Factors Associated with Students' Scores in Online Learning Method in UIN Alauddin Makassar: A Cross-Sectional Study

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ABSTRACT

As a result of the Covid-19 pandemic, since March 2020, transformation to online learning is fully implemented at all educational levels, including medical students who also adopt this new normal learning method. This study aims to determine contributing factors associated with students' scores within online learning methods during this pandemic. This study was conducted on 146 subjects in the Medical Faculty of Alauddin Islamic State University. Students' scores are classified into 3 learning methods (offline, blended, online) and were obtained from the academic portal. We also collected demographic data including social-economic status, student's entrance test, and student's origin from the university academic portal. We assessed the association between demographic data and student's scores in 3 different learning methods. Among 146 subjects, blended learning (78.55 ± 79.23) was the highest score compared to online (65.7 ± 10.2) and offline (70.25 ± 10.34) learning methods. Specific to online learning, students from district area was slightly tended to have low score compared to city students (p 0.05). The entrance test was associated with the score of blended and offline learning (p 0.02; p < 0.01) whereas online learning appears to be slightly significant (p 0.05). Social-economic factors have no association with students' scores in 3 different learning designs. In shifting to online learning during this pandemic, students' scores appear to be associated with student's origin and the entrance test.

Keywords: Online learning, Scores, Origin, Entrance test, Covid-19 pandemic.

1. INTRODUCTION

Covid-19 was associated with shifting in many sectors, including the education system. To prevent the development and spread of Covid-19, the government, through Indonesian Minister of Education and Culture, Nadiem Makarim, issued a policy to adjust online learning at home for each student's level [1]. Consequently, implementing the education system that has been running offline for half a semester must be transformed to online learning, including at UIN Alauddin University.

Online learning is defined as delivering courses online at least 80% of all learning objectives while blended learning (hybrid) for about 30-79% [2]. Those as part of distance learning models, distance learning itself has been regulated in Article 31 of UU No.12 of 2012 [3] so that this is not something new in Indonesia. However, this model of learning method's official application has only been implemented nationally[3] in March 2020.

Many factors contribute to student participation in online learning, such as technology and interface characteristics, student roles and assignments [4], sense of community, characteristics of previous life and experiences, interactions, learning styles, and motivation [5]. These factors come from students, which is one of the variables that large enough to determine the effectiveness of online learning [6]. Therefore, this study aims to determine students' demographic status as a contributing factor associated with the success of online learning as indicated by the student test score.

2. METHODS

We took 146 medical faculty students of the Islamic State University of Alauddin (UIN Alauddin Makassar—UINAM), Makassar City, Sulawesi Selatan Province, Indonesia. Students were taken from batches of 2017, 2018, and 2019 as total sampling. Each batch was confirmed to follow three learning methods: online, offline, and blended learning methods. For batch 2017, we took students' scores that they achieved from three-

block courses i.e. endocrinology (5 credits) as a second block in the fifth semester (before pandemic), urology (4 credits), and traumatology (6 credits) as second and third in the sixth semester. For batch 2018, we took them from three-block courses i.e., neuropsychiatry (6 credits) as a second block in the third semester (before pandemic), integumentary (4 credits), and cardiology (4 credits) as second and third in the fifth semester. And last for batch 2019, we took the score from biomedical 1 (6 credits) as a first block in the first semester (before pandemic), biomedical 3 (5 credits), and haematology (5 credits) as first and third in the second semester. Data were obtained from the UINAM Educational Portal.

1.1 The Score of Online, Offline, and Blended Learning

Data from students batch 2017, 2018, and 2019 was obtained to get a score of online, offline, and blended learning. Online learning defines as a learning process held 100% by an online source such as Moodle and zoom, an offline method described as the learning process was maintained 100% offline, and blended was determined if the learning process was a combination of online and offline methods. Based on that categorization, next, we classified 9 courses registered by students i.e., biomedical 3, integumentary, and urology into blended learning methods, while haematology, cardiology, and

Table 1. Respondent Characteristics

Variable	Online (n = 146)	Offline (n = 146)	Blended (n = 146)
Student's score (mean ± SD)	65.70 ± 10.20	70.25 ± 10.34	78.55 ± 79.23

Table 2. Factors contribute to student's score in online, offline, and blended learning methods.

Variables	Online score N = 146	P-value	Offline score N = 146	P-value	Blended score N = 146	P-value
Sex		0.18		0.11		0.52
Boys (median, IQR)	62.38 (18.46)		69.82 (9.9)		68.84 (13.34)	
Girls (median, IQR)	67.21 (13.44)		72.76 (9.62)		72.03(15.09)	
Entrance test		0.05*		0.01**		0.02*
SNMPTN (median, IQR)	64.52 (10.17)		73.92 (12.73)		71.32 (9.32)	
SBMPTN (median, IQR)	69.68 (15.94)		72.60 (6.33)		74 (14.95)	
UMM (median, IQR)	58.86 (8.16)		58.64 918.78)		62.5 (13.86)	
UMK (median, IQR)	68.92 (18.41)		77.67 (4.49)		67.07(21.89)	
Student's origin		0.05*		0.584		0.1
Districts (median, IQR)	67.79 (12.28)		72.72 (9.2)		73.03 (12.83)	
Cities (median, IQR)	63.48(15.27)		72.44 (10)		67.81(16.59)	
Socio-economic level		0.55		0.54		0.78
1.000.000 to 2.000.000 IDR (median, IQR)	65.03 (14.66)		72.57 (9.39)		70.52 (14.75)	
2.000.000 to 5.000.000 IDR (median, IQR)	66.01 (15.56)		72.13(11.46)		71.6 (15.23)	
>5.000.000 IDR (median, IQR)	69.88 (14.29)		74.8 (5.77)		75.13(11.35)	

Mann-Whitney test for 2 groups, Kruskal-Wallis test for more than 2 groups, * $p < 0.05$, ** $p < 0.01$

SNMPTN (Seleksi Nasional Mahasiswa Perguruan Tinggi Negeri); SBMPTN (Seleksi Bersama Mahasiswa Mahasiswa Perguruan Tinggi Negeri); UMM (Ujian Masuk Mandiri); UMK (Ujian Masuk Khusus).

traumatology as online learning methods. Biomedical 1,

neuropsychiatry, and endocrinology were classified as offline learning methods.

The student's score was defined as the accumulative total score from substantive (50%) and formative (50%) assessments. We assessed the formative process through some assignments, small group discussions, quizzes, and tutorials on problem-based learning given by all block lecturers. In substantive assessment, we took scores from the final test at the end of the block course with 100 MCQs with one best answer. The blueprint of the test was already written on the block book which had been distributed to students after the lecturing contract. All lecturer in each block collects their questions to the block coordinator then the block coordinator will map the question based on the blueprint and send them to the assessment division of Medical Education Unit. All the questions had been reviewed based on the national competency examination for medical students (UKMPPD).

2.1 Factors May Contribute

We obtained students' demographic data, including sex, entrance test, socio-economic level, and student's origin. We took the demographic data from the student database of UINAM Educational Portal. Entrance test were divided into 4 categories namely SNMPTN, SBMPTN, UMM, and UMK. SNMPTN is an entrance test that considers the score of report cards at the previous level of education. SBMPTN is one of the entrance tests through examinations that are held nationally and simultaneously. Both UMM and UMK are held in local institutions with local policies based on university characteristics. Socio-economic status was classified into 1-2 billion, 2-5 billion, and more than 5 billion. We categorized students' origin by the district if the student stays in place, categorized as districts or cities by government rule PP Number 28 the Year 2007.

2.2 Statistical Analysis

We presented numerical data by mean ± SD whereas the total number and percentage described nominal data. The association between sex, entrance test, socio-economic level, student's origin, parent's occupation, and student's score and variety of learning modalities were analyzed by Mann-Whitney test for 2 groups and Kruskal-Wallis's test for more than 2 groups. All statistical analysis was used IBM Statistical Package for Social Sciences (IBM SPSS Statistics for Windows; IBM Corp., Armonk, New York, USA) version 26.

3. RESULTS

The following are data analyses of the mean distribution of student scores (Table 1) and the bivariate

analysis between variables (Table 2). From 146 students, blended learning reached the highest score compared to online and offline learning modalities Entrance test seemed to affect score between online, offline, and blended learning methods with p-value < 0.05; p-value < 0.01; p-value < 0.02) respectively. UMM got the lowest score between other entrance tests on every learning method. Moreover, in the online learning method, students living in cities appeared to have lower scores than those who live in the district (p 0.05).

4. DISCUSSION

Our study found that blended learning achieved the highest score better than online and offline learning methods. Before the pandemic, institutions have started a combination of online and offline strategies. As the demand of the technology revolution era, teachers urged to change how they deliver their materials. The previous study reported blended learning as an effective learning strategy during disruptive periods with high student success rate and satisfaction [7][8]. However, Shu et al. found an equal satisfaction level between online, offline, and blended learning modalities [9]. A study that assessed student's characteristics to achieve good score found that age didn't influence their success, and they added time management and course modalities as an essential factor to get a good mark in a variety of learning methods [8][10].

Moreover, our study showed that online learning was appeared to associate with student's origin. Those who stayed in the district have a higher score than students living in cities. We assumed that this result states that signal was not a matter for students from districts area and could still study appropriately. Additionally, adolescents from rural area were tended to motivate in online learning to reduce information gap between urban and rural area [11]. Meanwhile, students from cities probably have more distractions alternatively than their courses, such as noise level and temperature that could impact the academic performance of students [12], as a general knowledge that structures such as buildings, roads, and other infrastructure in the city produce more noise also absorb and reflect the sun's heat more than natural landscapes such as forests and water in the district areas.

This study also shows us that student entrance tests were associated with student's test scores in all learning methods. SBMPTN students have the highest average scores in both online (p 0,05) and blended learning (p 0,02), while UMK students excel in offline learning (p 0,01). Moreover, UMM students always had the lowest score for all the teaching methods. The results of this study are different from those found by Nurhadi, A.A., et al. [13], Foley and Hijazi [14], also Mercer and Puddey

[15]. They discovered that previous academic achievement—the SNMPTN entrance test—was significantly associated with academic achievement. This difference can be explained by the different characteristics of the sample and the other features of these studies' universities.

So far, it is known that SBMPTN is a rigorous selection path to enter higher education because it is implemented at the national level for almost all universities in Indonesia. The test items in the SBMPTN are basic sciences that can build the logic of students' thinking so that we assumed that the student's ability to reach the passing grade is expected to be ideal for achieving student success at the university level. Moreover, the newest medical curriculum also demands a profile of medical graduates as researchers/educators who think critically and creatively and have literacy skills in the fields of science, finance, social and culture, as well as information technology in dealing with complex health problems [16]. Based on the data result, SBMPTN students seemed to adapt to learning using information and communication technology in online and blended learning rather than just face-to-face meetings in offline learning as indicated by their score between groups.

On the other hand, UMM was the last entrance test that was organized. Students in this group tended to have low scores. It is possible because this test is the last choice for students if they have failed the two previous tests.

Our study has several strengths and limitations. Although we included a total sample of students, it is still considered as a small sample. The student's score that calculated by the accumulation of summative and formative scores was reflected a comprehensive assessment method. However, we did not examine factors e.g., individual factors like motivation, stress level, and environmental situation such parents' support which important to take into account in the student's score as represented by academic performance [17–19].

As an output for these findings as this study has shown that students with SBMPTN have higher students' scores in this pandemic situation, therefore UINAM should consider emphasizing the SBMPTN scheme as the main entrance test and increase the proportion of this scheme.

5. CONCLUSION

Our study revealed that the entrance test appeared to associate with the student scores in different learning methods. In the future, we suggest to examine the individual factors that contribute the student's score in a variety of learning environments.

AUTHORS' CONTRIBUTIONS

Andi Faradilah – developing research idea and proposal, collecting data, data analysis, and publication manuscript; Andi Irhamnia Sakinah – collecting data and publication manuscript; Rini Fitriani – developing data analysis and publication manuscript.

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