



Analysis of Learning System in Higher Collection through a Technology 4.0 Approach in the Era of Covid-19 Pandemic

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Abstract: Analysis of learning management in higher education through a technology 4.0 approach. This study aims to obtain an overview of the implementation of learning management with a communication information technology approach (technology 4.0) to improve the learning management system in universities, especially the Bengkulu province UNIVED campus during the covid 19 pandemic. This research will be investigated further and more carefully on management factors. The results showed that: The availability of ICT network infrastructure services on the Unived campus was obtained by 80% of students and 93% of the academic community. In x₂ (Availability of Student Academic Information Systems) on the Unived campus, the results of interviews were 82% of students and 94% of the academic community. In x₃ (Availability of e learning applications) on the Unived campus, the results of interviews were 78% of students and 92% of the academic community. Based on the comparison of test data and interview data on the PT Unived campus, it was concluded that the Learning System (LS) = x in stages (ISM) = (A, C, and D) experienced an increasing trend (positive). Meanwhile, in the Individual stages of mastering ICT (B) there is a downward trend.

Keywords: learning management, technology 4.0, ICT

Recommended citation: Mesterjon., Suwarni., Selviani, D., & Monang, S. (2022). Analysis of Learning System in Higher Collection through a Technology 4.0 Approach in the Era of Covid-19 Pandemic. *Journal of Innovation in Educational and Cultural Research*, 3(3), 355-360.

INTRODUCTION

Management is the key to an educational institution, especially universities, because management can assist the process of activities that will be carried out by all parties involved directly or indirectly from these activities, so the importance of management if you imagine that if there is no management, all affairs will be chaotic and not As expected, this is in line with the opinion of Saefullah (2012), that "management comes from the word to manage which means to regulate, manage, and manage, as well as according to Musdiani et al. (2019) that a manager or principal is essentially a planner, organizer, leader, and controller. So it can be concluded that what is meant by a higher education quality assurance system is quality management that guarantees satisfaction or confidence to stakeholders that higher education quality requirements will be met, through the process of determining and fulfilling the quality of higher education management in accordance with established standards and procedures (Boihaki et al., 2020). Therefore, this research needs to know about learning management that can be used as a reference for educational institutions.

Higher education learning management in the perspective of higher education is a form of activity that starts from the arrangement, teaching and learning process, until the achievement of an effective and efficient teaching and learning process. Basically, learning management is the regulation of all aspects of learning activities in higher education, both learning activities categorized in the core and supporting curriculum, based on the curriculum that has been previously determined by the Ministry of National Education or the Ministry of Religion. According to Bafadal (2013), learning management is all efforts to regulate the teaching and learning process in order to achieve an effective and efficient teaching and learning process. Management of learning programs is often referred to as curriculum and learning management. From this explanation, it can be explained that higher education learning management is a learning management strategy that has an impact on effective and efficient services. Learning management is a leadership effort in planning, implementing, and evaluating learning with various existing components to support the learning process effectively effective.

Technology 4.0 is a phenomenon that collaborates cyber technology and automation technology. The concept of its application is centered on the concept of automation carried out by technology without the need for human labor in the application process. The era that currently demands various changes in all aspects is called the era of the industrial revolution 4.0, where universities must maximize lecture methods so that students can prepare themselves optimally and highlight their uniqueness and added value. Reflecting on the

stages of how individuals master ICT, the stages grouped by UNESCO (20017: 16) are divided into a). Discovering ICT tools (Finding ICT tools), b). Learning how to use ICT tools (learn how to use ICT tools), c). Understanding how and when to use ICT tools to achieve particular purposes (understanding how and when to use ICT tools to achieve certain goals) and d). Specializing in the use of ICT tools (specializing in the use of ICT tools). Based on the system theory put forward by [Sutherland \(1975\)](#), a system can be seen as a sequential cause-and-effect series, in which flowing inputs are captured and entered into the system, then processed and converted into outputs that flow out through a number of processes. He stated that "a system is seen as a causal sequence which finds a stream of inputs being transformed into a stream of outputs by some processes". He named this kind of model as the "black box" model. Output will affect the environment, resulting in changes in the environment. Information about environmental changes will be a feedback, which is then captured again by the system as new input. And so on.

[Campbell \(1979\)](#) in the book *Understanding Information Systems: Foundations for Control* asserts that the system is "any group of interrelated components or parts which function together to achieve a goal" together to function or move to achieve a goal. [Lippeveld et al. \(2000\)](#) in the book *Design and Implementation of Health Information Systems* define a system as "any collection of components that work together to achieve a common objective" common goals). In an environmental situation full of dynamics, technology-based learning management 4.0 is an option to be able to increase the effectiveness and productivity of higher education management in order to create organizations that can provide services that satisfy students and society in general as well as educational objects (parents and students) in particular. At the same time, they can compete effectively in local, national and even global contexts. In other words, universities are now required to develop ICT-based learning management in order to increase the effectiveness and productivity of PTS management that can be accessed by all students, lecturers and stakeholders. This is a strategy and operation that is basically widely applied in the business world, as an anticipatory step against new trends in order to achieve and maintain its competitive position, so that later it can produce humans who have quality human resources that are in accordance with the needs of the times.

The social distancing policy set by the government has an impact on the wheels of human life, including the field of higher education which is also affected by the policy. The government's sudden decision to dismiss or move the learning process from campus to home made many parties confused, due to the unpreparedness of schools to carry out online learning management of learning and how to overcome the difficulties of the learning system in higher education by utilizing ICT technology. Based on the results of observations, universities in Bengkulu Province spread to the four stages, but in some universities the academic community of higher education (lecturers, management, and students) have reached the stages of mastering C and D, namely understanding how and when to use ICT tools to perform a certain task (skill C), and have mastered the specific use of ICT tools (skill D).

This is also in line with the theory of [Mesterjon et al. \(2020\)](#) regarding this research had a weakness which is the students had not ability to their cognitive aspect because to the lowest the teacher was not creativity to learning process in the classroom. Meanwhile, when viewed from the data release by BAN P.T 2018 to 2020, it is found that: 1). University of Muhammadiyah Bengkulu, which has 9000 students spread across 9 faculties, 22 study programs, obtained study program accreditation with a value of A = 2, a value of B = 17 study programs and a value of C = 3 study programs. 2). Hazairin Bengkulu University has 4000 students spread across 6 faculties, 11 study programs, so the study program accreditation is obtained which is worth A = 1 study program, B = 7 study programs and C = 3 study programs. 3). Dehasen Bengkulu University has 7000 students spread across 8 faculties, 18 study programs, has an accreditation value of A = 0 (none), has a value of B = 15 study programs and a value of C = 3 study programs.

And the social distancing policy set by the government has an impact on the wheels of human life, including the field of higher education which is also affected by the policy. The government's sudden decision to dismiss or move the learning process from campus to home has confused many parties, due to the unpreparedness of universities to carry out online learning. Online platforms, also known as E-learning, is a form of distance education that can be accessed in a variety of ways. Students are no longer required to be in the same room as education used to be ([Syakur, 2020](#)). Online facilitators have the ability to communicate directly with their students about information and online resources ([Syakur et al., 2020](#)). According to [Henra and Masilah \(2021\)](#) since the Covid-19 pandemic hit the world, especially Indonesia from last year, all activities have been disrupted and have forced us to adjust the situation to suppress the spread of the virus. In addition, the education sector is also affected, so that the learning process must be rotated from face-to-face to online learning. In this aspect of education is then developed to study at home during the pandemic ([Syafi'i et al., 2021](#)). Part of the material is delivered via the internet, and partly through face-to-face, the functions are complementary ([Syakur et al., 2020](#)).

Therefore, the researcher conducted a study with the title *Analysis of learning management in higher education through technology 4.0*. The purpose of this research was to obtain an overview of the

implementation of Information and Communication Technology (ICT)-based learning management to improve the quality of higher education in Bengkulu Province. Leadership policies on management standards in order to improve the quality of higher education management which ultimately aims to strengthen the competitiveness of universities. In this study, it will be investigated further and more carefully on the management factor of improving the quality of higher education through information systems based on information communication technology (ICT) in order to improve the quality of higher education competitiveness. In the relation to the problem statements above, the researcher formulates two objectives of the study. 1) To describe the implementation of system management based on information communication technology in Bengkulu Province. 2) To describe the analysis results of Learning Management research in Higher Education through 4.0 Technology Approach.

METHODS

The method used in this study is a descriptive method with a qualitative approach, the author intends to see the reality in the field using interview and documentation techniques, this research was conducted during the Covid-19 pandemic that was sweeping the world so it was carried out remotely, to understand, explore and explore data, information that is correlated with the application of information system management based on information communication technology (ICT) to increase the effectiveness and productivity of learning management in universities with the aim of generating hypotheses from field research. The research findings only apply to the unit under study.

Data collection is the first step in this study because the main purpose of this research is to obtain as much data and information as possible, to obtain and find data that meet the standards, this research must use appropriate data collection techniques. The data and information that researchers want to collect in this study include; academic policies, organizational behavior, student intelligence, higher education ICT culture, length of study completion, quality documents and data or certain phenomena. So based on the categories of data and information, the data collection techniques that researchers use are: 1). Observation; 2). Interview; and 3). Documentation study.

As for the resources in this study are informants, as initial informants selected purposively, research objects who master the problem under study (key informants). Further information is asked to the initial informant to propose other people who can provide information, and then this information is also asked to indicate other informants, and so on. Researchers as instruments play a direct role in interacting with sources of information, namely leaders and lecturers in a free interview and also observing social situations, after which checking the data that has been revealed in advance whether there is a correlation or not. The stages in this study can be divided into two stages, namely: the exploration stage and the member check stage (Lincoln & Guba, 1985).

The stages in this research are: 1) Preparation stages, according to Moleong (2017) The activities and considerations are described as follows: a) compiling research designs, b) selecting fields, c) managing permits, d)) assessing the field, e) selecting and utilizing informants, f) preparing research equipment, g) research ethics issues. 2) The stage of work at school, according to Moleong (2017) the description of the stage of field work or in this case at school is divided into three stages, namely: a) understanding the background of research and self-preparation, b) entering the field , c) participate in collecting data. 3) The stages of data analysis, according to Moleong (2017) a description of the stages of data analysis include: a) data processing, b) categorization, c) data interpretation.

RESULT AND DISCUSSION

Based on the research that has been carried out at the University of Dehasen Bengkulu, the results of the analysis of the Learning Management research in Higher Education through the 4O Technology Approach and the findings obtained will be presented, as for the results of the research as follows. Subject (UNIVED Bengkulu). 1) Results of Observation and Learning System (LS) Tests on the Stages of Individuals mastering ICT (ISM) at PT Unived.

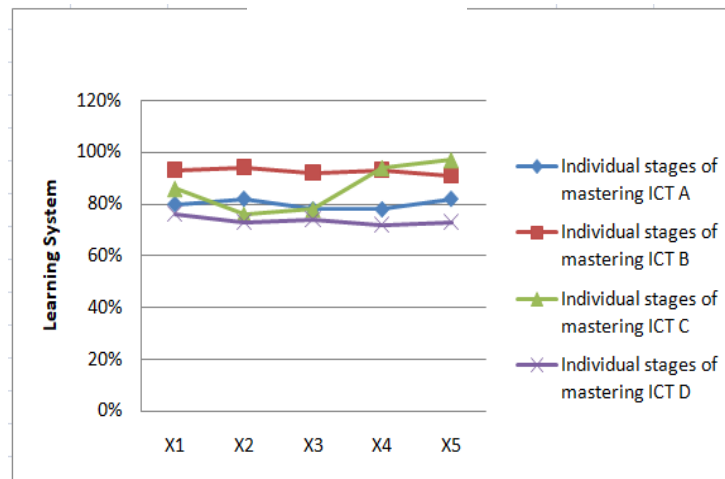


Figure 1. Results of interviews and tests (LS) at (ISM) PT UNIVED

Based on Figure 1, it was obtained on the Unived campus that LS (x1..x5), where x1 is very much needed by students because at ISM (A) students get the availability of an accessible ICT network with an INCREASING trend, while at LS (x2) students need an adm application that can accessed via the Web, because at ISM (B) students learn how to find ICT tools with a DECREASING trend; in LS (x3) students have taken advantage of available e-learning applications, because at ISM (C) students have understood how and when to use ICT tools to achieve learning objectives with an INCREASING trend, while in LS (x4) students have used e-libraries because in ISM (D) students have used to specialize in ICT-based learning with a CONSTANT trend. In addition, there is no doubt that the new generation is fond of technology and differs completely from the previous one (Al-Hidabi et al., 2020).

The results of the interview revealed that x1 (Availability of ICT network infrastructure) on the Unived campus was obtained by 80% of students and the academic community could easily find ICT tools for learning, 93% of students could easily learn how to use ICT tools for campus learning, 86% of students could understand how and when to use ICT tools to achieve certain goals in learning and 76% of students have specialized in learning and learning using ICT tools. This is relating with Aguyo (2010) point out that ICT in schools can be viewed as a cost effective strategy especially in terms of manpower since one teacher can reach many learners through internet, interactive white board and video conference technologies.

On x2 (Availability of Student Academic Information Systems) on the Unived campus, 82% of students and the academic community can easily find the SIAKAD system for ADM and learning, 94% of students can easily learn how to use the SIAKAD system for ADM and learning on campus, 76% of students can understand how and when to use SIAKAD for ADM to achieve certain goals in learning and 73% of students have specialized in learning and learning using SIAKAD and campus ADM equipment. Blended learning strategies become part of efforts to use technological advances in improving the quality of learning (Resien et al., 2020).

On x3 (Availability of e learning applications) on the Unived campus, the results of interviews obtained are 78% of students and the academic community can easily find e learning applications for learning, 92% of students can easily learn how to use e learning applications for learning on campus, 78% students can understand how and when to use e-learning applications to achieve certain goals in learning and 74% of students have specialized in learning and learning using e-learning applications on campus. The usage of Information and communication technology (ICT) in education is very broad, teaching and learning process becomes more creative and does not use the same teaching materials (Njoka et al., 2020).

On x4 (Availability of e-Library applications) on the Unived campus, the results of interviews with 78% of students and the academic community can easily find e-Library applications for reference and learning, 93% of students can easily learn how to use e-Library applications for on-campus learning, 94% of students can understand how and when to use e-library applications to achieve certain goals in learning and 72% of students have specialized in learning and learning using e-library applications on campus. The network Connectivity is improving and students are enthusiastic about using computing devices for learning, despite the inadequacy of equipment (Njoka et al., 2020).

On x5 (Availability of e-Journal applications) on the Unived campus, 82% of students and academics can easily find e-Journal applications for reference and learning, 91% of students can easily learn how to use e-Journal applications for campus learning, 97% of students can understand how and when to use the eJournal application to achieve certain goals in learning and 73% of students have specialized in learning and learning using the e-Journal application on campus. The present study is in line with utilization of technology is more appropriate as a medium for achieving better learning outcomes (Resien et al., 2020). Meanwhile, the use of information technology is the benefit expected by users of information systems in carrying out their

duties where the measurement is based on the intensity of utilization, the frequency of use and the number of applications or software used (Marlizar et al., 2021).

CONCLUSION

Based on the comparison of test data and interview data on the PT Unived campus, it was concluded that the Learning System (LS) = x in stages (ISM) = (A, C, and D) experienced an increasing trend (positive). Meanwhile, in the Individual stages of mastering ICT (B) there is a downward trend. The results of the interview found that; students who are able to find ICT service equipment on campus, have the willingness to learn how to use ICT tools, then these students understand how and when to use ICT tools to achieve learning goals, but students tend to be less specialized in the use of ICT tools for learning.

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