

Readiness of Biology Education Lecturers to Conduct E-Learning During the Covid-19 Pandemic

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Abstract

Tujuan penelitian ini adalah untuk menganalisis kualifikasi kesiapan dosen melakukan e-learning secara umum, berdasarkan faktor kesiapan, dan berdasarkan generasi kelahirannya. Penelitian ini merupakan penelitian deskriptif. Populasi penelitian adalah dosen biologi di lingkungan PTS wilayah Bali yang diambil dengan metode sampling insidental sebanyak 21 orang. Metode pengumpulan data yang digunakan adalah dengan memberikan instrumen yang digunakan kepada responden. Instrumen yang digunakan pada penelitian ini diadaptasi dari model Chapnick yang diukur dengan skala Aydin & Tasci. Hasil penelitian menunjukkan: (1) kualifikasi kesiapan dosen melakukan e-learning secara umum masuk kategori siap, tetapi butuh sedikit peningkatan; (2) kualifikasi kesiapan e-learning dosen berdasarkan faktor kesiapan masuk kategori tidak siap, membutuhkan sedikit peningkatan pada faktor kesiapan financial readiness dan technological readiness, dan (3) kualifikasi kesiapan dosen berdasarkan generasi kelahirannya masuk kategori siap tetapi butuh sedikit peningkatan, dengan nilai kesiapan tertinggi pada baby boomer generation. Simpulan penelitian ini adalah kualifikasi kesiapan dosen melakukan e-learning masuk kedalam katagori siap tetapi butuh sedikit peningkatan pada faktor kesiapan sociological readiness, environmental readiness, human resource readiness, dan equipment readiness. Implikasi pada penelitian ini yaitu dapat memberikan gambaran pelaksanaan pembelajaran dengan menggunakan e-learning pada pelaksanaan pembelajaran daring selama pandemic COVID-19.

Keywords: Kesiapan, E-Learning, Dosen Biologi

Abstract

The purpose of this study is to find out: (1) the readiness qualifications of lecturers doing e-learning in general; (2) qualification of lecturer's e-learning readiness based on readiness factor; (3) qualification of lecturer's readiness based on his birth generation. This research method uses a quantitative descriptive approach, with readiness assessment using the Aydin & Tasci Scale. The respondents were 21 lecturers of private colleges Biology Education in the Bali Region. The results showed: (1) lecturer readiness qualifications for e-learning are generally in the ready category, but need a slight improvement; (2) lecturer's e-learning readiness qualification based on readiness factor entered category is not ready, requires a slight improvement in financial readiness and technological readiness factor. Ready, but it takes a little improvement in sociological readiness, environmental readiness, human resource readiness, and equipment readiness. Ready, this e-learning implementation factor can be continued in psychological readiness and content readiness; and (3) qualifications for lecturer readiness based on their birth generation are in the ready category but need a slight improvement, with the highest readiness score in the baby boomer generation.

Keywords: Readiness, E-Learning, Biology Lecturer

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Introduction

Covid-19 is coronavirus 2 (SARS-CoV-2), originating from Wuhan city in China that attacks the acute respiratory tract (Remuzzi & Remuzzi, 2020). The process of spreading it is carried out by humans, as well as causing death (Mishra et al., 2020). Pandemic COVID-19 has an impact on changing human life order, including changes in education (Anugrahana, 2020; De Brouwer et al., 2020). In the field of education, many planned activities such as seminars, conferences, and study appeals were postponed or even canceled (Panesar et al., 2020). The government also issued a policy to "stay at home" so that face-to-face learning must be in line with the policy and change lessons with online learning methods. Online learning is one of the learning solutions carried out to prevent the spread of covid-19 (Hussein et al., 2020; Oyedotun, 2020).

The implementation of online learning is one of them by utilizing e-learning, there are various factors of learning difficulties experienced by biology students in the implementation of e-learning. The main learning difficulty factors include variable human resources, economics, and teaching materials. Learning difficulties experienced by students are one of the indicators of the lack of e-learning implementation in each university. Therefore, in this study, e-learning readiness or e-learning readiness was reviewed by lecturers based on generation differences (Ramadan et al., 2019; Rohayani et al., 2015)

E-learning is not a new item for lecturers, as lecturers have implemented e-learning either in whole or in part (or better known as blended learning) (Coopasami et al., 2017; Yilmaz, 2017). The development of e-learning systems and models has been developed in various institutions and various scientific domains. The development of an e-learning system and model needs to be done readiness measurement with instruments or often called good e-learning readiness (ELR). The ELR model is designed to simplify the process of obtaining the basic information needed to develop e-learning.

ELR model by grouping readiness into eight readiness factors, namely: psychological readiness, sociological readiness, environmental readiness, human, resource readiness, financial readiness, technological readiness, equipment readiness, and content readiness. Psychological readiness, this factor considers the way individual pan-dang on the influence of e-learning initiatives (Purwandani, 2017; Waryanto & Insani, 2013). This is the most important factor to consider and has the highest chance of sabotaging the readiness process, this factor takes into account the availability and design of a sum-ber human power support system. The financial readiness, this factor considers the size of the budget and the allocation process. Technological skill (aptitude) readiness, this factor considers competent-si technical that can be observed and measured. Equipment readiness, this factor considers the appropriate equipment. Content readiness, this actor considers learning content and learning goals.

This research is supported by several relevant types of research such as: (1) research conducted obtained the results of research that the implementation of elearning is ready and can continue with the condition of improvement on several sides of implementation. Then the research conducted by (Waryanto & Insani, 2013) stated that ELR scores that fall into the ready category are sociological readiness, environmental readiness, human resource readiness, technological readiness, and content readiness.

Based on this, the purpose of this research is tomen ganalisis:(1) the qualifications of readiness of lecturers to conduct e-learning in general; (2) e-learning readiness qualification of lecturers based on readiness factor; (3) qualifications of lecturer readiness based on the generation of birth

Materials and Methods

This research is descriptive quantitative research that describes the state of an object based on a certain size (Sugiyono, 2016). The purpose of this study was to analyze the readiness qualifications of lecturers to conduct e-learning in general, based on readiness factors, and based on the generation of birth. This research is a descriptive method.

The research population is biology lecturers in the private colleges area of Bali taken by incidental sampling method as many as 21 people. The samples used in this study were 21 lecturers of biology in the private college area of Bali.

The method of data collection used is to provide instruments used to 21 biology lecturers. The instruments used were adapted from the Chapnick model measured on the Aydin & Tasci scale. The average score of each question item on the same readiness factor is qualified into the assessment scale of the Aydin & Tasci ELR model. Aydin & Tasci's assessment scale consists of four categories, namely: ready and application of e-learning can be continued, ready but requires a little improvement, not ready and requires a little improvement, and not ready and requires a lot of improvement.

The data obtained were analyzed using descriptive statistical data analysis techniques, to analyze the readiness qualifications of lecturers doing e-learning.

Results and Discussion

Table 1. Research Data Analysis

Readiness Factor	Baby Boomer Generation, born 1943-1960	Generation X or Thirteenth Generation, born 1961-1981	Millennial Generation or Generation Y, born 1982-2003	Average per factor
Psychological Readiness	4.40	4.42	4.64	4.49
Sociological Readiness	3.88	3.28	3.98	3.71
Environmental Readiness	3.93	3.43	3.89	3.75
Human Resource Readiness	4.36	3.93	4.19	4.16
Financial Readiness	4.00	3.06	3.13	3.39
Technological Readiness	3.64	2.96	3.12	3.24
Equipment Readiness	4.17	3.67	3.92	3.92
Content Readiness	4.58	3.69	3.90	4.06
Average total	4.12	3.55	3.84	3.84

Color description:

-  : Ready, this e-learning implementation factor can be continued
-  : Ready, but need a little upgrade
-  : Not ready, requires a little improvement

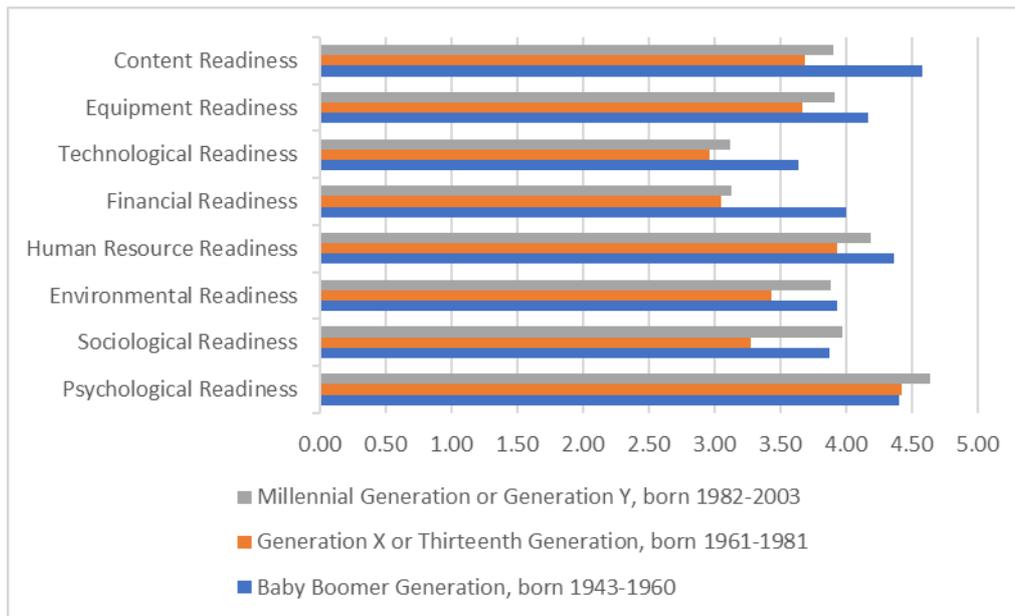


Figure 1. Lecturer E-Learning Readiness Comparison Graphic

Based on the scale of Aydin & Tasci all the generations that came in as respondents both baby boomers, generation x, and millennial generation entered the category ready, but it took a little improvement. This means that in general all respondents are ready to carry out e-learning but need a little improvement with training or training to be ready to carry out e-learning. Based on Table 1 two readiness factors fall into the category of not ready and require a slight increase, namely financial readiness, and technological readiness. Currently, both have been overcome by the provision of study quotas for lecturers and students to overcome the low financial readiness and various training and programs to improve technological readiness e.g. SPADA. Readiness factor in general that has been ready and the application factor of e-learning can be continued is psychological readiness and content readiness, especially in the baby boomer generation.

Based on Table 1 baby boomer generation Has higher readiness than other generations. All indicators are based on the results of the self-evaluation show ready to carry out e-learning. In sociological readiness indicators, environmental readiness, financial readiness, technological readiness, and equipment readiness shows ready but need a slight increase. That is, they are ready but there are still some things that cause them hesitation or awkwardness in implementing e-learning. While reviewed from psychological readiness, human resource readiness, and content readiness they are ready and this factor can be continued.

Baby boomer generation Born and growing in an age of modern and minimal employment at that time, making the youth of the Baby Boomers generation has a competitive nature. Generasi is achievement-oriented, dedicated, and career-focused. They are also called the work-mad generation, do not like to be criticized, but like to criticize the younger generation for their lack of work ethic and commitment to the workplace. Baby boomers have high curiosity, independence, and are optimistic about the achievements that have been made. That is what causes this generation even though it is classified as the older generation of lecturers but most adaptive to change, one of which is e-learning. It is shown in Figure 1, the most superior baby boomer generation in human resource readiness, financial readiness, technological readiness, equipment readiness, and content readiness. The advantages of this generation are their financial independence and adaptation, this strengthens this group to be ready to implement e-learning in all readiness factors.

The results showed Generation X or Thirteenth is at least ready to implement e-learning. It is proven, Generation X is not ready and requires a slight increase in sociological readiness, financial readiness, and technological readiness. Generation X is often called the latchkey kids, children who often feel alone due to being left behind by their parents at work. That because this generation was born in the mid-sixties the too early Eighties and was raised by work-mad Baby Boomers. This condition makes generation X more independent and begins to look for alternatives in addition to formal work that spends a lot of time. Seeing his parents spend a lot of time working outside the home, makes generation X start thinking about entrepreneurship or working at home. Lecturers who entered the Generation X group are not ready for sociological readiness, financial readiness, and technological readiness.

Generation X lecturers are not ready and need a slight increase in the sociological readiness factor. They think that the social environment of campuses/institutions is not ready and does not have the same spirit in implementing e-learning in lectures. This generation views the academic community of the campus/institution where they work less supportive and responds positively to the implementation of e-learning. Also, there is still a lack of communication and cooperation for all involved in the implementation of e-learning on the campus/institution where I work.

Financial readiness Generation X is not ready with the reason: (1) the absence of an internal campus budget for the development of lecturer competencies, especially in preparing the implementation of e-learning; (2) The absence of an internal budget to provide facilities to support the implementation of e-learning; (3) The absence of an internal budget for e-learning operations such as the budget for wifi or internet quota of lecturers and students; and (4) Personally lecturers do not have a special allocation of personal funds for the implementation of e-learning.

In addition to these two things, in technological readiness generation, X is also not ready and needs improvement because they think they have not mastered the management and utilization of technology for e-learning and have not been able to choose and sort out e-learning support applications as needed. Generation X provides further training and adaptation to use technology in the implementation of e-learning.

Generation Y based on the scale of Aydin & Tasci in the results showed unprepared and needed a slight increase in financial readiness and technological readiness factors. Generation Y or millennials love a harmonious and balanced life. Generation Y is hardworking but still attaches importance to 'me time'. Generation Y is known to be reliable in terms of discipline and technology utilization (tech-savvy). With these advantages, the lecturer of generation Y has good confidence and still upholds criticism and suggestions from others. The basis of the unpreparedness of Generation Y lecturers is financial readiness whereas a large part of this generation is a new lecturer whose functional position is still low and has not passed the lecturer certification. This generation relies on its basic salary for all living needs, where the allocation of funds "me time" for them is very important, so that if the added allocation of funds for e-learning it will be very burdensome for this group.

ELR model by grouping readiness into eight readiness factors, namely: psychological readiness, sociological readiness, environmental readiness, human, resource readiness, financial readiness, technological readiness, equipment readiness, and content readiness. Psychological readiness, this factor considers the way individual pan-dang on the influence of e-learning initiatives (Purwandani, 2017; Waryanto & Insani, 2013). This is the most important factor to consider and has the highest chance of sabotaging the readiness process, this factor takes into account the availability and design of a sum-ber human power support system. The financial readiness, this factor considers the size of the budget and the allocation process. Technological skill (aptitude) readiness, this factor considers competent-si technical that can be observed and measured. Equipment readiness, this factor considers the

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The results of research at the University of Nairobi show that there is no significant link between age, gender, and level of education about eLearning readiness. (Oketch, 2013) However, the results of the study show that technological readiness is the most important factor followed by cultural readiness in e-learning readiness. (Oketch, 2013) Meanwhile, this study shows that lecturer readiness is still low in the technology readiness factor. That is, it is necessary to prioritize the readiness of technology to prepare a better e-learning process. In another study, a modified Chapnick Readiness Score was used to measure their psychological, readiness tools, and technology for changes in learning methods. The results showed students' psychological readiness (Coopasami, M., Knight, S. & M. Pete, 2017) for e-learning was high, but they were less prepared on technology and equipment factors. Similarly, in Indonesia, the main obstacles in (Coopasami, M., Knight, S. & M. Pete, 2017) e-learning readiness are technological factors and inadequate pre-facilities.

Warranty and Insani's research show that the highest value in the e-learning readiness factor of SMA Yogyakarta is sociological readiness. (Waryanto, N.H. & N. Insani, 2013) While in this study the highest score on readiness factor psychological readiness and content readiness. This indicates a difference in e-learning readiness factors in different regions and institutions due to differences in human resources, facilities, and various factors supporting the implementation of e-learning. Based on Chapnick's model, ELR score, qualifications are ready on sociological readiness, environmental readiness, human resource readiness, technological readiness, and content readiness (Waryanto, N.H. & N. Insani, 2013). The development of e-learning readiness needs to be done as part of the development of learning systems (Priyanto, 2008; Prayudi., 2009).

Conclusion

Based on the results and improvement, it can be concluded that the qualifications of readiness lecturers doing e-learning into the category ready but need a slight improvement in the factors of sociological readiness, environmental readiness, human resource readiness, and equipment readiness. This research implies that it can provide an overview of the implementation of learning by using e-learning in the implementation of online learning during the COVID-19 pandemic.

References

- Anugrahana, A. (2020). Hambatan , Solusi dan Harapan : Pembelajaran Daring Selama Masa Pandemi Covid-19 Oleh Guru Sekolah Dasar. *Scholaria: Jurnal Pendidikan Dan Kebudayaan*, 10(3), 282–289.
- Coopasami, M., Knight, S., & Pete, M. (2017). e-Learning readiness amongst nursing students at the Durban University of Technology. *Health SA Gesondheid*, 22, 300–306. <https://doi.org/10.1016/j.hsag.2017.04.003>
- De Brouwer, E., Raimondi, D., & Moreau, Y. (2020). Modeling the COVID-19 outbreaks and the effectiveness of the containment measures adopted across countries. *MedRxiv*, 3, 1–9. <https://doi.org/10.1101/2020.04.02.20046375>

- Hussein, E., Daoud, S., Alrabaiah, H., & Badawi, R. (2020). Exploring undergraduate students' attitudes towards emergency online learning during COVID-19: A case from the UAE. *Children and Youth Services Review*, 119(August), 105699. <https://doi.org/10.1016/j.chilyouth.2020.105699>
- Mishra, D. L., Gupta, D. T., & Shree, D. A. (2020). Online Teaching-Learning in Higher Education during Lockdown Period of COVID-19 Pandemic. *International Journal of Educational Research Open*, August, 100012. <https://doi.org/10.1016/j.ijedro.2020.100012>
- Oyedotun, T. D. (2020). Sudden change of pedagogy in education driven by COVID-19: Perspectives and evaluation from a developing country. *Research in Globalization*, 2(June), 100029. <https://doi.org/10.1016/j.resglo.2020.100029>
- Panesar, K., Dodson, T., Lynch, J., Bryson-Cahn, C., Chew, L., & Dillon, J. (2020). Evolution of COVID-19 Guidelines for University of Washington Oral and Maxillofacial Surgery Patient Care. *Journal of Oral and Maxillofacial Surgery*, 78(7), 1136–1146. <https://doi.org/10.1016/j.joms.2020.04.034>
- Purwandani, I. (2017). Analisa Tingkat Kesiapan E-Learning (E-Learning Readiness) Studi Kasus: AMIK Bina Sarana Informatika Jakarta. *Bianglala Informatika*, 5(2), 102–107. <https://doi.org/10.31294/bi.v5i2.2976>
- Ramadan, R., Pradnyana, I. M. A., & Suyasa, P. W. A. (2019). Pengukuran Tingkat Kesiapan Implementasi E-Learning (E-Learning Readiness) Di Sma N 2 Singaraja Menggunakan Model Chapnick. *Jurnal Pendidikan Teknologi Dan Kejuruan*, 16(2), 258. <https://doi.org/10.23887/jptk-undiksha.v16i2.18683>
- Remuzzi, A., & Remuzzi, G. (2020). COVID-19 and Italy: what next? *The Lancet*, 395(10231), 1225–1228. [https://doi.org/10.1016/S0140-6736\(20\)30627-9](https://doi.org/10.1016/S0140-6736(20)30627-9)
- Rohayani, A. H. H., Kurniabudi, & Sharipuddin. (2015). A Literature Review: Readiness Factors to Measuring e-Learning Readiness in Higher Education. *Procedia Computer Science*, 59(Iccsci), 230–234. <https://doi.org/10.1016/j.procs.2015.07.564>
- Sugiyono. (2016). *Metode Penelitian Kualitatif, Kuantitatif, dan R&D*. Alfabeta.
- Waryanto, N. H., & Insani, N. (2013). Tingkat Kesiapan (Readiness) Implementasi E-Learning Di Sekolah Menengah Atas Kota Yogyakarta. *Jurnal Pendidikan Matematika Dan Sains*, 1(2), 117–124. <https://doi.org/https://doi.org/10.21831/jpms.v2i2.2478>
- Yilmaz, R. (2017). Exploring the role of e-learning readiness on student satisfaction and motivation in flipped classroom. *Computers in Human Behavior*, 70, 251–260. <https://doi.org/10.1016/j.chb.2016.12.085>