

Analysis of student learning outcomes' standards in lecturers in the perspective of a disruptive era

Hardika Hardika^a¹, Universitas Negeri Malang, Jl.Semarang No.5, Malang and 65145, Indonesia, <https://orcid.org/0000-0003-4815-2524>

Ahmad Zabidi Bin Abdur Razak^b, University of Malaya, W.Persekutuan, Kuala Lumpur and 50603, Malaysia, <https://orcid.org/0000-0002-8202-0595>

Dila Umnia Soraya^c, Universitas Negeri Malang, Jl.Semarang No.5, Malang and 65145, Indonesia, <https://orcid.org/0000-0003-0630-3750>

Eny Nur Aisyah^d, Universitas Negeri Malang, Jl.Semarang No.5, Malang and 65145, Indonesia, <https://orcid.org/0000-0003-3418-1965>

Tomas Iriyanto^e, Universitas Negeri Malang, Jl.Semarang No.5, Malang and 65145, Indonesia, <https://orcid.org/0000-0001-8856-8888>

Juharyanto Juharyanto^f, Universitas Negeri Malang, Jl.Semarang No.5, Malang and 65145, Indonesia, <https://orcid.org/0000-0003-3969-5842>

Suggested Citation:

Hardika, H., Razak, A. Z. B. A., Soraya, D. U., Aisyah, E. N., Iriyanto, T. & Juharyanto, J. (2021). Analysis of student learning outcomes' standards in lecturers in the perspective of a disruptive era. *Cypriot Journal of Educational Science*. 16(5), 2193-2208. <https://doi.org/10.18844/cjes.v16i5.6240>

Received from June 11, 2021; revised from August 30, 2021; accepted from October 10, 2021.

Selection and peer review under responsibility of Prof. Dr. Huseyin Uzunboylu, Higher Education Planning, Supervision, Accreditation and Coordination Board, Cyprus.

©2021 Birlesik Dünya Yenilik Arastırma ve Yayıncılık Merkezi. All rights reserved.

Abstract

In several universities in Indonesia, lecturers are accustomed to developing learning outcomes' standards without the involvement of students in the formulation, although the students have many ideas about learning outcomes that are relevant to their needs. This study aimed to analyse the student learning outcomes' standards in a disruptive era based on the students' perspective from 9 faculties of several universities in Indonesia. The research method used was a quantitative approach, with 1059 student participants. Data were collected using a questionnaire with close-ended questions, and normality was analysed using the Shapiro–Wilk test and one-way analysis of variance test to determine the differences in learning outcomes' standards between faculties. The achievements of disruptive learning at several universities in Indonesia are relatively high. However, there is an extreme distance in the level of disruptive learning achievement between faculties, due to the diversity of lecturers in understanding disruptive learning.

Keywords: Learning outcomes' standards, disruptive era, faculties;

¹* ADDRESS FOR CORRESPONDENCE: Hardika Hardika, Universitas Negeri Malang, Jl.Semarang, Malang and 65145, Indonesia
E-mail address: hardika.fip@um.ac.id / Tel.: +62-859-5522-0397

1. Introduction

1.1. Theoretical framework

Education and learning are the main pillars of development of a society (Darling-Hammond et al., 2020). The process and result of education cannot be separated from the demands and needs of society (Burger, 2010). Therefore, the process and educational outcomes, as well as the learning interactions, must be able to satisfy the needs of society and solve life problems based on the development of information technology. Higher education plays a significant role in the formation of adaptive and creative characteristics for community development, improvement of the quality of management governance and interaction with learning communications relevant to the current situation (Jongbloed et al., 2008). However, not all of these can be fulfilled by several universities in Indonesia due to various limitations, including (1) insufficient capacity of lecturers, (2) limited understanding of the academic community towards the development of information technology, (3) limited learning infrastructure and (4) management of higher education not being able to provide learning that is relevant to the current situation.

The current COVID-19 pandemic is changing the way we work, live and relate to one another suddenly and dramatically. Higher education as a place for adult human learning must also be able to demonstrate a transformative capability based on the need to digitise education and training processes in a short time with academics who do not have the innate technological capabilities for online learning. In such conditions, the education system must be able to overcome the situation to compete and provide high-quality education in a scenario of digital transformation, technological innovation and accelerated change (García-Morales et al., 2021).

Meanwhile, the problem of the disruptive situation that is currently developing must be addressed adequately by all elements of society, especially universities (Lucas, 2016). This needs to be carried out because the disruptive era encourages everyone to try to play the right role according to the characteristics of the disruptive era. The characteristics of the current disruptive era are as follows: 1) human interaction is based on the latest information technology; 2) human behaviour is always based on the principle of ease and speed; 3) the interaction and transaction needs between humans are always based on cheap and efficient factors; 4) flexibility and work efficiency are a priority; 5) the achievement of disruptive behaviour overpowers the existing technology in simple, fast and cheap ways; 6) disruptive era technology is always marked by the principle of open access; and 7) human behaviour in the recruitment era is always based on creative and innovative abilities (Shonkoff et al., 2012).

In this connection, since 2017, some universities in Indonesia have been developing a life-based curriculum. This curriculum has the main characteristics of the adaptive learning processes and outcomes in the disruptive era. Life-based learning is designed using five disruptive learning scenarios, namely (1) active, creative, innovative and adaptive to social development; (2) learning with the use and creation of information technology tools; (3) learning oriented towards learning needs; (4) learning oriented towards the creation of independent learning characters; and (5) transdisciplinary learning programme, which allows learners to take several courses outside of their study programme to strengthen their core knowledge (Zainul et al., 2020).

Based on these five learning scenarios, the learning process and activities must be designed and carried out on a disruptive basis, prioritising the learning transfer model and development of a wider society (Hardika et al., 2018). The pillar of the learning transfer model focuses on how to learn, thus

allowing learners to study independently, creatively and intelligently in a manner that is adaptive to development (Hardika et al., 2020). The learning model based on the transfer of learning emphasised efforts to achieve learner capability in solving life problems using appropriate information technology and the potential of society (Herdina & Rasyad, 2017).

In the context of the life-based learning curriculum with the principle transfer of learning, the standard aspects of learning outcomes are crucial in determining the learning success of learners (Shirazi, 2017). In previous research, a variety of student learning approaches towards achieving multidimensional and integrated learning outcomes during the lecture process were stated as a form of achieving learning outcomes (Quinn & Stein, 2013).. The results of the analysis of the combination of learning and teaching strategies are also useful in achieving learning targets (Delany et al., 2016). The standards of learning achievement are often considered as indicators of learning completeness in a lecture process. In fact, in numerous cases, the formulation of learning outcomes is often crucial in determining their graduation. This occurs due to the various standards of the parameters, indicators and coverage of learning outcomes concerning the learning mastery of the learner (Hardika et al., 2020). Meanwhile, life problems must be solved intelligently, creatively and innovatively and should not only be solved using cognitive intelligence (Juharyanto et al., 2020). Thus, learning is not only oriented towards the transfer of information from lecturers to learners but also puts more emphasis on the formation of learning abilities with the principle of learning how to learn.

1.2. *Related research*

The scope of the standard formulation of learning outcomes must describe the integrity of the learning process of the learner (Hamilton, 1925; Loughran & Hamilton, 2016). It is important to involve learners and lecturers through the involvement and physical and psychological attachments of learners (Bleakley, 2012). Involvement, engagement, agreement of responsibility, respect and assurance of learners' curiosity development must be the basis for the formulation of disruptive learning outcomes (Snow Andrade, 2020).

From the perspective of learning in higher education, learning outcomes' standards will tend to be positioned as a straight line in the presence of teaching materials used by lecturers in lectures (Aisyah et al., 2020). Problems arise when the interests, desires and learning needs of the learners differ from those provided by the curriculum that guides lecturers during the learning process. Not all lecturers have a positive attitude towards the personal, social and type of learner in learning outcomes. Lecturers who exhibit a positive attitude will certainly give recognition to the diversity of their learning outcomes (Phillips, 2015). All the learning outcomes of the learners, regardless of their contribution to the increase in capacity, capability and quality of life, will be recognised as superior achievements (Blazar & Kraft, 2017; Osborne et al., 2003).

The problem that arises now is the unknown performance of the lecturers in the development and determination of standards for disruptive learning outcomes that are relevant to the development of society (Education & Indonesia, 2011; He et al., 2014; Tawafak et al., 2021). It is also unknown how the involvement, attachment, respect, responsibility, agreement, understanding and curiosity of learners are towards the development of disruptive learning outcomes' standards (Shonkoff et al., 2012; Tawafak et al., 2021). It will raise questions from many parties because all the standard designs of the learning outcomes from the perspective of disruptive learning must be discussed with learners to obtain a positive response in learning interactions (Hardika, 2019; Sullivan, 2017). Each lecturer and learner must have the same responsibility and acceptance of the indicators and standards for disruptive

learning outcomes (Hardika, 2018; Hardika et al., 2021). Moreover, it must be understood that the passing standards of learners are not measured by the mastery of competencies related only to knowledge. Learning outcomes that lead to the formation of innovative, creative and adaptive learning capabilities for the development of society are also superior achievements that must be appreciated by all parties (Willink & Jacobs, 2011).

However, there are still numerous lecturers who have not implemented the learning patterns relevant to the current disruptive situation (Serdyukov, 2017). Lecturers still often interact via one-way learning communication, give lectures that are not based on information technology, have opinions that are often seen as the centre of truth, do not inspire student learning, do not encourage innovation and creativity and are not based on the needs of students and society.

1.3. Purpose of the study

This study aims to reveal the standard of learning outcomes from the student perspective on the disruption era in several faculties of Indonesian universities. Therefore, the standard of learning outcomes will always be an important issue in studying the success of learning. In this regard, it is important to reveal the objectives, foundation, characteristics and actors in developing learning outcome standards. Moreover, it is important to determine the level of disruptive learning outcomes between faculties' levels. These findings will greatly contribute to the improvement of the standard of learning in higher education, especially with regard to quality, capacity and capability of adaptive graduates in a disruptive era that is relevant to the demands of social development.

2. Method and materials

2.1. Research model

This study aims to determine the difference in the level of disruptive learning achievement in nine faculties from several universities in Indonesia. Data analysis was carried out to determine the percentage level of disruptive learning implementation for each faculty and inferential test comparison of disruptive learning achievements of each faculty from several universities in Indonesia. The research model is described as follows:



where O is the measurement of disruptive learning outcomes in nine faculties and X is the treatment or learning implementation in nine faculties.

2.2. Research participants

This study aimed to elucidate the lecturers' strategy in developing the standards of learning outcomes from the perspective of students from Indonesian universities in the disruptive era based on a qualitative and quantitative research model. The total participants in this study were 1059 students from several universities throughout Indonesia, who were from eight faculties and postgraduate degrees from eight faculties. The nine faculties were (1) Faculty of Letters, (2) Faculty of Sport Sciences, (3) Faculty of Economics, (4) Faculty of Mathematics and Natural Sciences, (5) Faculty of Engineering, (6) Faculty of Psychology Education, (7) Faculty of Social Sciences, (8) Faculty of Education Sciences and (9) postgraduate programmes, which consisted of masters and doctoral programmes. The respondents were selected from input learners for 2016/2017, 2017/2018, 2018/2019 and 2019/2020 academic

years (Hardika et al., 2020b). The distribution of respondents for each academic year is shown in Figure 1.

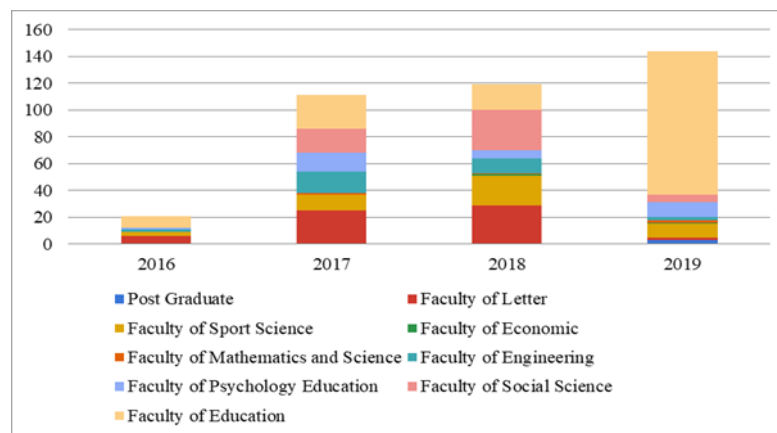


Figure 1. Number of respondent distributions per academic year for each faculty

2.3. Data collection tools

The data collection method is based on a questionnaire format, wherein the research instrument is a closed questionnaire sheet with a 3-point Likert scale where each statement has four answer options. The instrument was distributed via Google Forms. The standard learning outcomes were measured based on four indicators, namely (1) formulation of learning outcomes, (2) basic learning outcome formulation, (3) characteristics of learning outcome formulation and (4) learning achievement targets.

2.4. Data Collection Process

Before the instrument was used for research, the instrument was tested on 50 respondents to measure its validity and reliability. The validity test of the research instrument was conducted using the product-moment statistical technique; the instrument was considered valid if the Sig. statistic was <0.05 and Pearson's correlation coefficient was positive. The instrument reliability test was conducted using Cronbach's alpha. The instrument was considered reliable if Cronbach's alpha value is >0.60 . The data were tested for normality and homogeneity as a prerequisite for analysis. The normality test used the Shapiro-Wilk test, and the data were considered normal if the Sig. statistic was >0.05 .

Furthermore, the instrument was distributed through Google Forms to participants throughout Indonesia through electronic and social media tools to reach participants' whereabouts. The data obtained were then displayed, verified and confirmed through an academic discussion group forum by presenting several representative elements from participants and experts. In this case, they included students, lecturers and also stakeholders who use university graduates. Then parametrically and non-parametrically, the data were analysed statistically and descriptively to be presented in a structured and accountable conclusion and suggestion for the advancement of education in Indonesia and also the world.

2.5. Data Analysis

The research data were analysed using percentage descriptive statistical techniques and inferential statistics. One-way analysis of variance test was conducted to determine the differences in learning achievement standards between faculties at Indonesian universities; Ho is rejected if the Sig. statistics < 0.05.

3. Results

There are six research findings related to learner engagement in developing the formulation of learning outcome standards, namely (1) the goal of developing learning achievement standards, (2) the basis for developing learning outcome standards, (3) the characteristics of developing learning outcome standards, (4) developing performance standards' actors in learning, (5) comparative learning outcome levels among faculties and (6) disruptive learning achievement levels at Indonesian universities.

Concerning the goal of developing learning outcomes, students have the perception that students experience a change in mindset towards being more creative and innovative, which is the most important thing that has become a learning goal in the disruptive era. Figure 2 shows the data findings parametrically.

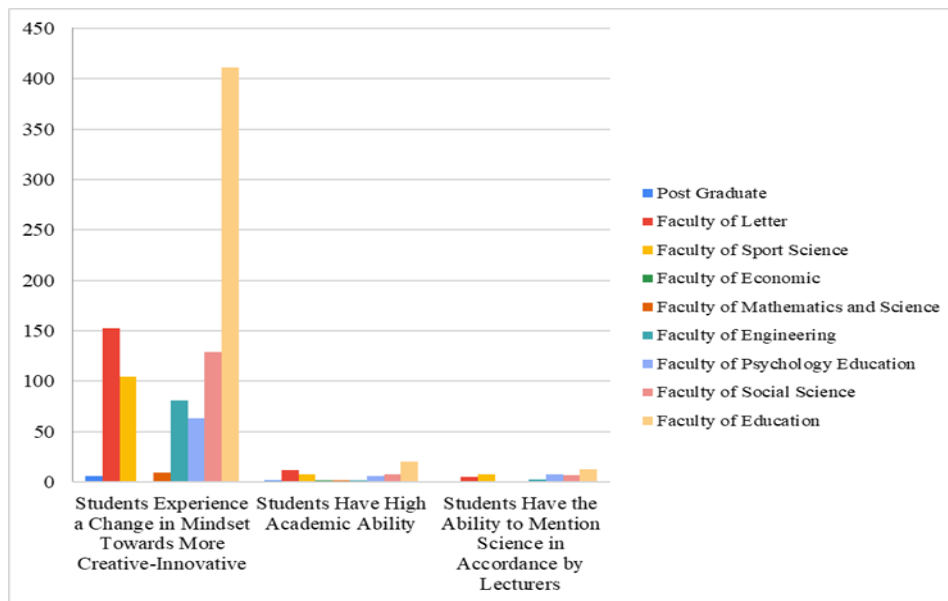


Figure 2. Purpose for developing learning outcomes' standards for each faculty

Figure 2 shows that the students experience a change in mindset towards being more creative and innovative, and this has been implemented by almost all students from various faculties, especially from the Faculty of Education.

Based on field data findings, the basis for the development of outcomes learning standards is based on current demands for ICT development. The development of ICT has become the main demand in developing learning outcomes in almost all faculties by reaching a participant response rate of 750 students. This is shown in Figure 3. The decisions of lecturers and also the needs of students have become things that have been ignored.

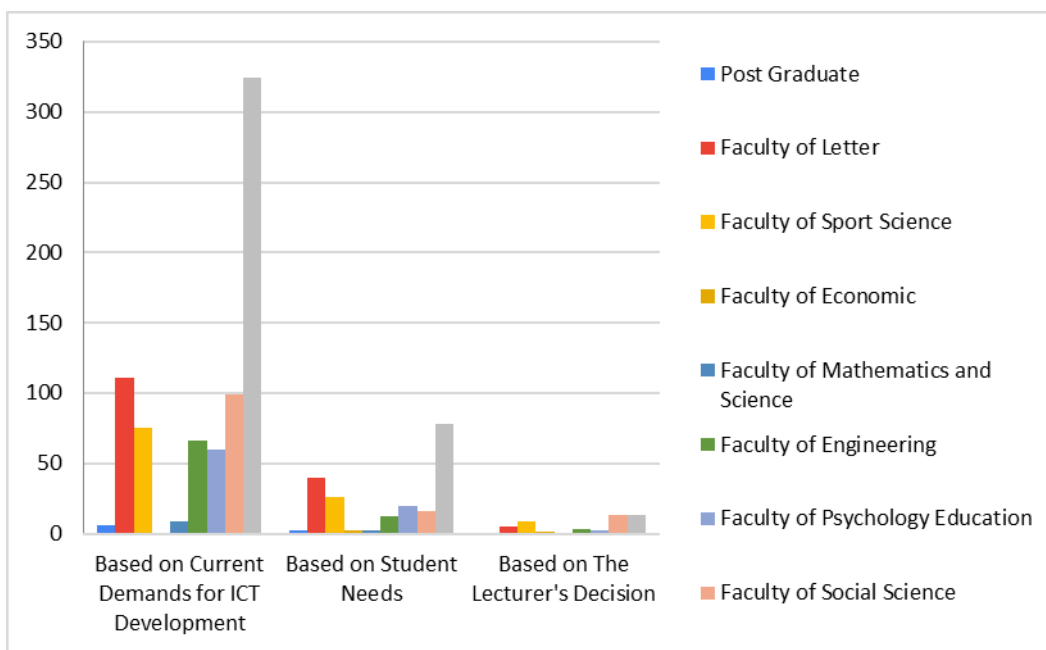


Figure 3. Foundation for developing learning outcomes' standards for each faculty

Furthermore, judging from the characteristics of developing learning outcome standards shown in Figure 4, it was found that 957 students from the 9 faculties had a perception of learning achievement standards that inspired students to create and innovate.

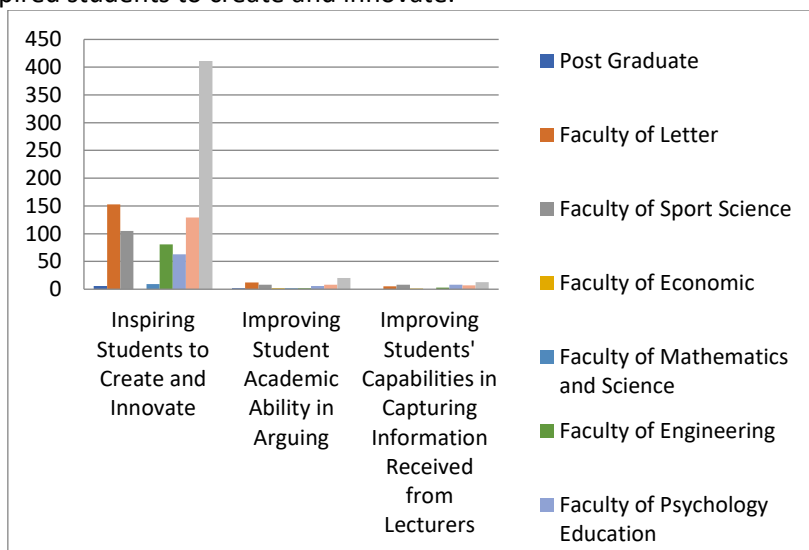


Figure 4. Characteristics of the development of learning outcomes' standard for each faculty

From Figure 4, it appears that in the perception of students, improving student academic abilities in arguing and improving students' capabilities in capturing information are no longer the main

characteristics of learning achievement standards in the disruptive era that appears in learning activities in universities.

The preparation of learning outcomes in several faculties has also been carried out jointly between lecturers and students. This is indicated by the findings shown in Figure 5, which show that 693 students stated that they had formulated learning outcomes together with the lecturers.

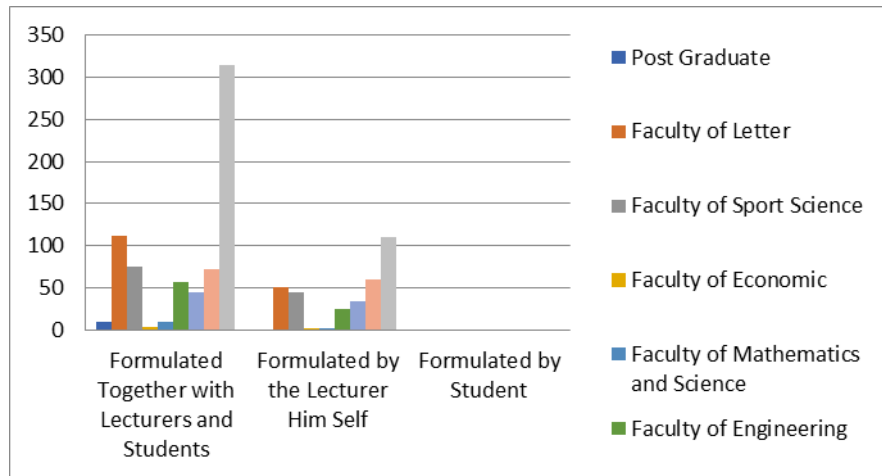


Figure 5. Actors in developing learning outcomes' standards for each faculty

Based on Figure 5, it was found that out of the nine faculties, the Faculty of Sport and Science dominated the implementation of the preparation of learning outcomes jointly between lecturers and students up to 315 participants.

The level of disruptive learning outcomes between faculties exhibits very sharp variations. The comparison of the level of disruption learning achievement of each faculty in Indonesia universities has various ranges. Based on Figure 6, the Faculty of Education has the highest percentage among the other eight faculties, followed by the Faculty of Letters, the Faculty of Social Sciences, the Faculty of Sport Sciences, the Faculty of Engineering, the Faculty of Psychological Education, the Faculty of Mathematics and Natural Sciences and the least was the postgraduate programmes. Here Figure 6 presents a pie chart that provides complete data of the level of achievement of each faculty.

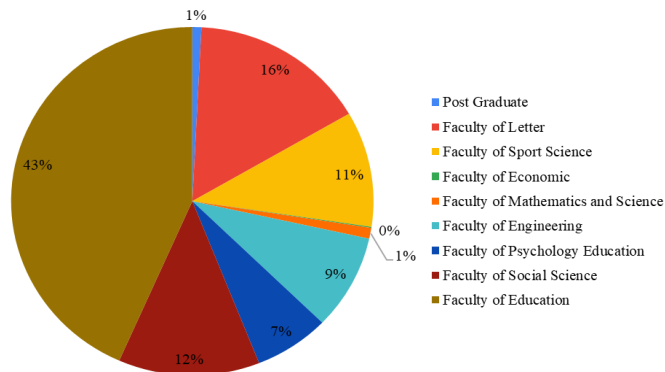


Figure 6. Disruptive learning outcome levels of each faculty

At the university level, the learning outcomes with disruptive characteristics can be classified into three groups, namely low, average and high. This grouping is based on the student's assessment of the lecturer's performance in the implementation of disruptive learning indicator-based learning. Figure 7 presents a pie chart that provides complete data of the level of disruption learning achievement at Indonesia universities.

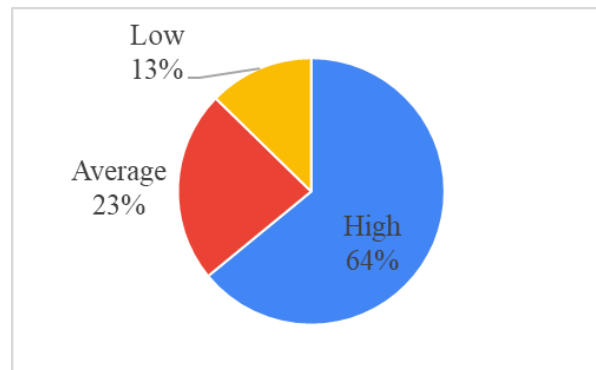


Figure 7. Levels of disruptive learning outcomes

More specifically, the standard learning outcomes are measured based on four indicators, namely (1) the formulation of learning outcomes, (2) the basic learning outcome formulation, (3) the characteristics of learning outcome formulation and (4) the learning outcomes achievement targets. Table 1 presents the results of the validity test data.

Table 1. Validity test data

		Correlations				
		N1	N2	N3	N4	Total score
N1	Pearson's correlation Sig.(2-tailed) N	1	0.090	0.313*	0.384**	0.571**
			0.532	0.027	0.006	0.000
		50	50	50	50	50
N2	Pearson's correlation Sig.(2-tailed) N	0.090	1	0.612**	0.460**	0.737**
		0.532		0.000	0.001	0.000
		50	50	50	50	50
N3	Pearson's correlation Sig.(2-tailed) N	0.313*	0.612**	1	0.596**	0.849**
		0.027	0.000		0.000	0.000
		50	50	50	50	50
N4	Pearson's correlation Sig.(2-tailed) N	0.384**	0.460**	0.596**	1	0.827**
		0.006	0.001	0.000		0.000
		50	50	50	50	50
Total score	Pearson's correlation Sig.(2-tailed) N	0.571**	0.737**	0.849**	0.827**	1
		0.000	0.000	0.000	0.000	
		50	50	50	50	50

*Correlation is significant at the 0.05 level (2-tailed).

**Correlation is significant at the 0.01 level (2-tailed).

As can be seen from Table 1, which presents the product-moment validity test, the Sig. statistics was <0.05 for all questionnaire items; thus, all items in the instrument were declared valid. Furthermore, the data were tested for reliability. Table 2 presents the reliability test data.

Table 2. Reliability statistics

Reliability statistics	
Cronbach's alpha	N of Items
0.741	4

As can be seen from Table 2, the reliability test resulted in Cronbach's alpha value of $0.741 > 0.60$; so, the instrument was declared reliable and suitable for use as a research instrument. Table 3 presents the results of the normality and homogeneity test of lecturer strategies in developing learning achievement standards.

Table 3. Results of normality test and homogeneity test

	Tests of normality					
	Kolmogorov–Smirnov ^b			Shapiro–Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Total score	0.097	50	0.200 ^a	0.971	50	0.266

^aThis is a lower bound of the true significance.
^bLilliefors significance correction.

Test of homogeneity of variances

	Score		
Levene's statistic	df1	df2	Sig.
1.347	8	386	0.219

As can be seen from Table 3, which presents the normality test, Sig. is $0.266 > 0.05$ and the homogeneity test resulted in Sig. being $0.219 > 0.05$; thus, it can be concluded that the data are normally distributed and is homogeneous. Table 4 presents a summary of the data analysis results from the different test strategies of lecturers between faculties in developing learning achievement standards.

Table 4. Results of the ANOVA

ANOVA					
Score					
	Sum of squares	df	Mean square	F	Sig.
Between groups	104,590,000.7	8	13,073,750.09	3.283	0.001
Within groups	1,537,315,566	386	3,982,682.813		
Total	1,641,905,566	394			

As can be seen from Table 4, in which the one-way ANOVA statistical technique is used, Sig. is $0.001 < 0.05$; thus, H_0 is rejected. Moreover, it can be concluded that there are differences in lecturer strategies in developing learning achievement standards between 9 faculties at Indonesia universities.

4. Discussion

The research results indicate that in all faculties at Indonesian universities, gaps and variations exist. Several factors leading to the disruptive learning achievement gap can be caused by lecturers, learners

and learning facilities and infrastructure. The factors related to lecturers include (1) differences in the quality of understanding of the characteristics of the disruptive era in learning, (2) differences in the understanding of learning models relevant to the disruptive era, (3) ignorance of information technology in the disruptive era, (4) unwillingness to use information technology, (5) unwillingness to learn about information technology and (6) limited time for lecturers to learn about information technology. The factors caused by learners are (1) limited economic resources, (2) limited ownership of intelligent information technology devices, (3) unwillingness to use information technology for learning purposes, (4) business in finding additional income and (5) poor time management for study and work. The factors caused by learning facilities are (1) limited learning tools provided by universities; (2) poor management of learning schedules that are irrelevant to learner conditions; (3) imbalance of the learning resources between courses, units and faculties; and (4) poor management of learning resources and facilities, which results in gaps in the process (Adri et al., 2020; Budiman, 2020).

Judging from the scientific characteristics, each faculty has a different scientific vision in supporting the changes in student thinking patterns and actions in learning. Engineering Faculty learners are always encouraged to create and innovate in every academic work, so that they can compete in the race for employment. Lecturers of the Faculty of Engineering always strive to develop learning achievement standards oriented towards the development of creativity and innovation in academic work, both in the form of scientific development and appropriate technology. Likewise, lecturers of the Faculty of Education also always prioritise learning principles based on the transformation of thinking patterns and actions that prioritise the study and implementation of the most actual learning theory.

The surprising data are the low disruptive learning outcomes in the Faculty of Economics. In this faculty, learning is very strong in the dominance of lecturers in developing the standards of learning outcomes. Almost all development processes of learning outcomes are always under the control of the lecturer. Learners are not involved in the formulation of learning outcomes, even though each learner has different aspirations and learning goals. Certainly, these findings will provide important information to improve the preparation of learning designs. The involvement of learners contributed to the development of creativity, critical power and even learner militancy in the learning process.

The same is the case of the previous studies, which state that masses dare to make the right decisions and actions according to real conditions in the field (Sullivan, 2017). Creative and innovative attitudes often coincide with off-track behaviour (Davis, 2018). Almost all figures and research on creativity and innovation agree that creative and Davis innovative characteristics will greatly contribute to the success, sustainability and quality of human life (Ones et al., 2012).

In the Faculty of Natural Sciences and Mathematics, the learning objectives were found to be more oriented towards strengthening academic abilities (77%). It is understandable because the field of study at the faculty emphasised cognitive mastery of various exact academic content. In this context, it is ascertained that the creativity and improvisation of the teaching processes and materials cannot be freely developed as in the field of social science. However, the development of a learner mindset towards a more creative, innovative and adaptive direction to information technology must remain a major concern.

In the review of the disruptive era society, the entire range of abilities, capacities, capabilities, talents, creativity and positive behaviour of learners in learning must be addressed as an integral part of learning outcomes (Fiore et al., 2002; Lundberg, 2014). Lecturers must consider all learning outcome standards as an achievement worthy of appreciation to determine the level of capability and graduation standards

of learners (Quinn & Stein, 2013).. The involvement and opportunities for the improvisation of learning participants to generate independent learning are benchmarks for the success of learning in a society in a disruptive era. Independent learning will result in maximum creativity, innovation and self-confidence in solving life problems. In this connection, tertiary institutions as a source of knowledge and community reference in developing capabilities must pay attention to all the characteristics existing in the communities.

Recognition of learning outcomes will certainly encourage educators to appropriately conduct assessments based on learner achievement. Thus, the standard of learning outcomes is the overall achievement of learning behaviour, both those carried out based on the provisions of learning regulations, the curriculum and the results of interactions with the environment (Shay, 2013). From the perspective of humanistic psychology, the standard of learning outcomes has broader parameters and indicators that are related to the public recognition of human existence as individuals who are free to learn, act, grow and develop. Therefore, the development of learning outcomes standards in each lecture must always be connected to the nature of learning as a transfer of learning that has at least four pillars, namely learning how to know, learning how to do, learning how to be and learning how to live together in peace (Elfert, 2019; Scott, 2015). The four pillars are integrated into one learning activity unit, which is called learning how to learn which contributes to the formation of creativity and learning independence.

Based on the other analysis results, it can be emphasised that the reasons why some learners do not have learning creativity include the following: (1) they do not obtain clear information on how to learn the correct learning strategies in higher education, (2) they do not understand the philosophy and learning objectives at higher education institutions that have different characteristics from school learning, (3) they do not have wide opportunities to improvise and enrich in determining the learning models and strategies according to their characteristics and (4) the learning model that has been applied so far is not sufficient for learners to improvise learning optimally using a multidirectional interaction system with various learning sources, so as not to produce creative and independent learners (Bovill & Woolmer, 2018; Hardika, 2016; Hardika et al., 2018).

The transfer of learning is a learning model based on efforts to change the understanding, meaning and learning behaviour of learners in performing academic duties, obligations and rights in an educational environment (Sullivan, 2017). The learning and learning process implemented in this disruptive learning strategy is packaged in a transformative learning container, which is called 'learning how to learn' (Hardika, 2012). In the analysis of society education, learning transfer is intended for building creativity and independent learning of the learner (Elfert, 2019; Hardika et al., 2020). Learning centres with the transfer of learning model emphasise efforts to increase the creativity and independence of learners by providing opportunities for them to improvise the nature of learning outcomes. From the perspective of learning transfer, learning strategies emphasising the transfer of knowledge are no longer considered suitable for the development of the disruptive era learning paradigm.

Learner involvement in the formulation of learning outcomes is one of the most important aspects in the analysis of the findings of this study. In learning transformation, the ability of learners to discuss, argue and give opinions is one of the important achievements of learning outcomes (Hardika et al., 2018). Learning is not only a behaviour change intervention but also a process of awareness, generation

and empowerment of the learning participants in developing their full potential (Wang, 2018; Willink & Jacobs, 2011).

In the self-learning theory, in the context of the disruptive era, the transfer of the learning model has an impact on the use of learning resources and media (Hardika, 2019). Self-directed learning guides the development of cognitive activities (Aggarwal et al., 2009; Wahyuni Kadarko, n.d.; Widodo et al., 2017). Cognitive activity development is influenced by the patterns of the learning behaviour according to the maturity level of the learners themselves (Hardika, 2019; Schmidt & Vandewater, 2008).

5. Conclusion

The objectives, foundations, characteristics and actors of the development of disruptive learning outcome standards between lecturers, subjects and faculties greatly vary. Such variations occur not because of the lack of regulations to guide work, but rather because of the different understandings of the lecturers. The demand for the mindset of the participants in learning to become more disruptive and relevant to social development has not been maximised. Even though there is still a very sharp difference between lecturers, courses and faculties, the difference is very sharp at the university level; the disruptive learning outcomes at the university level are high among all respondents who rate them highly.

In the review of social development as the centre of life for learning participants, the process and outcomes of disruptive learning have not yet made a significant contribution to the empowerment of learning participants as part of the society. The involvement of learning participants in the learning activities in various aspects is still very low. The dominance of lecturers in learning is very high; thus, it does not provide opportunities for the learning participants to develop and build self-confidence to increase learning independence.

6. Recommendations

Based on the results of this research, it is recommended that university leaders in Indonesia (1) make policies on increasing the understanding of the era of disruption in the context of learning, (2) increase understanding of creating disruptive learning content, (3) establish discussion groups among lecturers to share knowledge about adaptive learning with the disruptive era and (4) develop a curriculum that is adaptive to rapid changes in information technology.

Acknowledgements

Thank you to the Universitas Negeri Malang Indonesia for funding this research and also to Malaya University Malaysia as a research collaborator so that this research can be completed properly.

References

Adri, M., Rusdinal, Zainul, R., Darni, Sriadhi, Wahyuningtyas, N., Khaerudin, Nasrun, Rahmulyani, Nuranjani, Nurmaniah, Wedi, A., Surahman, E., Aisyah, E. N., Oktaviani, H. I., Meilanie, R. S. M., Purnamawati, S. N., Hapidin, Listyasari, W. D., ... Adnan, E. (2020). Development of Content Learning System in Professional Education Subjects for Educational Institutions in Indonesia. *Journal of Physics: Conference Series*, 1594,

- Hardika, H., Razak, A. Z. B. A., Soraya, D. U., Aisyah, E. N., Iriyanto, T. & Juharyanto, J. (2021). Analysis of student learning outcomes' standards in lecturers in the perspective of a disruptive era. *Cypriot Journal of Educational Science*. 16(5), 2193-2208. <https://doi.org/10.18844/cjes.v16i5.6240>
012022. <https://doi.org/10.1088/1742-6596/1594/1/012022>
- Aisyah, E. N., Iriyanto, T., Hardika, H., Rosyidamayani, & Maningtyas, T. (2020). *The Cyber Ethics of Academic Communication Based on Early Childhood Education Student Perception in Universitas Negeri Malang*. 1–5. <https://doi.org/10.2991/assehr.k.200711.001>
- Blazar, D., & Kraft, M. A. (2017). Teacher and Teaching Effects on Students' Attitudes and Behaviors. *Educational Evaluation and Policy Analysis*, 39(1), 146–170. <https://doi.org/10.3102/0162373716670260>
- Bleakley, A. (2012). The curriculum is dead! Long live the curriculum! Designing an undergraduate medicine and surgery curriculum for the future. *Medical Teacher*, 34(7), 543–547. <https://doi.org/10.3109/0142159X.2012.678424>
- Bovill, C., & Woolmer, C. (2018). How conceptualisations of curriculum in higher education influence student-staff co-creation in and of the curriculum. *Higher Education*, 78(3), 407–422. <https://doi.org/10.1007/s10734-018-0349-8>
- Budiman, E. (2020). Mobile Data Usage on Online Learning during Covid-19 Pandemic in Higher Education. *International Journal of Interactive Mobile Technologies (IJIM)*, 14(19), 4–17. <https://doi.org/10.3991/ijim.v14i19.17499>
- Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B., & Osher, D. (2020). Implications for educational practice of the science of learning and development. *Applied Developmental Science*, 24(2), 97–140. <https://doi.org/10.1080/10888691.2018.1537791>
- Davis, L. C. (2018). Creative Teaching and Teaching Creativity: How to Foster Creativity in the Classroom. In *Psych Learning Curve*. <http://psychlearningcurve.org/creative-teaching-and-teaching-creativity-how-to-foster-creativity-in-the-classroom/>
- Education, D. G. of H., & Indonesia, R. of. (2011). *Directorate General of Higher Education Republic of Indonesia Data Collection Survey on Higher Education Development in Indonesia Final Report*.
- Elfert, M. (2019). Lifelong learning in Sustainable Development Goal 4: What does it mean for UNESCO's rights-based approach to adult learning and education? *International Review of Education*, 65(4), 537–556. <https://doi.org/10.1007/s11159-019-09788-z>
- Fiore, S. M., Cuevas, H. M., Scielzo, S., & Salas, E. (2002). Training individuals for distributed teams: Problem solving assessment for distributed mission research. *Computers in Human Behavior*, 18(6), 729–744. [https://doi.org/10.1016/S0747-5632\(02\)00027-4](https://doi.org/10.1016/S0747-5632(02)00027-4)
- García-Morales, V. J., Garrido-Moreno, A., & Martín-Rojas, R. (2021). The Transformation of Higher Education After the COVID Disruption: Emerging Challenges in an Online Learning ScenarioT. In *Frontiers in Psychology* (Vol. 12, p. 616059). Frontiers Media S.A. <https://doi.org/10.3389/fpsyg.2021.616059>
- Hamilton, W. J. (1925). Character education. *Religious Education*, 20(4), 263–267. <https://doi.org/10.1080/0034408250200404>
- Hardika. (2019). Improving Student Learning Independence through Transfer of Learning Strategies. *Improving Student Learning Independence through Transfer of Learning Strategies*. <https://doi.org/10.2991/icet-18.2018.10>
- Hardika, H. (2016). Model Pembelajaran Transformatif Berbasis Learning How To Learn Untuk Peningkatan Kreativitas Belajar Mahasiswa. *Madrasah*, 6(2), 14. <https://doi.org/10.18860/jt.v6i2.3319>
- Hardika, H. (2018). *Strengthening Education Character of Primary School Educators*. 57–60. <https://doi.org/10.2991/ecpe-18.2018.13>
- Hardika, H., Aisyah, E. N., & Listyaningrum, R. A. (2021). Utilization of Various Disruptive Community Learning

Hardika, H., Razak, A. Z. B. A., Soraya, D. U., Aisyah, E. N., Iriyanto, T. & Juharyanto, J. (2021). Analysis of student learning outcomes' standards in lecturers in the perspective of a disruptive era. *Cypriot Journal of Educational Science*. 16(5), 2193-2208. <https://doi.org/10.18844/cjes.v16i5.6240>

Resources for the Covid-19 Period in the Perspective of Life Based Learning. *International Journal of Interactive Mobile Technologies (IJIM)*, 15(07), 123. <https://doi.org/10.3991/ijim.v15i07.21551>

Hardika, H., Aisyah, E. N., Raharjo, K. M., & Soraya, D. U. (2020). Transformation the Meaning of Learning for Millennial Generation on Digital Era. *International Journal of Interactive Mobile Technologies (IJIM)*, 14(12), 69. <https://doi.org/10.3991/ijim.v14i12.15579>

Hardika, H., Nur Aisyah, E., & Gunawan, I. (2018). *Facilitative Learning to Improve Student Learning Creativity*. 186–189. <https://doi.org/10.2991/coema-18.2018.44>

He, H., Ye, J., Liu, E., Liang, Q., Liu, Q., & Yang, V. C. (2014). Low molecular weight protamine (LMWP): A nontoxic protamine substitute and an effective cell-penetrating peptide. *Journal of Controlled Release*, 193, 63–73. <https://doi.org/10.1016/j.jconrel.2014.05.056>

Herdina, L., & Rasyad, A. (2017). Pengasuhan Ibu Berperan Ganda Dalam Membentuk Kemandirian Anak Usia 2-4 Tahun. *Jurnal Pendidikan Nonformal*, Vol 12, No 1 (2017): Maret 2017, 1–16. <http://journal2.um.ac.id/index.php/JPN/article/view/2137>

Jongbloed, B., Jü, A. E., Ae, E., Salerno, C., Jongbloed, B., Enders, Á. J., & Salerno, C. (2008). *Higher education and its communities: Interconnections, interdependencies and a research agenda*. 56, 303–324. <https://doi.org/10.1007/s10734-008-9128-2>

Juharyanto, J., Sul-toni, S., Arifin, I., Bafadal, I., Nurabadi, A., & Hardika, H. (2020). “Gethok Tular” as the Leadership Strategy of School Principals to Strengthen Multi-Stakeholder Forum Role in Improving the Quality of One-Roof Schools in Remote Areas in Indonesia. *SAGE Open*, 10(2), 215824402092437. <https://doi.org/10.1177/2158244020924374>

Loughran, J., & Hamilton, M. L. (2016). International handbook of teacher education. In Mary Lynn John Loughran, Hamilton (Ed.), *International Handbook of Teacher Education: Volume 1* (volume 1). Springer. <https://doi.org/10.1007/978-981-10-0366-0>

Lucas, H. C. (2016). Technology and the Disruption of Higher Education. In *Technology and the Disruption of Higher Education*. World Scientific Publishing Co. Pte. Ltd. <https://doi.org/10.1142/10147>

Lundberg, C. A. (2014). Peers and Faculty as Predictors of Learning for Community College Students. *Community College Review*, 42(2), 79–98. <https://doi.org/10.1177/0091552113517931>

Ones, D. S., Dilchert, S., & Viswesvaran, C. (2012). Cognitive Abilities. *The Oxford Handbook of Personnel Assessment and Selection*. <https://doi.org/10.1093/oxfordhb/9780199732579.013.0010>

Osborne, J., Simon, S., & Collins, S. (2003). Attitudes towards science: A review of the literature and its implications. *International Journal of Science Education*, 25(9), 1049–1079. <https://doi.org/10.1080/0950069032000032199>

Phillips, J. A. (2015). Replacing traditional live lectures with online learning modules: Effects on learning and student perceptions. *Currents in Pharmacy Teaching and Learning*, 7(6), 738–744. <https://doi.org/10.1016/j.cptl.2015.08.009>

Quinn, F., & Stein, S. (2013). Relationships between learning approaches and outcomes of students studying a first-year biology topic on-campus and by distance. *Higher Education Research and Development*, 32(4), 617–631. <https://doi.org/10.1080/07294360.2012.704902>

Schmidt, M. E., & Vandewater, E. A. (2008). Media and attention, cognition, and school achievement. In *Future of Children* (Vol. 18, Issue 1, pp. 63–85). <https://doi.org/10.1353/foc.0.0004>

Scott, C. L. (2015). The Futures of learning 2: what kind of learning for the 21st century? - UNESCO Digital Library. In *Education, research and foresight: working papers* -

Hardika, H., Razak, A. Z. B. A., Soraya, D. U., Aisyah, E. N., Iriyanto, T. & Juharyanto, J. (2021). Analysis of student learning outcomes' standards in lecturers in the perspective of a disruptive era. *Cypriot Journal of Educational Science*. 16(5), 2193-2208. <https://doi.org/10.18844/cjes.v16i5.6240>

https://unesdoc.unesco.org/ark:/48223/pf0000242996_fre (p. 14).
https://unesdoc.unesco.org/ark:/48223/pf0000242996_fre

Serdyukov, P. (2017). Innovation in education: what works, what doesn't, and what to do about it? *Journal of Research in Innovative Teaching & Learning*, 10(1), 4–33. <https://doi.org/10.1108/jrit-10-2016-0007>

Shay, S. (2013). Conceptualizing curriculum differentiation in higher education: A sociology of knowledge point of view. *British Journal of Sociology of Education*, 34(4), 563–582. <https://doi.org/10.1080/01425692.2012.722285>

Shirazi, S. (2017). Student experience of school science. *International Journal of Science Education*, 39(14), 1891–1912. <https://doi.org/10.1080/09500693.2017.1356943>

Shonkoff, J. P., Garner, A. S., Siegel, B. S., Dobbins, M. I., Earls, M. F., McGuinn, L., Pascoe, J., Wood, D. L., High, P. C., Donoghue, E., Fussell, J. J., Gleason, M. M., Jaudes, P. K., Jones, V. F., Rubin, D. M., Schulte, E. E., Macias, M. M., Bridgemohan, C., Fussell, J., ... Wegner, L. M. (2012). The lifelong effects of early childhood adversity and toxic stress. *Pediatrics*, 129(1). <https://doi.org/10.1542/peds.2011-2663>

Sullivan, F. R. (2017). Creativity, Technology, and Learning: Theory for Classroom Practice. In *Creativity, Technology, and Learning: Theory for Classroom Practice*. Taylor & Francis. <https://doi.org/10.4324/9781315765143>

Tawafak, R. M., AlFarsi, G., Jabbar, J., Iqbal Malik, S., Mathew, R., AlSidiri, A., Shakir, M., & Romli, A. (2021). Impact of Technologies During COVID-19 Pandemic for Improving Behavior Intention to Use... Impact of Technologies During COVID-19 Pandemic for Improving Behavior Intention to Use E-learning Ragad M Tawafak (2021). *International Journal of Interactive Mobile Technologies (IJIM)*, 15(01), 184–198. <https://doi.org/10.3991/ijim.v15i01.17847>

Wahyuni Kadarko. (n.d.). Kemampuan Belajar Mandiri dan Faktor-faktor Psikososial yang Mempengaruhinya: Kasus Universitas Terbuka. *Jurnal PTJJ*, 1.1. Retrieved August 19, 2020, from <http://simpen.lppm.ut.ac.id/ptjj/PTJJ Vol 1.1 maret 2000/11wahyuni.htm>

Wang, V. X. (2018). Critical theory and transformative learning. *Critical Theory and Transformative Learning*, May, 1–333. <https://doi.org/10.4018/978-1-5225-6086-9>

Widodo, W., Mundzir, S., Fatchan, A., & Hardika, H. (2017, February 20). *Analysis of Non-Formal Education Leadership*. <https://doi.org/10.2991/nfe-16.2017.60>

Willink, K. G., & Jacobs, J. M. (2011). Teaching for change: Articulating, profiling, and assessing transformative learning through communicative capabilities. *Journal of Transformative Education*, 9(3), 143–164. <https://doi.org/10.1177/1541344611436012>

Zainul, R., Adri, M., Sriadhi, Khaerudin, Wahyuningtyas, N., Darni, Rusdinal, Nasrun, Rahmulyani, Nuranjani, Nurmaniah, Wedi, A., Surahman, E., Aisyah, E. N., Oktaviani, H. I., Meilanie, R. S. M., Purnamawati, S. N., Hapidin, Listyasari, W. D., ... Adnan, E. (2020). Development of e-Learning Courses for Subjects about 'Learn and Learning' with Moodle-based for Prospective Teacher in Indonesia. *Journal of Physics: Conference Series*, 1594(1), 012023. <https://doi.org/10.1088/1742-6596/1594/1/012023>