Differences in Student Learning Performance in Online Learning: Based on Gender and Field of Science

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ABSTRACT

Purpose: This study aims to see differences in student learning performance in online learning based on gender and field of science.

Methodology: The sample in this study was 488 students in Indonesia. Collection of learning performance data from student GPA. Data were analyzed using descriptive statistics and non-parametric inferential with Mann-Whitney U with SPSS 20 for windows. The Mann-Whitney U test was carried out to see differences in student learning performance based on gender and field of science.

Results: The results of data analysis with the Mann-Whitney U test obtained the value of sig (0.0) <0.05 Ha1 is accepted so that it can be concluded that there is a significant difference in learning performance during the covid-19 pandemic based on the field of science. Furthermore, for differences in learning performance based on gender, the value of sig (0.039) <0.05, Ha2 is accepted so it can be concluded that there is a significant difference in learning performance during the covid-19 pandemic based on gender.

Keywords: Learning Performance, Online Learning, Gender, Field of Science

INTRODUCTION

The development of information and communication technology is growing very rapidly. All fields use ICT as a means to improve performance. The sophistication of ICT has made the flow of information exchange very fast, and communication seems to be without boundaries. In everyday life we can feel that the impact of the development of ICT has occurred in all aspects of our lives, including aspects of education. Education is now no longer something that is exclusive to certain groups, but is more accessible. ICT has opened the barriers that previously hindered access, and has been able to facilitate the delivery and absorption of knowledge at the same time. ICT has also opened access to knowledge in a way that was never imagined in the previous technological era. The use of ICT in education has been very advanced and now there are many alternative ways to provide access, equalize, and optimize the use of existing learning resources. One of them is the implementation of online learning. (Copriady, 2014; Gleason, 2020; Munir, 2010). Several publications have developed extensive online learning in universities (Han & Shin, 2016; Wei et al., 2015). The implementation of online learning such as mobile learning systems on student academic achievement (Han & Shin, 2016) analyzes the interaction effect of online learning on academic scores (Joksimović et al., 2015) and the effect of student perceptions of online learning is measured based on learning achievement (Wei et al. , 2015).

Online learning is learning that is done through the internet. The term online learning is often synonymous with other terms such as e-learning, internet learning, web-based learning, tele-learning, distributed learning and so on (Ally, 2008). Online learning is not just sharing learning materials on the internet. In online learning, apart from online learning materials, there is also an online teaching and learning process. So, the main difference between online learning and just online learning material is the interaction that occurs during the learning process. Interaction in learning consists of interactions between the learner and the teacher and/or facilitator (teacher), with other fellow learners, and with the learning material itself (Moore, 1989). The three types of interactions that occur in online learning will create a learning experience that will lead to learning performance.

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The achievement of student outcomes in the learning process in higher education can be seen from the GPA (Cumulative Assessment Index) (Saputri, 2015). In the world of work, although it is not completely an absolute basis, GPA is still often used as a requirement in the administration of the recruitment process. In government agencies and private institutions have a predetermined GPA standard in recruiting prospective employees. GPA that shows students' hard skills, companies also want graduates who have soft skills. Stakeholders need graduates who have high competitiveness armed with hard skills and soft skills. Soft skills are categorized into three main categories, namely personal traits, interpersonal skills, and problem solving and decision making skills. In Parkinson's research, John & Simon, (2006) stated that intelligence and personality can predict student learning performance in an effort to complete a case study (Nilawati & Bimo, 2011). Students who have a high level of intelligence with a positive personality will find it easier to study performance. In contrast to students who have a high level of intelligence but are not balanced with a positive personality, individuals will tend to be passive and interact less with students or lecturers.

Research conducted by Lu et al., (2003) looked at learning performance based on learning style, ethnicity, gender, age, employment status, year of acceptance and learning experience in web-based learning. However, Lu et al., (2003) did not examine differences in student learning performance based on the field of science. The research we carried out was to see differences in learning performance based on gender and scientific fields. When the research was carried out, learning was carried out online. Online learning is carried out during the pandemic through a Circular (Kemendikbud, 2020). The Indonesian government prohibits universities from conducting face-to-face lectures and orders them to conduct online learning.

RESEARCH METHODS

This research is a quantitative study using 488 students at universities in Indonesia. Learning performance is obtained from the student's GPA. Data analysis in this study used descriptive statistics and parametric inferential. In this study there are two hypotheses, namely:

Ha1 : there are differences in student learning performance based on gender in online learning.

Ha2 : there are differences in student learning performance based on the field of science in online learning.

Analysis of the data in this study using the help of the SPSS 20 for windows program. The prerequisite test for normality uses the One-Sample Kolmogorov-Smirnov and the homogeneity test uses Anova. The prerequisite tests for normality and homogeneity were carried out to determine the inferential statistical analysis to be used. Inferential statistical analysis used was non-parametric t test (Mann-Whitney U) because the normality and homogeneity of the data were not met.

RESULTS AND DISCUSSION

This research was carried out during the COVID-19 pandemic, which based on a Circular (Kemendikbud, 2020) the Indonesian government prohibited universities from conducting face-to-face lectures and ordered them to conduct online learning. Online learning is a new thing for several Indonesian universities. The level of student learning success can be represented by student learning performance. This study was conducted to see differences in student learning performance in online learning based on gender and field of science.

The following descriptive data on learning performance by gender and field of science is shown in table 1. In table 1 it can be seen that the average performance of female students is higher than male. Meanwhile, based on the field of science, social science students were higher than science students.

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Table 1. Descriptive Data on Learning Performance by Gender and Field of Science

Variable		N	mean	Std. Deviation	Std. Error
Gender	Man	107	3.3442	0.75108	0.07261
	Woman	381	3.4725	0.55685	0.02853
Total		488	3.4443	0.60627	0.02744
Knowledge field	Science	264	3.4426	0.38785	0.02387
	Social Science	224	3.4464	0.79075	0.05283
Total		488	3.4443	0.60627	0.02744

Prerequisite tests for normality and homogeneity of data were conducted to determine the appropriate data analysis used to answer the research hypothesis. In table 2 it can be seen that the results of the normality prerequisite test are not met, the learning performance data has a probability value $(0.0) < 0.05$ so it can be concluded that the data is not normal. To test the homogeneity of learning performance based on gender and field of science has a probability value <0.05 so that it can be concluded that the data is not homogeneous. From the two prerequisite tests, it can be concluded that the data were analyzed using a nonparametric t-test, namely the Mann-Whitney U test.

Table 2. Prerequisites for Normality Test of Learning Performance Data

Variable	Normality	Homogeneity	Conclusion
Gender	0.0	0.030	Nonparametric Test
Knowledge field	0.0	0.009	Nonparametric Test

Student Learning Performance Based on Gender in Online Learning

This research was carried out during the covid-19 pandemic where learning was carried out online. Online learning is a new experience for students in Indonesia. Based on table 3, the gender of female students has higher performance than male students.

Table 3. Descriptive data on student learning performance by gender.

	N	mean	Std. Deviation	Std. Error
Woman	381	3.4725	.55685	.02853
Man	107	3.3442	.75108	.07261
Total	488	3.4443	.60627	.02744

The Mann-Whitney U test was carried out to see the significance of differences in learning performance by gender. The results obtained in table 4, the value of sig $0.039 < 0.05$, so it can be concluded that there is a significant difference in learning performance during the covid-19 pandemic based on gender.

Table 4. Results of the Mann-Whitney U test of student learning performance by gender

Test Statistics [a]

	Learning Performance
Mann-Whitney U	17718.000
Wilcoxon W	23496.000
Z	-2.068
asymp. Sig. (2-tailed)	.039

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Student Learning Performance Based on the Field of Science in Online Learning

The educational process consists of 3 basic elements, namely input-process-output. Among the three elements, the learning process will determine whether or not the ability and learning outcomes of students are good. The success of the learning process will certainly be influenced by various factors, both from the school environment, family or from the students themselves. Both in terms of motivation, attitude or learning style that supports learning success (Rijal & Bachtiar, 2015). In this study, it was found that social science students had higher learning performance than science students in online learning. Table 5 shows that the average GPA of social science students is 3.4464 while science students are lower at 3.4426.

Table 5. Descriptive data on student learning performance by type of field of science.

	N	mean	Std. Deviation	Std. Error
science	264	3.4426	.38785	.02387
Social Science	224	3.4464	.79075	.05283
Total	488	3.4443	.60627	.02744

The Mann-Whitney U test was carried out to see the significance of differences in learning performance based on the fields of science and social science. The results obtained in table 6, the value of sig $0.0 < 0.05$, so it can be concluded that there is a significant difference in learning performance during the COVID-19 pandemic based on the field of science.

Table 6. Mann-Whitney U Test Results of student learning performance by field of science

	Learning Performance
Mann-Whitney U	22163,000
Wilcoxon W	57143,000
Z	-4.771
asymp. Sig. (2-tailed)	.000

CONCLUSION

Online learning creates learning experiences that will lead to learning performance. In this study, it was found that there were significant differences in learning performance during the COVID-19 pandemic based on the field of science and gender.

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