

Eny Winaryati Applying Google Classroom based on Prospective Teacher

by Bu Eny Winaryati

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Applying google classroom based on prospective teacher

M Prihaswati*, V D Mawarsari, and E Wiaryati

Mathematic Education Study Program, Universitas Muhammadiyah Semarang,
Indonesia

*martyana@unimus.ac.id

Abstract. Teachers and prospective teachers must be technology-educated, they are equipped with technology-based that vary in knowledge which will be taught to the next industrial revolution 4.0 generation. This study aims to create a technology-educated prospective teacher. Applying Google Classroom, the teacher can distribute the assignments to give grades in one place. The target of the implementation is to increase the level of technological literacy of prospective teachers in teaching. The research is quantitative research with the data collection using a questionnaire in pretest-posttest. The results showed that there is an increase in the ability of prospective teachers after implementing of Google Classroom and prospective teachers respond well to the implementation of Google Classroom on learning.

1. Introduction

Currently, the world is entering the era of the industrial revolution 4.0 where the era emphasizes artificial intelligence patterns, big data, robotic, and so on known as the disruptive innovation phenomenon [1]. The role of humans will be replaced by automatic machines. The impact was a shift in jobs that relied on human resources, replaced by 28 million new jobs in the following decade. As a result, 6.6 million people lost their jobs because they did not have the necessary skills [2]. This is a challenge for humans to be able to survive in this era of the industrial revolution. Humans are required to be technology literate, it does not mean they are good at operating devices, but are aware of and understand the importance and benefits of using technology so that technology literacy education becomes a priority agenda to face the challenges of the industrial revolution era 4.0.

Technology literacy education needs to be echoed early on. Indonesian internet user penetration in 2017 increased by 8 per cent from the previous year to 143.26 million [3]. There are 16.68 percent of internet users which is in the age range of 13-18 years while in terms of education, high school level users are 70.54 per cent, junior high school 48.53 per cent and elementary school 25.1 per cent. It shows the high use of the internet in Indonesia. However, the type of service that is accessed by most users is social media. The high use of the internet is not accompanied by the use of targeted technology. From the data, technological literacy education can be used in technology-based learning.

Education plays a very important role in increasing the skills and knowledge of technology and media literacy, communicate effectively, think critically, problems solving, and collaborating. A common condition in the world of education is learning that still uses traditional learning methods, such as lectures (conventional), expository, or drill that are often applied before the exam [4]. Technology is part of the process by which a person's environment is deliberately managed to enable students to participate in certain behaviours in special conditions or give responses to certain situations [5].



Mathematics Education Department is educating prospective teachers with technological materials. It is shown in several technology-based courses, such as computer programming and so on. However, the application of technology has not been maximized in the learning process. Most of the supporting technology in the learning process only uses power points for presentations, so the computerization skills of prospective teacher students are limited. Another obstacle is that the teacher or lecturer cannot give a lecture due to the limited time, but learning must be carried out. Therefore, prospective teachers need to be equipped with technology variations using technology-based knowledge that will later be taught to the next generation who will face the era of the industrial revolution 4.0.

Google Classroom is a learning platform intended for the educational sphere to facilitate the preparation, distribution, and assessment of paperless assignments [6]. The advantage of Google Classroom is it roles as a bridge towards the teacher and lecturer problem who have limited time. One of them is the teacher can instruct, assign, and discuss with students online at the same time [7]. With the implementation of learning with Google Classroom, prospective teachers can improve their knowledge and technological capabilities which is also increasing the level of technological literacy, so that the technological literacy of prospective teacher is applied. This study aims are to determine the increase of technological literacy level of prospective teachers after the implementation of Google Classroom. Also, determine the response of prospective teachers to the implementation of Google Classroom.

2. Methods

This study uses descriptive quantitative methods described in the level and responses of technological literacy of prospective teachers in Google Classroom applying.

Data collection used interview, questionnaires, and observation. To find out the amount of the increase in students' mathematical communication skills, the pretest and posttest data were analyzed to obtain the data. The calculation of the normalized gain index formula (g) [9], is:

$$g = \frac{\text{questionnaire score after} - \text{questionnaire score before}}{\text{highest score} - \text{questionnaire score before}} \quad (1)$$

The interpretation of the gain index according to Hake is as follows:

Table 1. Gain index interpretation

Gain index (g)	Criteria
$g > 0,7$	High
$0,3 < g \leq 0,7$	Medium
$g \leq 0,3$	Low

Student responses to the Google Classroom implementation are measured by the questionnaire. The response amount is measured by indicators and score response.

Table 2. Response criteria [10]

Coefficient	Interpretation
81% - 100%	Excellent
61% - 80%	Good
41% - 60%	Fair
21% - 40%	Poor
0% - 20%	Very Poor

3. Results and Discussion

The results of the study used three main stages in quantitative research, those are the description phase, the reduction stage and the selection stage.

3.1. Description Phase

This stage described the current condition of prospective teachers who are required to be technology-educated during the 4.0 industrial revolution. The majority of teachers are still not familiar with technology-based learning because of the learning process so far, tend to be teacher-centred. The next obstacle when the teacher is unable to attend during the learning schedule, students are given the predetermined-time task. However, the majority of students who have low discipline submit these assignments out of the due date beyond teacher control. It can be minimized if the teacher implements technology-based learning, implementing Google Classroom on learning is one of them.

3.2. Reduction Stage

The stage reduces the information obtained at the description stage. The results obtained on the description stage is the need to introduce the technology in learning by the Google Classroom implementation to create the technology-educated prospective teachers that have well technological literacy. The learning is applied to the Mathematics Education students study programs in the Numerical Methods lecture implementing the Google Classroom application. Mathematics Education Study Program students as the research subject, are prospective teachers who are educated and later become professional teacher candidates to meet the demands of the industrial revolution 4.0. The data taken is about their technological literacy and student responses after implementing the Google Classroom application.

Before the implementation of Google Classroom, observations and interviews were conducted to know the prospective teacher's level of technological literacy. Observation results indicate that the level of technological literacy of prospective teachers in learning is still low. It is indicated by the lack of student knowledge about technology-based learning. After the interview, it turns out that they only know the direct learning models or learning methods applied directly in the classroom because, in daily lectures, technology-based learning is never introduced.

The implementation of Google Classroom in the Numerical Method lecture is carried out by forming 3 group discussions of 6 people each with different materials for each member. In Google Classroom application, assignments are given along with the material, which later the task must be uploaded in Google Classroom with a predetermined time limit.

2.1. Selection Stage

This stage outlines and analyzes the problem focus in-depth. Assessment on the technological literacy level was taken on the material before and during the use of Google Classroom Application using observation sheets can be seen in Table 3 below.

Table 3. Assessment of the technological literacy level

Statements	Before	After
1 Being able to use features and applications in technology.	30	62
2 Being able to use and browse websites.	37	65
3 Being able to use technology to support critical thinking, creativity and make an innovation to be applied in education, networking, and recreational goal.	35	45
4 Being able to use technology in teamwork and individual work.	38	54
5 Always be critical and reflective in responding to the information.	33	68
6 Having the ability to critically judge the technological impact.	37	70
Average	35	60,67
Percentage	43,75%	75,83%

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The results of the observation showed that the percentage of technological literacy was 75.83% with good criteria. While the gain index shows 0.57 with medium criteria. So there is an increase in the level of technological literacy with moderate criteria.

Furthermore, direct observations and interviews were conducted to complete the data obtained from the observation sheets of technology literacy levels. The observations began at the introduction of Google Classroom, from 20 students who took part in the study, 5 students have difficulties in the process joining to become members, so they had to be invited to join. At the end of the lesson, students who upload assignments can be monitored in the Google Classroom educator account, Google Classroom shows that from the 20 students as members, 19 students upload assignments, so there is 1 student who does not upload tasks. 12 students uploaded assignments on time, while 7 other students were late to upload. However, from 12 students who uploaded, 1 student uploaded the blank data, so that in total there were 2 students did not upload assignments.

Table 4. Results of student response questionnaire by using google classroom learning indicator

Indicator	Score
1	65
2	54
3	52
4	44
5	41
6	45
7	46
8	44
9	50
10	70
Total	511
Percentage	63,875%

20 The next stage is giving the questionnaire to students. The results of the questionnaire are shown in table 4 below. Table 4 shows the results of the responses of prospective teachers in learning Google Classroom with a percentage of 63.875 which means good. So, a prospective teacher gives a good response to learn using Google Classroom application.

The current condition of learning is not technology-based yet because the lecturer with technological literacy level is low. In contradiction with Tempo magazine statement [11], the evolution of Industry 4.0 requires teachers to take advantage of the rapid information technology advancement to improve the teaching and learning quality and prepare the high-grade human resources. The implementation of technology-based learning is needed by teacher candidates to increase their learning knowledge to meet the demands of the industrial revolution 4.0. One of the technology-based learning tools is Google Classroom application. Google Classroom is an application specifically for online learning media to make it easier for teachers to create, share and classify each assignment without the use of paper [12].

11 Data is collected through observation, interview, and questionnaire filling. The results of the assessment on the level of technological literacy before implementation showed that the level of technological literacy of students was quite good whereas after using Google Classroom application, the level of technological literacy became good with a modest increase. That is because, before implementation, the students as a prospective teacher did not know technology-based learning yet. Students that did not master the features and technology applications, especially in learning, would not be able to use technology for educational purposes and to have

critical thinking in facing the technological impact. After implementing Google Classroom, students learn about online-based learning, knowing how to use and utilize it in education, using at least 1 application. As a result, they have the expertise to use and utilize technology to support thinking and being critical and even can critically evaluate the impact of technology. To provide technology-based education, teachers must have a positive attitude towards technology, be able to manage the use of technology in the classroom, be able to assess the use of technology, and have technical ability in using technology [13].

Prospective teacher responses to the implementation of learning with Google Classroom are in the level of good criteria. It means the Google Classroom application can be used in mathematics, especially in giving assignments. But from the interview results, Google Classroom has several weaknesses, including the need for a strong internet connection to be able to chat with lecturers so that when the internet network is broken down, students have difficulty to ask questions about the material. Google Classroom also has advantages, those are easy to use, save time, cloud-based, flexible, and free that can be a consideration to apply in the learning process [14].

22 4. Conclusions

Based on the results of the study and discussion, these are some conclusions: The prospective teachers' ability increased after implementing the Google Classroom gain index is 0.57, which means the increasing level of technological literacy is in medium criteria. Prospective teachers respond well to the implementation of Google Classroom on learning. Based on the research conducted, the suggestions that can be given are as follows: For the teachers, the use of Google Classroom learning application can be implemented in learning especially for providing assignments. For schools, a strong internet connection is needed to facilitate the use of Google Classroom in the class.

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