The Differences in Students Learning Motivation Based On Gender Using Blended Learning Models of Mathematics Learning

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Abstract. Blended learning models is a new e-learning methods that Universitas Negeri Medan used recently. E-Learning is commonly fascinating by men more than the women. And that was the reason why the researcher took research about the motivation between that both gender. Thus, this study aims to describe the motivations in learning mathematics using blended learning based on gender. The subject of this research were 9 male and 23 female mathematics students. The research used motivations questionnaire sheets form instrument as the object. By transforming the ordinal data to ratio, the motivation data were changed to score and analyzed with parametric statistics since the normality test of Shapiro-Wilk shows significant levels of 0.230. Furthermore, from the Levene’s test for equality of variances shows 0.908 with α = 0.05. It means that the data variance between male and female groups is homogeneous. Thus, the result of questionnaires and tests show that there’s no difference between the motivation of male and female students in learning mathematics with the Blended Learning models since the t-test value larger than t-table level of significance 0.05.

1. Introduction
Science and technology expansion enables us to obtain information abundantly, quickly and easily from various sources and places in the world. Thus, student needs to have the ability to get, choose, and manage the information to survive in a situation that always changes, uncertain, and competitive. This ability requires critical thinking, systematically, creativity, and willingness to work together effectively. Mathematics education has great potential to play a strategic role in preparing human resources to deal with it, especially students at the university levels. Learning activities carried out by students will succeed if they motivated by self impulse calls motivation. Students with high motivation in learning will high likely obtain high learning outcomes as well. It means the increase of the motivation and the effort made, will likely be followed by the increase of learning achievement they would get later.

Motivation couldn’t be observed directly. It was interpreted by behavior in the form of stimulus and push. According to Uno [1], motivation coming from a word called ‘motive’ which means the strength inside causes the individual to act. Uno also said that motivation is an impetus that makes a person try
to make changes for better behavior to meet their needs. Without having the motivation, the learning process wouldn't work well as expected. Motivation is a force for students in learning. It may determine whether the student may achieve the goal well or no. Thus, the increase in motivation might be followed by success [1].

In addition to motivation, gender roles also affect how the student learns. According to Zainal [2], gender is one of the demographic parameters which always interesting to analyze in educational research. If you want to distinguish between men and women, the first thing to consider is gender, which is a biological characteristic that distinguishes between men and women [3]. Mubeen, Saeed, and Arif [4] explained that boys had different achievement in the mathematical girls. Girls achieve better results compared to boys. It's because boys and girls are raised differently in the same environment. As a result, boys and girls had different perspectives on education. In learning mathematics, for example, a similar mathematical problem is given to several individuals. They will get different responses in solving them. The difference in how to solve it is because each individual has a uniqueness in himself. In his journal Hoang [5] revealed that men, with all their innate characteristics, are different from women. These differences are thought to influence the aspects of student learning motivation experienced.

Facing current digital era, it's time to change the paradigm of learning process in the classroom into a process full of innovation. Pratama [6] argued that many factors influence the development of education in the future, including the rapidly developed of information technology and increasingly fierce competition in obtaining employment that is characterized by development of new technologies which require increased competence. The internet is one of the technological facilities that exist recently. It may be easily, quickly, and efficiently used in anywhere and anytime. In this context, renewal in the field of education and learning needs to be done continuously and must be a never-ending process. With the increasingly sophisticated technology, it will affect learning methods that will also be more sophisticated.

There are still many educators and students who have not maximized the used of internet access in this globalization era, as well as the lack of educators in mastering the e-learning model used in teaching [7]. Transform a conventional learning model, the e-learning could start with model calls Blended Learning. The Blended Learning Model is a combination of the excellent learning ways of class meet and virtually. Blended learning provides convenience in learning in terms of delivery, teaching models, and learning styles that introduce a variety of media choices dialogues between the facilitator and the people who get the teaching.

Blended learning is about discovered by mathematics students at the State University of Medan in e-learning methods recently. E-Learning is commonly fascinating by men more than the women. And that was the reason why the researcher took research for known about the motivation between that both gender. Thus, this study aimed to describe the difference of student motivations in learning mathematics using blended learning based on gender.

2. Method
The method used in this study was a quantitative approach, a descriptive comparative type. This study examined the differences of students' learning motivation in terms of gender. The population of this study was 140 fifth semester student of mathematics education at the Universitas Negeri Medan. With a purposive sampling technique, a sampling technique with special considerations, in this case, the suitability of the lecture schedule, 1 class has established a total of 32 students consists of 9 men and 23 women.

The instrument used to collect data is a questioner of learning motivation. This research questionnaire consisted of 36 statements using a Likert scale model with five answer choices, namely: strongly disagree (1), disagree (2), doubt (3), agree (4), strongly agree (5). The obtained data were analyzed and tested with parametric statistics with the Shapiro-Wilk normality test. The homogeneity check by Levene's Test and hypothesis examined by Student-tests (t-test) computed by SPSS Program version 22. The categorization of student motivation variables is presented in Table 1 below.
Table 1. Learning Motivation Categories

| Motivation Category | Participant score (%) | Frequency | Percentage |
|---------------------|------------------------|-----------|------------|
| Very High           | 85 < score ≤ 100       | 2         | 8.70       |
| High                | 70 < score ≤ 85        | 18        | 78.26      |
| Quite High          | 55 < score ≤ 70        | 3         | 13.04      |
| Lack                | 40 < score ≤ 55        | 0         | 0          |
| Very Lack           | 25 < score ≤ 40        | 0         | 0          |
| **Total**           |                        | 23        | 100        |

Table 2 above shows that the female student's learning motivation was in the very high, high and quite high categories with 8.70%, 78.26% and 13.04% respectively. It expresses that most females have high motivation.

3.1.1. Female student’s learning motivation
The following table 2 shows female student’s motivation data.

Table 2. Female Student’s Learning Motivation Categories

| Motivation Category | Participant score (%) | Frequency | Percentage |
|---------------------|------------------------|-----------|------------|
| Very High           | 85 < score ≤ 100       | 2         | 8.70       |
| High                | 70 < score ≤ 85        | 18        | 78.26      |
| Quite High          | 55 < score ≤ 70        | 3         | 13.04      |
| Lack                | 40 < score ≤ 55        | 0         | 0          |
| Very Lack           | 25 < score ≤ 40        | 0         | 0          |
| **Total**           |                        | 23        | 100        |

3.1.2. Male Student’s learning motivation
The following table 3 shows male student’s motivation data.

Table 3. Female Student’s Learning Motivation Categories

| Motivation Category | Participant score (%) | Frequency | Percentage |
|---------------------|------------------------|-----------|------------|
| Very High           | 85 < score ≤ 100       | 0         | 0          |
| High                | 70 < score ≤ 85        | 9         | 100        |
| Quite High          | 55 < score ≤ 70        | 0         | 0          |
| Lack                | 40 < score ≤ 55        | 0         | 0          |
| Very Lack           | 25 < score ≤ 40        | 0         | 0          |
| **Total**           |                        | 23        | 100        |

Table 3 shows that all of the male students were in the same motivation category, which is in a high category.
3.2. Data analysis
There were three-point that had been checked in analyzing the data. Two of them were the prerequisite to use the other one. The normality test and the homogeneous test had to be proven first before using the t-test..

3.2.1. Normality Test
The SPSS output (table 4) shows that the normality test of the Shapiro-Wilk test with significance levels 0.05 or 5% error.

| Table 4. Test of Normality |
|---------------------------|
|                     | Kolmogorov-Smirnov\(^a\) | Shapiro-Wilk |
|                     | Statistic | df | Sig. | Statistic | df | Sig. |
| Motivasi           | .126      | 32 | .200* | .957      | 32 | .230 |

Table 4 above shows that the Shapiro-Wilk Sig. 0.230 was higher than 0.05. Therefore, the data was in a normal distribution.

3.2.2. Homogeneous Test
For homogeneous test, the SPSS run for The Levene’s test, and also with 0.05 significance levels.

| Table 5. Independent Samples Test |
|-----------------------------------|
| Levene's Test for Equality of Variances | t-test for Equality of Means |
| df | Sig. | df | Sig. |
| Equal variances assumed | .014 | .908 | -.400 | 30 |
| Equal variances not assumed | -.417 | 16,084 |

The table above shows that Levene’s test had 0.908 on significance levels which were higher than 0.05. Therefore, the variances between males and females were homogenous. Both tests show that the t-test can be used to analyze the data.

3.2.3. Hypothesis test
Hypothesis testing is done using t-test data analysis techniques. The hypotheses put forward in this study are:
H0: There is no difference between male and female students learning motivation in learning mathematics with the blended learning model
Ha: There is a difference between the learning motivation of male and female students in learning mathematics with the blended learning model.
The results of testing the hypothesis are as follows.

| Table 6. Independent Samples Test |
|-----------------------------------|
| t-test for Equality of Means |
| Sig. (2-tailed) | Mean Difference | Std. Error Difference |
| Equal variances assumed | .692 | -1.594 | 3,989 |
| Equal variances not assumed | .682 | -1.594 | 3,819 |

Based on the Independent Sample Test output in the Equal Variance assumed section known that the Sig. (2-tailed) value of 0.692 > 0.05.
Then based on the decision making of the independent sample t-test, it concluded that Ha is rejected and accepts H0. There is no difference between learning motivation of male and female students in learning mathematics with blended learning models.
3.3. Discussion
Motivation is a source of encouragement for students to conduct learning activities to obtain satisfying learning outcomes. Hakan [8] argued that academics motivation was the main factor of academic performance and achievement. Motivation creates a sense of joy in students to keep learning. Students with motivation will devote all their energy, attention, and time to their favorite things without burden. Motivation causes actions to be more consistent, serious, creative, and longer [9]. One way that can arouse student learning motivation is the application of diverse learning models, including online learning.

Generally, online learning can solve various problems, such as distance, time, cost, and limited teaching resources [10]. Blended learning is part of the online learning model. By applying this model, there are no worries about the time limit. In this study, while learning was taking place, both male and female students showed the same enthusiasm for learning in class and network. Student's enthusiasm has shown a high motivation to learn when they try to get the best results. SIPDA is e-learning provided by Universitas Negeri Medan to support the blended learning model. In SIPDA, students learn to study independently and take the learning materials unimpeded. Sandi [11] argued in his research that the student independently plays an important role in learning.

The results showed that there was no difference between male and female students' learning motivation in learning mathematics with blended learning models. Both male and female students have the average motivation to learn in the high category. But from its expanse, female students' learning motivation with blended learning spreads at quite high, high and very high levels. While the learning motivation of male students with no blended learning is spread, all of them fall into the high category. There is no difference in learning motivation between male and female students with the blended learning model contrary to the hypothesis proposed by the researcher. This is possible because their curiosity is equal to the newly introduced learning model. This learning model is assisted by technology, where all students normally use it. And this learning model might also be considered more efficient because it does not require always face to face but learning can still continue.

4. Conclusion
Based on the results obtained in this study it can be concluded that there is no difference between male and female students’ motivation in learning mathematics with blended learning models. The mean score of learning motivation of male and female students are equal, which are in the high category.

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