

Quality Evaluation Of Learning Systems In Open Universities (Ut) Using Kirkpatrick Method Based On Website

Effendi, Mantang¹, Zainuddin², Muh. Sabri Ahmad³, Sulfikar Sallu⁴

¹ Universitas Terbuka Ternate, Maluku Utara, Indonesia

^{2,3} Universitas Khairun, Ternate Maluku Utara, Indonesia

⁴ Universitas Sembilanbelas November Kolaka, Sulawesi Tenggara Indonesia

Email: 1effendimantang@gmail.com

ABSTRACT

The learning system is used to achieve learning goals, namely achieving maximum learning outcomes by students in learning activities. This study aims to determine and analyze UPBJJ-UT Ternate students' perceptions of the quality of learning at the Open University with Kirkpatrick's evaluation. An evaluation carried out through four levels: reaction, learning, behaviour and results. This research uses a quantitative descriptive approach to describe the object of research or research results. The population in this study were students of the Ternate Open University Distance Learning Program (UPBJJ-UT). They were registered to follow the tutorial in Ternate City and Pokjar Bobong, Taliabu Island. The sampling technique used is non-probability sampling, using a proportional random sampling method. The number of samples in this study was 232 students registered in the academic year 2020.1 and actively participated in tutorials. The data collection technique used a questionnaire. Website as an information system is present as a device that can connect student lecturers from any place within an unlimited time limit. Analysis of the data used in this study using a quantitative descriptive analysis technique. The results showed that at the initial level, students were satisfied with the relevance of the material provided with the module, administrative services at the Open University (UT) and the material provided in the tutorial process were felt to add new insights to students. Students are satisfied at the learning level because they think they can apply the Tutor's material in their daily life. The implication is that most students feel that their knowledge and experience have increased after following the tutorial, and students also think that the material obtained during the tutorial is very relevant to the world of work

Keywords

KirkPartick, Learning Systems, Website

Article Received: 10 August 2020, Revised: 25 October 2020, Accepted: 18 November 2020

Introduction

The quality of learning is a condition of achievement in educational institutions from the initial learning objectives in all aspects including art learning, achieving these goals to increase knowledge, skills and developing student attitudes through the learning process in class. To achieve this, Study processes are conceived in terms of three independent dimensions - utilization, internalizing and gaining - each of which has a cognitive (strategic) and an affective (motivational) component (Biggs, 1979). Furthermore, in improving quality, it also needs to be improved. Student learning research has recently focused on various aspects of relationships between students' perceptions of their academic environments, their approaches to learning and their learning outcomes (Pine, 2011). The learning experience from tutors is also one that can be considered to be used of their experience or thought in such a way that they affect a systematic representation of this experience or thought, as a means of understanding it, or explaining it to others (Seel, 2017) —learning models that can be done by utilizing various technologies available in learning. Results indicated a functional relationship between the independent variable and dependent variables. Limitations, suggestions for future research, and implications for practice are provided (Mazzotti, Test, & Wood, 2013). The following are measuring tools that can be used to measure the success of learning. In the era of the internet, universities and higher education institutions increasingly tend to provide e-learning. For suitable planning and more enjoying this

educational approach's benefits, a model for measuring proper systems' success is essential. (Hassanzadeh, Kanaani, & Elahi, 2012).

The online learning system is a learning system that can be done anytime and anywhere in support of the learning system. E-learning systems are enablers in the learning process, strengthening their importance as part of the educational strategy. Understanding the determinants of e-learning success is crucial for defining the instructional strategy. (Aparicio, Bacao, & Oliveira, 2016) As a direct result of the integration of technology and education, E-learning has emerged as a powerful medium of learning, mainly using Internet technologies (Al-Fraihat, Joy, Masa'deh, & Sinclair, 2020).

However, the Offline learning system is still very much needed for specific conditions. Because of the growing awareness of internet technology's significant benefits, traditional classroom lectures have complemented online education. However, even with the rising interest in online teaching and its ability to offer students an alternative way to learn, its efficacy is still questioned. This is especially true when online learning is a complementary system to the offline class. (Sohn, Park, & Chang, 2009).

Furthermore, one model is used, namely the Kirkpatrick Method as an evaluation model as a theoretical framework. While well-received and famous, the Kirkpatrick model has been challenged and criticized by scholars, researchers, and practitioners, many of whom developed their models using Kirkpatrick's theoretical framework. (Reio, Rocco, Smith, & Chang, 2017). Because this method has several advantages

that can be combined with other fields. The improved model can simulate the expert in evaluating the strategic performance and avoiding the subjective mistakes in the evaluation process and enhance the learning accuracy and the algorithm convergence speed greatly. (T. Li, Yang, & Liu, 2008).

Website is a facility that is on the internet using a browser to use it. The website is very important, according to the conditions that exist today. This can be implemented in all existing courses; for example, the following: Proof of integration between Technology Enhanced Learning and Human-Computer Interaction requires a significant evaluation. Collaboration method was developed in the form of an e-learning website. The assessment is done with WebQual 4.0 and modelled in several variables. (Udjaja, Sasmoko, Indrianti, Rashwan, & Widhoyoko, 2018).

Improving the quality of learning staff also has a very influential role. It introduces one part of a HEFCE LGM funded findings investigating how staff learning and development interventions are evaluated in UK Higher Education Institutions (HEIs). Funding was awarded due to the millions of pounds spent on learning and development in HEIs every academic year, and the perceived lack of evidence of how individuals, departments and Universities benefit from this.

Personalized curriculum sequencing is an important research issue for web-based learning systems because no fixed learning paths will be appropriate for all learners. (C. M. Chen, 2008).

Literature Review

Quality is an element interrelated with quality that can affect a performance process in meeting customer desires. Quality not only emphasizeemphasises the result, namely products and services, and concerns human quality, process quality, and environmental quality in producing quality products and services through quality people and processes. The quality of learning in tertiary institutions still refers to quality assurance, in various related elements in a university. evaluation is an essential component of models of instructional design. (Dick, 2002).

Learning quality is necessary because the quality is seen as innate excellence or something that can intuitively be understood and understood. Still, it is almost impossible to communicate, for example, looks or feelings. This perspective asserts that people can only learn by understanding quality through repeated exposure. Besides that, quality is an objective component, characteristic or attribute that can be quantified and measured.

Kickpatrick is an evaluation model for training programs' effectiveness (Watkins, Leigh, Foshay, & Kaufman, 1998; Kanto et al., 2020; Umanailo, 2020; (I Gede Juanamasta et al., 2019; Novitasari et al., 2019) which includes four evaluation levels, namely: level 1 reaction, level 2 learning, level 3 behaviour, and level 4 results. Evaluation of the participants' reactions/programs (level 1) means measuring participant satisfaction (customer satisfaction). The training program is considered adequate if the training process is fun and satisfying for the trainees to be motivated to learn and practice. In other words, the training participants will be motivated if the training process runs satisfactorily for the

participants who in the end, will lead to a pleasant reaction from the participants. Conversely, if participants are not satisfied with the training process they have participated in, they will not be motivated to attend further training.

Website is a graphical display of information on the internet, which can also be used in the learning model. Content analysis was used to analyze students' experiences of online learning. The findings of this study are 1) the most popular topics presented by students who were the discovery and construction of the online project; 2) the co-designed website by students can promote students' information literacy and learn to share attitude; 3) students were able to convert the outcomes of their project into a topic-based learning website through the online PBL. Ultimately, the students showed remarkable improvements in their research skills, decision-making, implementation and evaluation; and 4) online PBL could develop the students' fundamental attitudes towards research, including their approaches to prepare and plan actual visits. (Liu, Lou, Shih, Meng, & Lee, 2010).

Learning Systems In this theory, learning systems in work organizations are analyzed in a network approach to organizations. Learning systems are subject to tensions, which arise from their dual orientation: an orientation toward the development of human potential (humanity) and an orientation toward developing the work process (work relevance). (van der Krogt, 1998). Web-based e-learning is not restricted by time or place. It can provide teachers with a learning environment that is flexible and convenient, enabling them to efficiently learn, quickly develop their professional expertise, and advance professionally. (HR Chen & Tseng, 2012).

Quality of Learning Systems Information quality frameworks is developed to measure the quality of information systems, generally from the designers' viewpoint. The recent proliferation of e-services and e-learning significantly raises the need for a new quality framework in the context of e-learning systems (Alkhatabi, Neagu, & Cullen, 2010). Based on existing local conditions, learning support can be a solution. The learner's acceptance of e-learning systems has received extensive attention in prior studies, but how their experience of using e-learning systems impacts their behavioural intention to reuse those systems has attracted limited resear. (Y. Li, Duan, Fu, & Alford, 2012).

The implementation of online lectures can be implemented in various places and conditions. Personalized curriculum sequencing is an important research issue for web-based learning systems because no fixed learning paths will be appropriate for all learners. (CM Chen, 2008) Therefore, many researchers focused on developing e-learning systems with personalized learning mechanisms to assist online web-based learning and adaptively provide learning paths to promote individual learners' learning performance.

Method

The research method used is quantitative research with a descriptive approach, using primary data, namely research data obtained directly from the source (not through intermediary sources). The data is collected through structured interviews using a questionnaire as a data

collection instrument. The form of the question is a combination of closed and open questions. Second, secondary data is data that is indirectly the source of research data obtained by researchers through intermediaries (obtained and recorded by other parties). Secondary data is generally in the form of evidence, records or historical reports that have been compiled in archives (documentary data) which are published and which are not published. Secondary data in this study include data from the Open University about the university profile and data on students' number. Secondary data were obtained from websites, related literature, and articles from various newspapers and magazines.



Figure Online Learning System (Website, 2019).

Evaluation of the participants' reactions / programs (level 1) means measuring participant satisfaction (customer satisfaction). The training program is considered effective if the training process is fun and satisfying for the trainees to be motivated to learn and practice. In other words, the training participants will be motivated if the training process runs satisfactorily for the participants who in the end, will lead to a pleasant reaction from the participants. Conversely, if participants are not satisfied with the training process they have participated in, they will not be motivated to attend further

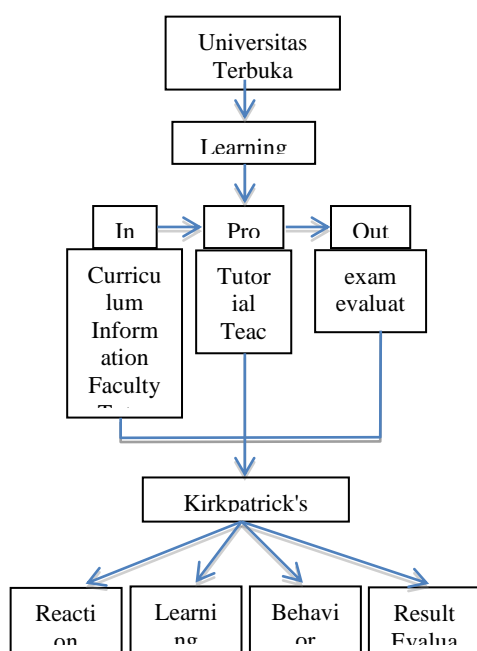


Figure 1 Research methods

From the picture above it is very clear that the Open University through UPBJJ UT Ternate with the learning system the process of inputting the output process through KIRKPATRICK evaluation to produce 4 evaluations, namely: Reaction Evaluation, Learning Evaluation, Behavioral Evaluation and Result Evaluation, this method is taken to improve the quality of existing learning systems.

Data Analysis

This study's population were UPBJJ-UT Ternate students who were registered to attend face-to-face lectures in Ternate City and Taliabu Island. The sampling technique used is non-probability sampling, using a proportional random sampling method.

To determine the sample size in this study, the formula from Slovin is used, which is as follows:

$$n = \frac{N}{1 + Ne} \cdot 2$$

Information :

n = sample size

N = population size

e = The desired critical value (accuracy limit) (per cent allowance for inaccuracy due to sampling error)

Table 1. Data Sources

No	Regency / City	Number of Respondents	Involved
1	Ternate	403	169
2	Pulau Taliabu	156	63
Total		559	232

Data analysis techniques in research are very important in scientific research methods. In this study, the analysis used is descriptive, namely analysis to describe promotional data and secondary data (which have been processed) to explain a condition, process, characteristics of a variable, and provide data interpretation. In this study, because it uses one variable, a descriptive analysis will be carried out. This study only uses one variable, so the research carried out is a univariate analysis. To test the validity and reliability of the instruments used and to calculate the frequency of the data obtained, it is carried out and processed using the statistical program SPSS 25.0 (Statistical Package for Social Science) for Windows. Website technology can be used as a tool to view and process existing information.

Table 2. Characteristics of respondents based on job status

Group of respondents	Bobong		Ternate		Number of people
	Number of people	Presentage (%)	Number of people	Presentasi (%)	
Not work	12	19%	114	67%	126
PNS	34	54%	12	7%	46
Private employee	8	13%	18	11%	26
IRT	4	6%	2	1%	6
Other	5	8%	23	14%	28
Total	63	100%	169	100%	232

Results

Based on the existing population, with an error tolerance of 5% (in socio-cultural research between 5 to 10%) with a population of 559 students, the calculation is:

$$n = 559 / (1 + 559 \times 5\%)^2$$

$$n = 232$$

So based on the Slovin formula, the number of samples to be studied is 283 people with the following details:

Primary data were collected through structured interviews using a questionnaire as a data collection instrument. The form of the question is a combination of closed and open questions. In closed questions, the measurement scale uses a Likert scale with 5 levels of choice, namely:

1 = Strongly Disagree

2 = Disagree

3 = Average

4 = Agree

5 = Strongly Agree

The validity test is conducted to measure whether a questionnaire is valid or not. A questionnaire is said to be valid if the questionnaire's questions can reveal something will be measured by the questionnaire. Validity testing uses factor analysis. Factor analysis was performed to extract a number of variables forming indicators and check the research instruments' validity and reliability. Performing a first-order confirmatory factor analysis for each variable will determine the variables forming indicators and their validity and reliability. The loading factor value or lambda value (λ) and its significance value indicate the suitability or unidimensionality of the dimensions and variables forming indicators. Meanwhile, the reliability test shows the accuracy, accuracy and consistency of the questionnaire in measuring variables. A questionnaire is reliable or reliable if someone's answer to a question is consistent or stable over time. Reliability testing is carried out only on construct indicators that have passed validity testing, and are declared valid

Discussion

This test is done by calculating the Cronbach Alpha (α) coefficient of each instrument in one variable. A variable is called reliable, if the result is $\alpha \geq 0.60$, then the result is reliable, and if the result is $\alpha \leq 0.0$, then the result is not reliable.

Table 2 above shows that overall, most UT students have not worked as many as 126 respondents, while the lowest is housewives as many as 6 respondents. However, when viewed from each research area, most respondents in Bobong are just the opposite, namely civil servants as much as 54% while the lowest is housewives as much as 6%. In another case in the city of Ternate, the majority of respondents have not worked with 67%, and the lowest is also a housewife as much as 1%. In today's digital era, transparency is needed to assess the quality of learning in a university, so the website as an online medium is required.

Table 3. Results of the Research Instrument Validity Test

No	Variabel	Question Item	Correlation coefficient	Ket.
1	Reaction Level	REA1	0,533	Valid
		REA2	0,536	Valid
		REA3	0,624	Valid
		REA4	0,556	Valid
		REA5	0,695	Valid
		REA6	0,617	Valid
		REA7	0,631	Valid
		REA8	0,677	Valid
		REA9	0,601	Valid
		REA10	0,647	Valid
2	Learning Level	LEA1	0,834	Valid
		LEA2	0,861	Valid
		LEA3	0,742	Valid
		LEA4	0,785	Valid
		LEA5	0,717	Valid
		LEA6	0,697	Valid
3	Behavior Level	BEH1	0,787	Valid
		BEH2	0,790	Valid
		BEH3	0,780	Valid
4	Result Level	RESI1	0,787	Valid
		RESI2	0,860	Valid
		RESI3	0,787	Valid
		RESI4	0,703	Valid

Source: 2020 Research Primary Data

Based on Table 3, it can be seen that the instruments for each variable in this study are valid and can be used to research because the value on each instrument is above the significant value in the correlation coefficient.

The reliability test is done by comparing the coefficient of variance (alpha) with r tabel. If the coefficient value (alpha) is more significant than r table (0.60), then the item or variable is reliable. Meanwhile, if the coefficient (alpha) is smaller from r table (0.60), then the item or variable is not reliable.

Table 4. Instrument Reliability Test Results

No	Variabel	Cronbach Alpha	r alpha tabel	Keterangan
1	Reaction level	0,754	0,60	Reliabel
2	Learning Level	0,794	0,60	Reliabel
3	Behavior Level	0,820		
4	Resulat Level	0,810	0,60	Reliable

Source: primary data processed, 2020

Based on the results of the instrument reliability test in Table 4. it can be concluded that all the instruments above are reliable because the Cronbach Alpha value of each instrument is greater than r table (0.60) so that it can be used to carry out research or test research hypotheses.

The Kickpatrick method introduces an evaluation model of the training or program outcomes. A training or program evaluation model that uses these four models in categorizing learning outcomes. The four models are reaction evaluation, learning evaluation, behaviour evaluation and outcome evaluation.

1. Reaction Evaluation. This evaluation is carried out to measure the level of reaction, which is designed to determine students' opinions regarding the tutorial process that has been carried out.

2. Learning Evaluation. Evaluation of learning to determine the extent to which students absorb the material that has been given.

3. Behavior Evaluation. Evaluation of program participants' expected behaviour after participating in the learning process changes in the behaviour of participants (students) during the learning process.

4. Evaluation Result. Evaluation of the results of the applied learning process where he works.

A research instrument is a tool used in collecting data. This research used a research instrument in the form of a questionnaire. To see whether or not the questionnaire used is good, it will be tested for reliability and validity. This study's questionnaire is closed; each statement in the questionnaire is equipped with an alternative answer to choose according to specific conditions that best suit him. Each statement in the questionnaire is directed to obtain information about the learning process at UT.

As illustrated in the table above, the Reaction Level, this evaluation is carried out to measure the level of reaction which is designed to find out the opinions of the training participants regarding the program that has been implemented, Learning Level, Evaluation at this stage conducted on learning to determine the extent to which students absorb the tutorials that have been given, Learning Level, namely evaluation at this stage is carried out on learning to determine the size to which students absorb the tutorials that have been given. Behaviour Level is an evaluation of expected student behaviour after participating in the learning process changes in behaviour following the process in the academic environment.

Reaction Level is an evaluation that is carried out to measure the level of reaction which is designed to find out the opinions of the training participants regarding the programs that have been implemented related to the Material Provided Relevant to BMP / Module, namely the majority of respondents agree that the material presented by the Tutor is following the teaching materials, module / BMP, the material given adds to the students' insight, that there are no respondents who answered disagree. The facilities available in the tutorial application are easy to access, where the information system plays a role in the learning process because it serves as a bridge to convey ideas and programs from the university to students so that it strongly agrees that the facilities available in the information system are easy to access, also the computer network connection is quite good, and related to the delivery of material by the Tutor, most of the material delivered by the Tutor was understandable, but there were still some who abstained. Furthermore, regarding feedback, overall respondents agree that the Tutor always provides feedback on the tutorial process. However, there are still those who are hesitant and even abstained and related to services, and it shows that the service on campus is very good. The learning media used to attract and encourage student learning motivation also received very good attention and responses, affordable tuition fees, and showed the Tutor's authenticity

in various scientific discussions. In the Learning Level, the evaluation at this stage is carried out on learning to find out the extent of student absorption of the tutorials given so that students get new knowledge from the tutorial process and get new experiences from the tutorial process. Students can apply the material from the Tutor. Develop knowledge and skills and improve the attitude of the tutorial process in the learning environment at UPBJJ-UT Ternate. Behaviour Level, namely evaluation of the expected behaviour of students after participating in the learning process changes in action so that students feel happy and satisfied after following both TTM / Tuton and Tuweb tutorials, Students feel comfortable studying at UT because the infrastructure is complete, Result Level, namely evaluation at this stage is carried out on the results of the learning process that is applied so that student knowledge increases after following the tutorial, student experience increases after following tutorials and student attitudes are better after following tutorials and tutorial material is relevant to the needs of the world of work.

Limited and Future Studies

Study participants were small and focused on only one university, so data constraints were limited, so attempts to generalize should be treated with caution. Besides, participants relied on their memory of past evaluation experiences that were not without error and emphasized formal learning interventions that may only be a part of their development journey.

Conclusion

The Kirkpatrick method can be used as one of the methods used to evaluate learning to improve the quality of higher education and is integrated with the website in the development of information technology.

Acknowledgement

UT leaders who have provided research assistance
Chairman of the Khairun Ternate University, North Maluku

References

- [1] Al-Fraihat, D., Joy, M., Masa'deh, R., & Sinclair, J. (2020). Evaluating E-learning systems success: An empirical study. *Computers in Human Behavior*, 102, 67–86.
<https://doi.org/10.1016/j.chb.2019.08.004>
- [2] Alkhattabi, M., Neagu, D., & Cullen, A. (2010). Information quality framework for e-learning systems. *Knowledge Management and E-Learning*, 2(4), 340–362.
<https://doi.org/10.34105/j.kmel.2010.02.025>

- [3] Aparicio, M., Bacao, F., & Oliveira, T. (2016). Cultural impacts on e-learning systems' success. *Internet and Higher Education*, 31, 58–70. <https://doi.org/10.1016/j.iheduc.2016.06.003>
- [4] Biggs, J. (1979). The QUALITY OF LEARNING OUTCOMES Students' Study Processes Research into students' study processes may be classified into two main kinds: (1) relatively large scale studies in which students are grouped according to general characteristics, *fr. Higher Education*, 8, 381–394.
- [5] Chen, C. M. (2008). Intelligent web-based learning system with personalized learning path guidance. *Computers and Education*, 51(2), 787–814. <https://doi.org/10.1016/j.compedu.2007.08.004>
- [6] Chen, H. R., & Tseng, H. F. (2012). Factors that influence the acceptance of web-based e-learning systems for junior high school teachers in Taiwan in-service education. *Evaluation and Program Planning*, 35(3), 398–406. <https://doi.org/10.1016/j.evalprogplan.2011.11.007>
- [7] Dick, W. (2002). Evaluation in instrumental design: the impact of Kirkpatrick's four-level model (Chapter 11). *Trends and Issues in Instructional Design and Technology*. Florida City: Florida State University. Retrieved from http://jhollenbeck.com/courses/hrd480/pdf/handouts/06b_dick_eval.pdf
- [8] Hassanzadeh, A., Kanaani, F., & Elahi, S. (2012). A model for measuring e-learning systems success in universities. *Expert Systems with Applications*, 39(12), 10959–10966. <https://doi.org/10.1016/j.eswa.2012.03.028>
- [9] Juanamasta, I.G., Wati, N. M. N., Hendrawati, E., Wahyuni, W., Pramudianti, M., Wisnujati, N. S., Setiawati, A. P., Susetyorini, S., Elan, U., Rusdiyanto, R., Astanto, D., Ulum, B., Khadijah, S. N., Trimarjono, A., Syafii, M., Mubarroq, A., Kristiningsih, K., Pratiwi, R. D., Veri, V., ... Umanailo, M. C. B. (2019). The role of customer service through customer relationship management (Crm) to increase customer loyalty and good image. *International Journal of Scientific and Technology Research*, 8(10).
- [10] Kanto, S., Wisadirana, D., Chawa, A. F., & Umanailo, M. C. B. (2020). Change in community work patterns. *Proceedings of the International Conference on Industrial Engineering and Operations Management*, 0(March), 2496–2502.
- [11] Li, T., Yang, Y., & Liu, Z. (2008). An improved neural network algorithm and its application on enterprise strategic management performance measurement based on Kirkpatrick model. *Proceedings - 2008 2nd International Symposium on Intelligent Information Technology Application, IITA 2008*, 1, 861–865. <https://doi.org/10.1109/IITA.2008.168>
- [12] Li, Y., Duan, Y., Fu, Z., & Alford, P. (2012). An empirical study on behavioural intention to reuse e-learning systems in rural China. *British Journal of Educational Technology*, 43(6), 933–948. <https://doi.org/10.1111/j.1467-8535.2011.01261.x>
- [13] Liu, Y., Lou, S., Shih, R., Meng, H., & Lee, C. (2010). A Case Study of Online Project-Based Learning: The Beer King Project. *International Journal of Technology in Teaching and Learning*, 6(116), 43–57.
- [14] Mazzotti, V. L., Test, D. W., & Wood, C. L. (2013). Effects of Multimedia Goal-Setting Instruction on Students' Knowledge of the Self-Determined Learning Model of Instruction and Disruptive Behavior. *Journal of Positive Behavior Interventions*, 15(2), 90–102. <https://doi.org/10.1177/1098300712440452>
- [15] Novitasari, R., Usanti, T. P., Adiansha, A. A., Soesantari, T., Said, M. F., Hanapi, H., Indrayani, N., Kubangun, H., Nur, M., Musa, D., Ar, N., Qomaria, R., Marasabessy, R. N., Tuaputy, U. S.,

- Widyawati, N., Prastyorini, J., Wali, M., P. N. D., Soedarmanto, S., & Umanailo, M. C. B. (2019). The Existence of Waranggana in Tayub Ritual. *INTERNATIONAL JOURNAL OF SCIENTIFIC & TECHNOLOGY RESEARCH VOLUME*, 8(10). <http://www.ijstr.org/research-paper-publishing.php?month=oct2019>
- [16] Pine, D. S. (2011). The brain and behaviour in childhood and adolescent anxiety disorders. *Anxiety Disorders in Children and Adolescents, Second Edition*, (1983), 179–197. <https://doi.org/10.1017/CBO9780511994920.010>
- [17] Reio, T. G., Rocco, T. S., Smith, D. H., & Chang, E. (2017). A Critique of Kirkpatrick's Evaluation Model. *New Horizons in Adult Education and Human Resource Development*, 29(2), 35–53. <https://doi.org/10.1002/nha3.20178>
- [18] Seel, N. M. (2017). Model-Centred Learning and Instruction (January 2003), 29. Retrieved from [file:///Volumes/Data/2021/Artikel Masuk/Ternate/Ref-6 Seel2003MCLI.pdf](file:///Volumes/Data/2021/Artikel%20Masuk/Ternate/Ref-6%20Seel2003MCLI.pdf)
- [19] Sohn, S. Y., Park, H. Y., & Chang, I. S. (2009). Assessment of a complementary cyberlearning system to offline teaching. *Expert Systems with Applications*, 36(3 PART 2), 6485–6491. <https://doi.org/10.1016/j.eswa.2008.07.075>
- [20] Udjaja, Y., Sasmoko, Indrianti, Y., Rashwan, O. A., & Widhoyoko, S. A. (2018). Designing Website E-Learning Based on Integration of Technology Enhance Learning and Human-Computer Interaction. 2018 2nd International Conference on Informatics and Computational Sciences, ICICoS 2018, 71–74. <https://doi.org/10.1109/ICICOS.2018.8621792>
- [21] Umanailo, M. C. B. (2020). Development of science and technology towards the formation of participatory spaces. *Proceedings of the International Conference on Industrial Engineering and Operations Management*.
- [22] van der Krogt, F. J. (1998). Learning network theory: The tension between learning systems and work systems in organizations. *Human Resource Development Quarterly*, 9(2), 157–177. <https://doi.org/10.1002/hrdq.3920090207>
- [23] Watkins, R., Leigh, D., Foshay, R., & Kaufman, R. (1998). Kirkpatrick plus: Evaluation and continuous improvement with a community focus. *Educational Technology Research and Development*, 46(4), 90–96. <https://doi.org/10.1007/BF02299676>
- [24] Website. (, 2019). Gambar Jaringan Komputer- Implenentasi Pembelajaran. Retrieved from [https://www.google.com/url?sa=i&url=https%3A%2F%2Fbootup.ai%2Fblog%2Fpengertian-jaringan-komputer-fungsi-dan-jenisnya%2F&psig=AOvVaw0lYHgkvbAHXwpe-xi2e-sZ&ust=1613360619965000&source=images&cd=vfe&ved=0CAIQjRxqFwoTCLDL2sy76O4CFQAAAAAdAAAAABAD](https://www.google.com/url?sa=i&url=https://www.google.com/url?sa=i&url=https%3A%2F%2Fbootup.ai%2Fblog%2Fpengertian-jaringan-komputer-fungsi-dan-jenisnya%2F&psig=AOvVaw0lYHgkvbAHXwpe-xi2e-sZ&ust=1613360619965000&source=images&cd=vfe&ved=0CAIQjRxqFwoTCLDL2sy76O4CFQAAAAAdAAAAABAD)