge from professional actions in carrying out their duties as a teacher.

### **3. Evaluation of Technology-Based Learning**

The learning evaluation system based on information and communication technology that is carried out is actually the same as the learning evaluation system that is generally carried out, namely through the assessment of student learning outcomes. In terms of measuring the level of achievement of student competence, it is necessary to carry out an assessment, the results are used as material for preparing progress reports on learning outcomes, and to become continuous improvement in the learning process. The evaluation results obtained become the basis for teachers to be able to provide support for students who have low achievement of competence and determine an appropriate learning process by making improvements to the deficiencies that existed in previous learning. Assessment is carried out consistently, systematically, and programmed. This is in accordance with learning assessment in general which refers to the 2013 curriculum that is being used. The results of the research show that the program carried out by the teacher in the context of assessing learning outcomes is:

1. Schoolwork,
2. Homework,
3. Daily test,
4. Midterm test,
5. And repeat class increase.

Some tasks at school and at home are done individually and some are done in groups. Individual assignments at school that are often given by teachers are in the form of exercises from books or questions made by the teacher, observations outside the classroom, portfolios, making crafts and class surveys. While group assignments at school include group discussions, observations, and making simple tools. Then the tasks at home are also almost the same, namely doing questions, observing, and making simple tools. Some of the tasks above are what teachers strive to be able to take advantage of technology, for example in giving assignments, teachers use interactive media to display assignments, then when students are looking for information to do individual or group assignments, students can use information technology, such as computers, Android, and so on. other gadgets to access the internet. Likewise for daily tests and midterm tests. The questions, both written and unwritten, were prepared by the teacher. In this case, the teacher utilizes information technology to assist in making these questions, for example from a collection of question banks, articles on the internet and magazines. However, students still technically do it manually, namely working on answer sheets. The same is true for end-of-semester tests that are done by students manually. Based on the results of the research, the implementation of the assessment of learning outcomes is still carried out manually, namely students working on questions on answer sheets. However, there was one teacher who carried out the assessment of learning outcomes by means of an assessment on the media lectora, even though they did not use it routinely. Evaluation questions are used in the form of multiple choices about the material that has been studied. From these activities it can be seen that the evaluation activity has utilized information and communication technology. However, this has not been done in its entirety, there are still many evaluation activities that are carried out manually.

#### **4. Obstacles in Technology-based Learning at South Minahasa State Vocational School**

At this time, Information and Communication Technology (ICT) plays an important role in various fields, including in the field of education. One of the applications of ICT in the field of education includes the use of multimedia facilities and Internet media in the learning process. Utilization of multimedia facilities in the learning process is realized through learning modules that are more interactive and attract students' interest, for example the use of flash, the existence of explanations through sound/audio media and the addition of features that can increase the active participation of students. Meanwhile, the use of Internet media in the learning process is expected to make it easier for students to get the information needed, so it is hoped that students will actively seek the information and knowledge needed. However, in reality, the application of ICT in education in Indonesia is still in its early stages and has not been fully utilized.

Constraints in the application of ICT in the field of education are caused, among other things: The uneven infrastructure that supports the application of ICT in the field of education is an initial problem that must be resolved immediately by the authorities, because without the supporting infrastructure, the application of ICT in the field of education will only be just a dream. Infrastructure is a very important component that serves as the initial and main capital in the application of ICT in education. At this time, there is a tendency that only certain areas have access to ICT. This is because there are still many areas where they don't even have telephone access, let alone access to the Internet. Even though in fact there is a lot of superior human resource potential that is owned by the region. If this continues like this, it is feared that the potential of human resources owned by the region will be wasted and cannot be utilized for the progress of the Indonesian nation in general, so that an interactive and creative discussion process is obtained on the website.

Another obstacle that needs to be resolved is the unpreparedness of human resources to utilize ICT in the learning process. This unpreparedness is due to patterns of learning habits that still do not consider the important role of ICT in improving the quality of learning. They tend to be satisfied with the material that has been provided by the teacher directly, causing them to be unwilling/lazy to look for additional information on the Internet even though the facilities and infrastructure already support the application of ICT. Sometimes these obstacles are much more difficult to solve than the absence of infrastructure that supports ICT, this is because it is usually more difficult to change a person's behavior pattern/habit. Therefore, there needs to be awareness from each individual learner to utilize and apply ICT in their learning methods.

Barriers to integrating ICT in learning, can be concluded with two groups, namely:

### **1. Physically**

Physically, it can be in the form of inadequate facilities and infrastructure, especially for schools located in remote areas. even if there are facilities and infrastructure, they are still very minimal both in terms of quantity and quality of the equipment. Used multimedia devices are still used in educational institutions in rural areas. Of course, this used multimedia device still uses outdated specifications. So that its use is not able to compete with the rapid rate of development of ICT.

### **2. Non-physically**

- a. Teachers lack self-confidence in using ICT in carrying out the PBM process. Teachers are afraid of failing to teach through the use of ICT which is currently highly recommended. Although the use of ICT in the learning process is highly recommended by experts.
- b. Lack of teacher competence, what is meant here is the lack of teacher competence in integrating ICT into pedagogical practice, that is, they do not have knowledge and skills in using computers and are not enthusiastic about change and integration with learning using computers in their classes.

- c. Teacher attitudes and inherent resistance to change. Teachers' attitudes and resistance to change regarding the use of a new strategy, namely the integration of ICT in PBM. This is meant by the teacher's attitude that the use of ICT in PBM has no clear benefits or advantages.

In the Information, Communications, and Technology (ICT) Era, currently ICT in the classroom is very important to provide opportunities for student learning success in the current information age. By using ICT, obstacles in learning can be overcome. The findings show that teachers have a strong desire to integrate ICT into education, however, they encounter many obstacles. The main obstacle is:

1. Lack of confidence, / trust.
2. Lack of competence.
3. Lack of access to resources.

Information and communication technology (ICT) has become an essential part of most organizations and businesses. Computers began to be placed in schools in the early 1980s, and several researchers indicated that ICT was an important part of education for the next generation. Modern technology (ICT) has a lot to offer in the world of education, namely improving teaching and learning in the classroom; The view that new technology has the potential to support education across the curriculum; and Provide opportunities for effective communication between teachers and students in ways that have not been possible before. Efforts to apply ICT in Education.

## CONCLUSION

Based on the results of the research and discussion, the following research conclusions can be drawn.

Technology-based learning management at SMK Negeri I Amurang has been carried out optimally starting from planning, implementation to evaluation, this has been achieved because it is supported by adequate human resources and infrastructure.

Management of technology-based learning at SMK Negeri I Tumpaan is still low starting from planning, implementation to evaluation, this occurs due to the low availability of human resources and infrastructure in schools. Management of technology-based learning at SMK Negeri I Tenga is still low starting from planning, implementation to evaluation, this occurs due to the low availability of human resources and infrastructure in schools

Utilization of Technology in Learning at SMK Negeri I Amurang has been maximized because it is supported by adequate human resources and infrastructure. The use of technology in learning at SMK Negeri I Tumpaan has not been maximized because it is not supported by adequate human resources and infrastructure.

The use of technology in learning at SMK Negeri I Tenga is not maximized because it is not supported by adequate human resources and infrastructure.

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