Student Satisfaction Perspective: Online Learning And The Effectiveness Of Online Learning Media

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Abstract COVID-19 has had an impact on lectures being conducted today. Lecturers must conduct online and effective learning, besides that student also get satisfaction in the lecture process. The purpose of this study is to determine the satisfaction of students in the online lecture process and also the effectiveness of the learning media. The research was conducted using a quantitative survey using the Google Forms facility which was addressed to students at state universities. Data collection was obtained using a random sampling technique which is useful for determining student online learning satisfaction and the effectiveness of the online learning media used. Furthermore, using Confirmatory Factor Analysis (CFA) test analysis to find out the results of online learning that has been done. The impact of this research is to provide information to lecturers during online lectures that have been carried out effectively in the media used and satisfy students in the learning process.

Keywords : Effective learning, E-learning, E-learning media, Student satisfaction, Covid-19

Introduction

Higher education is a continuation of secondary education which is held to prepare students to become members of society who have academic and professional abilities in applying, developing and creating science, technology and arts. To achieve this goal, higher education juridically-formally does not only act as a teaching center because the teaching and learning process carried out in the classroom without being supported by relevant research results will experience setbacks and do not develop.

Higher education in most developing countries has undergone a revolution on its own due to higher demand, increased education and governments struggling with how to finance its provision. E-learning is becoming increasingly important in higher education institutions. The development and introduction of various e-learning tools (from using email to a digital portfolio and virtual learning environment) has led to many changes in higher education institutions, especially with respect to the process of delivering and supporting their education. Moreover, the Corona Virus Disease 19 which first appeared in Wuhan China caused a problem in various affected countries. The impacts that occur are not only in the health sector, the economy, but also in the education sector.

Corona virus (COVID-19) cases in Indonesia reached 514, 48 people died, and 29 people recovered. To reduce the spread rate, President Joko Widodo (Jokowi) is encouraged to issue a government regulation (PP) to reinforce policies social distancing. The government prohibits its citizens to gather in a place or location which is known as a social distancing policy. This social distancing policy carried out by the government makes changes rapidly, so it will certainly cause problems for those who are not ready. The existence of social distancing of teaching and learning is done online or online. Regarding the field of education, the learning process will inevitably be constrained for those who are not ready, because not all educators and students are able to do or adapt. For this reason, it is necessary for educators who are competent in the use of Internet Technology in order to keep up with it. If the development of digital technology is avoided, it will result in the formation of primitive and isolated human resources. E-learning is defined as the process of distance learning through the use of the Internet or Intranet, providing the necessary knowledge to certain subjects or selected specializations, to increase the level of knowledge or to achieve rehabilitation, using computers, sound, video, multimedia, e-books. , email, chat and discussion groups.

E-learning is in many ways especially in terms of delivery methods and technology used, except that it refers to a shorter learning time frame that is usually specifically designed to achieve a specific learning goal or skill. The role of information technology in human activities at this time is indeed so great, technological developments have had an influence on the world of education, especially in the learning process. Effective learning activities require a medium that supports the absorption of as much information as possible. Along with the times, technology plays an important role as a means of getting the learning material taught. Technology and learning media are one of the supports that play an important role in improving the quality of human resources in the learning process.

The effectiveness of the teaching and learning process is greatly influenced by the methods and learning media used and the educators themselves, all of which are interrelated, where

certain choices will affect what type of media will be used. In the sense that there must be a match between the two to realize learning objectives, the arrangement of learning carried out by a teacher is influenced by the media used in the online learning system. The implementation of online learning requires lecturers to force them to adapt and learn more in online learning. And this is certain to have obstacles in the online learning process, because not all lecturers can be digitally literate. This is a problem that must be researched to make online learning better and more effective.

In connection with relevant research, including the first research conducted by Ananda Hadi Elyas in 2018 entitled The Use of E-Learning Learning Models to Improve Learning Quality with the results of learning models with virtual classes (e-learning) is a new breakthrough in the field of teaching and learning, because it is able to minimize differences in teaching methods and materials, thus providing a more consistent quality standard of learning. The e-Learning system is absolutely necessary to anticipate the times with the support of information technology where all are heading to the digital era (Elyas, 2018).

Second research (Rais et al., 2004), about The Experience of the E-Learning Implementation at the Universiti Pendidikan Sultan Idris, Malaysia with the aim that e-learning implementers need to work with SCORM or other e-learning standards for general software interoperability. This will promote a high-quality learning experience and provide different teaching and learning methods. Teachers and students must have both technical and cognitive skills in Computer Information Technology (CIT) so that they become effective users of technology (Rais et al., 2004). The third research, regarding E-learning in Student Perception with the aim of the research is to describe the need to develop learning by combining e-learning with learning models and teaching materials that are in accordance with the characteristics of the material, so that the use of e-learning can be maximized and provide provisions for students while working as a teacher in the digital age (Kanto et al., 2020; Nuraini et al., 2019; Saifuddin, 2018). This research is important because it can be a measure of effective learning by paying attention to 5 variables during a pandemic. The benefit of this research is to provide an overview of information to officials in universities in making policies in the academic field and lecturers in teaching effectively online due to the application of social distancing in universities.

Methodology

This research is specifically intended to predict indicators of effective learning concepts in higher education. This research is ex-post facto, namely research conducted to find out or reveal data from an event that has occurred (passed) without manipulation (Sugiyono, 2014). So that this study applies a correlational research design (John W. Creswell, 2009). Data collection is carried out via google form which is addressed to students by measuring several scales.

Table 1. Data of 2017-2019 undergraduate students

No	Force Year	Total
1	Class of 2017	6.205

| 2 | Class of 2018 | 7.007 |
| 3 | Class of 2019 | 7.208 |

The sampling technique is a sampling technique (Sugiyono, 2014). To determine the sample to be used in the study, various sampling techniques were used. The samples in this study were randomly based on each batch year. This study uses data collection techniques as questionnaire filling. Used to obtain primary data that is more structured and is expected to provide more privacy to respondents. Questionnaires are one of the most widely used methods of collecting data (Lancaster, 2007). Collecting data from respondents / primary data sources by submitting a written list of questions through a questionnaire. The questionnaire is arranged in the form of a value scale according to the Likert model with 5 alternative answers. Guidelines for measurement are as follows:

a. The answer category is very satisfied or very effective given a score of 5 (five)

b. The category of satisfied or very effective answers was given a score of 4 (four)

c. The answer category is quite satisfied or quite effective, a score of 3 (three)

d. The answer category is less satisfied or less effective given a score of 2 (two).

e. The unsatisfied or ineffective answer category is given a score of 1 (one).

The analysis of this research uses descriptive quantitative, which describes the research results from a questionnaire using Google Forms, then the analysis is carried out automatically.

Discussion

In connection with the history of online education, it was first carried out in 1960 at The University of Illinois in Chicago, USA, namely conducting lectures with a connected computer terminal system where students can access course material, and listen to recorded lectures (Peterson's, 2019). Furthermore, online education, carried out in Indonesia in 1999 was carried out by the University of Indonesia campus by organizing a remote education system known as the Student Centered e-Learning Environment or better known as SCELE (Agus Setiawan, 2017).

The learning revolution is learning changes that are carried out in accordance with the times and electronic learning, known as e-learning, has an effect on the transformation of conventional education into digital form, both in terms of content and systems (Sampurno et al., 2015). E-learning is an instruction process that involves the use of electronic equipment in creating, fostering, conveying, assessing and facilitating a learning process for students as the center which is carried out interactively anytime and anywhere.

Online learning or e-learning is learning that uses electronic equipment or digitization to facilitate the process of conveying or transferring knowledge that is carried out on an interactive basis from educators to students (Imam Shofwan, 2019). This brings many opportunities for innovative research and classroom practice which in turn can accelerate and

optimize lecturer productivity in learning and learning becomes flexible without having to be face-to-face or classical. Therefore, professional lecturers must be aware of and adapt to this development. These digital age educators, for example, must become lecturers with a 21st century learning mindset, have digital literacy, continue to learn new things, and be able to take advantage of the opportunities provided by IR 4.0 for their better teaching. In short, if done consciously and systematically, all developments in the future will have a positive impact on the achievement of our national education (Afrianto, 2018).

The presence of computer-based multimedia will greatly assist the learning process because it can bring something that was previously difficult to bring to class. Hybrid learning requires an application that can be a learning platform for lecturers and students. Considering how often Google is used as a search engine and also many other applications that are liked by the younger generation such as G-mail, Google Groups and so on, it is therefore considered more appropriate to develop applications using applications from the Google App for education (Hammi, 2017). The implementation of learning through e-learning needs to be studied more deeply by looking at students' responses to the e-learning-based learning process, so that it can be seen that the form of e-learning-based learning that students like (Saifuddin, 2018).

Definition of E-learning

E-learning is information and communication technology to enable students to study anytime and anywhere (Dahiya, S., Jaggi, S., Chaturvedi, K.K., Bhardwaj, A., Goyal, R.C. and Varghese, 2016). E-learning is an approach to teaching and learning, representing all or part of an applied educational model, which is based on the use of media and electronic devices as tools to increase access to training, communication, and interaction and which facilitate the adoption of new models. how to understand and develop learning (Sangrà et al., 2012).

Various terms are used to express ideas about electronic learning, including online learning, internet-enabled learning, virtual learning, or web-based learning. here are 3 (three) important things as a requirement for electronic learning activities (e-learning), namely: (a) learning activities are carried out through network utilization, in this case limited to internet use, (b) availability of learning support services that can be utilized by participants learning, for example, External Hard disk, Flash disk, CD-ROM, or printed materials, and (c) the availability of tutor support services that can help participants learn if they experience difficulties.

The philosophy of e learning is as follows. First, e-learning is the delivery of information, communication, education, training on-line. Second, e-learning provides a set of tools that can enrich the value of conventional learning (conventional learning models, study of textbooks, CD-ROMs, and computer-based training) so that they can respond to the challenges of globalization. Third, e-learning does not mean replacing conventional learning models in the classroom but strengthening the learning model through content enrichment and development of educational technology. Fourth, student capacity varies greatly depending on the form of content and the way it is conveyed. The better the harmony between content and delivery tools with learning styles, the better the student's capacity which in turn will give better results (Elyas, 2018).

Student Satisfaction Response

Student satisfaction in the lecture process is a measure of student comfort in the lecturing process. Student satisfaction is another indicator of the quality of education. A higher level of satisfaction will logically be associated with a greater probability of success in the learning process, which translates to better academic performance (Martín-rodríguez et al., 2015). Student satisfaction in the lecture process can be measured in relation to the delivery of the lecturer according to the lecture contract, the use of learning resources and time for each meeting and assignment or test(Dewi & Asikin, 2009). Regarding the measuring instrument used to determine student lecture satisfaction is the core of this framework is student connectedness and the four factors of the online student connectivity survey: (a) convenience, (b) community, (c) facilitation, and (d) interaction and collaboration(Bolliger & Inan, 2012).

Regarding whether learning is comfortable or not, it can be seen or felt from education or the students themselves who are the actors in learning. In connection with student responses in E-learning recovery, there are 2 (two) aspects of student response in the learning process, namely aspects of response (related to enthusiasm, taste, attention) and reaction aspects (satisfaction, curiosity, and pleasure) (Binta Basuni Yusuf, 2017). Student responses are of course positive and negative, effective learning will be carried out well if there are many positive responses from students. This requires an evaluation that can be done every month or at the end of each semester.

The ability to communicate effectively, manage technology, and deliver and rate content is critical in intensive online environments, where there is little time available to adjust to new tools and the operating environment. Monitoring student progress, identifying, and following up on problems or obstacles are also important tasks for lecturers, so that student responses in e-learning lectures have minimal obstacles.

The Effectiveness of Student Lecture Media

Learning activities are teaching and learning activities carried out online between lecturers and students. In online lectures that are carried out is by utilizing various online media such as laptops, smartphones, and internet networks, wifi in the learning process used. E-learning is primarily focused on students. Students are independent at certain times and are responsible for their learning. The learning atmosphere "e-learning" will "force" students to play a more active role in their learning. Students make designs and look for material with their own efforts and initiatives (Elyas, 2018).

Virtual class or better known as e-learning, is a form of internet use that can increase the role of students / learners in the learning process. Various e-learning services are available, both independently managed by institutions using the Learning Management System (LMS) or those provided freely by third parties (Saifuddin, 2018). Learning outcomes are related to students' abilities in cognitive (knowledge), affective (attitudes), and psychomotor (skills) learning (Mahananingtyas, 2017). The success of learning is influenced by many factors in its implementation. These factors can be grouped into internal student factors (talent, intellectual, and readiness) and external (lecturers, environment, facilities or online media, material, learning conditioning).

The history of online education was first carried out in 1960 at The University of Illinois in Chicago, USA, which is conducting lectures with a connected computer terminal system where students can access lecture material, as well as listen to recorded lectures.(Peterson's, 2019). Furthermore, online education, carried out in Indonesia in 1999 was carried out by the University of Indonesia campus by organizing a remote education system known as the Student Centered e-Learning Environment or better known as SCELE (Siswanto et al., 2018).

Regarding student response satisfaction in E-learning recovery, there are 2 (two) aspects of student response in the learning process, namely the response aspect (related to enthusiasm, taste, attention) and reaction aspects (satisfaction, curiosity, and pleasure)(Binta Basuni Yusuf, 2017). Student responses are of course positive and negative, effective learning will be carried out well if there are many positive responses from students. This requires an evaluation that can be done every month or at the end of each semester.

After conducting a survey with the following table results:

Figure 1. Google Forms Analysis Results S1 Class 2017-2019

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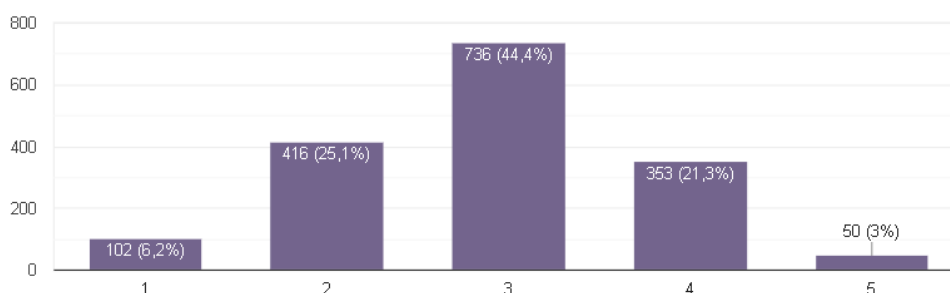
Online Student Satisfaction Analysis

Student satisfaction in the lecture process is a measure of student comfort in the lecturing process. Student satisfaction is another indicator of the quality of education. A higher level of satisfaction will logically be associated with a greater probability of success in the learning process, which translates to better academic performance(Martín-rodríguez et al., 2015). This also needs to be considered in relation to education in the pandemic era, must prioritize coordination between lecturers and students (Hazizah & Ismaniar, 2020). After analyzing using google forms related to lecture satisfaction, seen from the flexibility in learning, it can be explained in the table as follows.
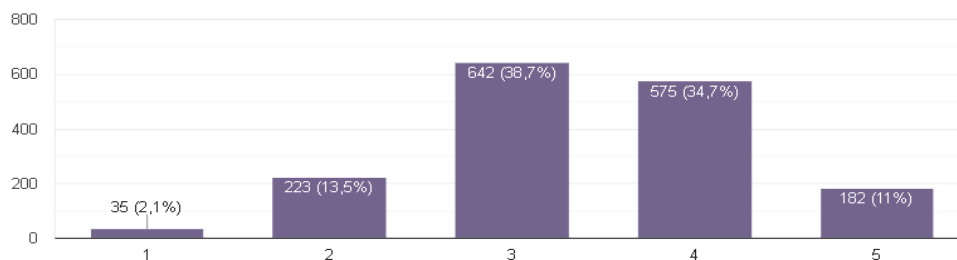
Figure 2. The results of google analysis form are time-flexible and encourage students to ask questions in online lectures

Judging from the figure, student satisfaction is related to time flexibility and encouraging students in online lectures which can be described that students from 1,657 responses who answered very satisfied were 11% or 182 students, who answered satisfied by 34.7% or 575 students, who answered fairly satisfied by 38.7% or 642 students, and those who answered less satisfied were 13.5% or 223 students, and 2.1% or 35 students. This means that it needs to be improved for all lecturers so that in lectures they need to think about flexibility in online learning and students are given the opportunity to ask questions, so that students are satisfied in their recovery.

Furthermore, it can be seen in the online learning satisfaction related to the delivery made by the lecturers that it can be seen after the analysis using the google form is explained as follows.
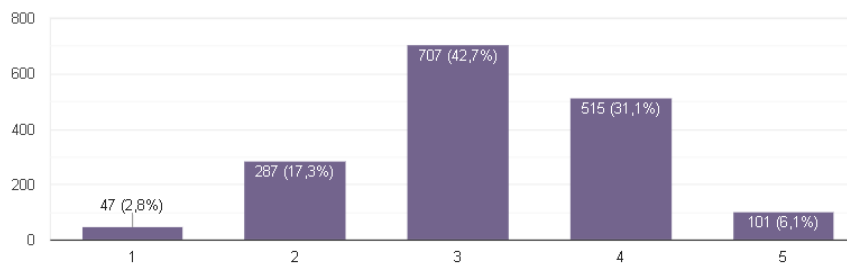
Figure 3. The results of the google analysis of the online learning satisfaction form carried out by all lecturers

Judging from the picture, student satisfaction related to online learning can be described that students from 1,657 responses who answered very satisfied by 3% or 50 students, who answered satisfied by 21.3% or 353 students, who answered quite satisfied by 44.4% or 736 students, and those who answered unsatisfied were 25.1% or 416 students, and 6.2% or 102 students.This means that it needs to be improved for all lecturers so that in lectures it is necessary to think about online learning strategies so that students are satisfied in their recovery.

Effectiveness of learning media
The learning revolution is learning changes that are carried out in accordance with the times and electronic learning, known as e-learning, has an effect on the transformation of conventional education into digital form, both in terms of content and systems(Imam Shofwan, 2019). Online learning or e-learning is learning that uses electronic equipment or digitization to facilitate the process of conveying or transferring knowledge that is carried out on an interactive basis from educators to students(Imam Shofwan, 2019). This brings many opportunities for innovative research and classroom practice which in turn can accelerate and optimize lecturer productivity in learning and learning becomes flexible without having to be face-to-face or classical. Therefore, professional lecturers must be aware of and adapt to this development. In connection with the results of the survey that has been carried out, the results can be shown in the following image or graphic.

Figure 4. Results of analysis of the google form effectiveness of learning media used been effective

Based on a survey via google form, with very effective answers given a score of 5 (five), effective answers were given a score of 4 (four), quite effective answers were scored 3 (three), less effective answers were given a score of 2 (two), and ineffective answers were given score 1 (one).

Judging from the picture, student satisfaction related to online learning can be described that students of 1,657 responses who answered very effectively were 6.1% or 101 students, who answered effectively 31.1% or 511 students, who answered quite effectively by 42.7 % or 707

students, and those who answered less effective were 17.3% or 287 students, and 2.8% or 47 students.

Obtained data and it can be concluded that the online learning media that has been carried out is quite effective, proven at 42.7%. This means that it still needs to be improved in improved online learning media, because the results are quite effective. There needs to be a learning strategy or effort that can adapt to the times. In addition, it is also necessary to think about technology or related to the learning media used.

These digital age educators, for example, must become lecturers with a 21st century learning mindset, have digital literacy, continue to learn new things, and be able to take advantage of the opportunities provided by IR 4.0 for their better teaching. In short, if done consciously and systematically, all developments in the future will have a positive impact on the achievement of our national education (Afrianto, 2018). The presence of computer-based multimedia will greatly assist the learning process because it can bring something that was previously difficult to bring to class. Hybrid learning requires an application that can be a learning platform for lecturers and students. Considering how often Google is used as a search engine and also many other applications that are liked by the younger generation such as G-mail, Google Groups and so on, it is therefore considered more appropriate to develop applications using applications from the Google App for education (Hammi, 2017). The implementation of learning through e-learning needs to be studied more deeply by looking at student responses to the e-learning-based learning process, so that it can be seen that the form of e-learning based learning is suitable for students' wishes (Saifuddin, 2018).

E-learning is information and communication technology to enable students to study anytime and anywhere (Dahiya, S., Jaggi, S., Chaturvedi, K.K., Bhardwaj, A., Goyal, R.C. and Varghese, 2016). E-learning is an approach to teaching and learning, representing all or part of an applied educational model, which is based on the use of media and electronic devices as tools to increase access to training, communication, and interaction and which facilitate the adoption of new models. how to understand and develop learning (Sangrà et al., 2012). Other than that to improve the quality of better learning outcomes, it is necessary to improve the quality of network infrastructure by Telkom, increase the quality of instructional learning by lecturers, and provide Indonesia subsidies for students (Giatman et al., 2020)

Conclusion
Student satisfaction in online lectures can be assessed from various points of view. This study examines (1) student satisfaction from the point of view of time flexibility in online lectures with satisfactory results, and (2) satisfaction of all lecturers in teaching with satisfactory results. And (3) related to the effectiveness of the lecture media used in lectures which is quite effective. This means that online lectures that have been carried out so far have not been optimal, for that it is necessary to have thoughts related to learning strategies in the pandemic era that need to be researched in order to make lectures carried out in universities in Indonesia satisfied and effective.

Recommendations

The benefit of this research is to provide an overview of information to lecturers in online teaching, so that lecturers in carrying out the online learning process in addition to transferring knowledge or material also pay attention to effective learning that is fun for students.

Limitations

The novelty of this research is to plan effective online learning strategies used in universities so that the learning process can be fun for students and online lecture materials can be accepted by students effectively.

Funding

References

Afrianto. (2018). Being a Professional Teacher in the Era of Industrial Revolution 4 . 0 : Opportunities , Challenges and Strategies for Innovative Classroom Practices. English Language Teaching and Research, 2(1), 1–13.

Agus Setiawan. (2017). Sejarah Singkat E-Learning dan E-Learning di Institusi Pendidikan di Indonesia. http://elearningbdlhksmd.blogspot.com/2017/01/sejarah-singkat-e-learning-dan-e.html

Binta Basuni Yusuf. (2017). Konsep dan Indikator Pembelajaran Efektif. Jurnal Kajian Pembelajaran Dan Keilmuan, 1(2), 13–20.

Bolliger, D. U., & Inan, F. A. (2012). Development and validation of the online student connectedness survey (OSCS). International Review of Research in Open and Distance Learning, 13(3), 41–65. https://doi.org/10.19173/irrodl.v13i3.1171

Dahiya, S., Jaggi, S., Chaturvedi, K.K., Bhardwaj, A., Goyal, R.C. and Varghese, C. (2016). An eLearning System for Agricultural Education. Indian Research Journal of Extension Education, 12(3), 132–135.

Dewi, N. R., & Asikin, M. (2009). Kepuasan Mahasiswa Terhadap Proses. Lembaran Ilmu Kependidikan, 39(2), 132–140.

Elyas, A. H. (2018). Penggunaan Model Pembelajaran E-Learning Dalam Meningkatkan Kualitas Pembelajaran. Jurnal Warta, 56(04), 1–11.

Giatman, M., Siswati, S., & Basri, I. Y. (2020). Online Learning Quality Control in the Pandemic Covid-19 Era in Indonesia. Journal of Nonformal Education, 6(2), 168–175. https://journal.unnes.ac.id/nju/index.php/jne

Hammi, Z. (2017). Implementasi Google Classroom Pada Kelas Xi Ipa Man 2 Kudus.

Hazizah, N., & Ismaniar, I. (2020). Teachers ' Strategies in Preparing Online Learning Digital Media for Developing Children ' s Literacy Skills. Journal of Nonformal Education ', 6(2), 156–160. https://journal.unnes.ac.id/nju/index.php/jne%0ATeachers

Imam Shofwan, dkk. (2019). Revolusi Pendidikan yang Berperadaban (E. S. Abdul rahmat

(ed.); 1st ed.). IdeasPublising.

John W. Creswell. (2009). Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. In Sage Publications (3rd ed, Vol. 2017, Issue 150). https://doi.org/10.1002/tl.20234

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.

Lancaster, G. (2007). Research methods in management. USA: Routledge.

Mahananingtyas, E. (2017). Hasil Belajar Kognitif, Afektif dan Psikomotor melalui penggunaan jurnal belajar bagi mahasiswa PGSD. Prosiding Seminar Nasional HDPGSDI Wilayah IV, 192–200.

Martín-rodríguez, Ó., Fernández-molina, J. C., Montero-alonso, Á., & González-gómez, F. (2015). The main components of satisfaction with e-learning. Technology, Pedagogy and Education, 24(2), 37–41. https://doi.org/10.1080/1475939X.2014.888370

Nuraini, N., Riadi, A., Umanailo, M. C. B., Rusdi, M., Badu, T. K., Suryani, S., Irsan, I., Ismail, I., Pulhehe, S., & Hentihu, V. R. (2019). Political Policy for the development of Education. INTERNATIONAL JOURNAL OF SCIENTIFIC & TECHNOLOGY RESEARCH, 8(10).

Peterson's. (2019). The history of online education. Peterson's LLC.

Rais, M., Karim, A., & Hashim, Y. (2004). The Experience of the E-Learning Implementation at the Universiti Pendidikan Sultan Idris , Malaysia. Malaysian Online Journal of Instructional Technology, 1(1), 50–59.

Saifuddin, M. F. (2018). E-Learning dalam Persepsi Mahasiswa. Jurnal VARIDIKA, 29(2), 102–109. https://doi.org/10.23917/varidika.v29i2.5637

Sampurno, P. J., Maulidiyah, R., & Puspitaningrum, H. Z. (2015). Implementasi Kurikulum 2013 : MOODLE (Modular Object Oriented Dynamic Learning Environment) dalam Pembelajaran Fisika melalui Lembar Kerja Siswa pada Materi Optik di SMA. Jurnal Fisika Indonesia, XIX(55), 54–58.

Sangrà, A., Vlachopoulos, D., & Cabrera, N. (2012). Building an inclusive definition of e-learning: An approach to the conceptual framework. International Review of Research in Open and Distance Learning, 13(2), 145–159. https://doi.org/10.19173/irrodl.v13i2.1161

Siswanto, Y., Sutarto, J., & Mulyono, S. E. (2018). E-training based on Determination of Education and Training Models of Early Childhood Teachers Education Programs. Journal of Nonformal Education, 4(2), 107–118. https://doi.org/10.15294/jne.v4i2.15517

Sugiyono. (2014). Statistik untuk Penelitian.Bandung: CV. Alvabeta.