

The Influence of Gender and Majors on Students Motivation to Learn During Pandemic of Covid-19 (Case Study of High School Students in Indonesia)

Linda Theresia, Gadih Ranti, Ni Made Sudri

Industrial Engineering Department, Institut Teknologi Indonesia
Indonesia

tarlind@yahoo.com; gadih63@gmail.com; madesudri32@gmail.com

Correspondent author: Linda Theresia 081510559729

Abstract

High school students are affected by the pandemic of covid-19 because they have to study online and study separately from their teachers and friends. Not infrequently students are confused in the online learning system. This creates students feeling of unsecure, with affect their mental health. In online learning system students' mental health becomes a concern because it affects students' learning motivation. The purpose of study is to examine the motivation of students to learn in Indonesian public high school during covid -19 pandemic. Motivation is measured through 5 dimensions, namely: general competence belief, interest to learn, learning usefulness value, mastery oriented, and performance oriented. The respondents consisted of students from 13 public high schools in Tangerang, Indonesia. A total of 528 students filled out a questionnaire using google form media. The questionnaire contains 13 questions distributed from February 1, 2021, to February 17, 2021. There are 498 valid questionnaires (44.5% male and 55.5% female). The data were processed and then analyzed using multivariate analysis (MANOVA). The results showed that gender affects students' learning motivation, this is because men have different innate characteristics from female. The mean value of the indicators 'general competence' and 'interest to learn' for men is higher than for female. Meanwhile, the mean value of the indicators 'learning usefulness value', 'mastery oriented' and 'performance oriented' of female is higher than that of men. The results also show that majors do not affect students' learning motivation when studying online.

Keywords

COVID-19; Motivation; High school students, Gender, Majors

1. Introduction

The pandemic of covid-19 has become a serious problem around the world. As a result, every country tries to prevent the spread of covid-19 in their own way, such as locking down, closing schools, and limiting activities, which of course affect daily social interactions. This preventive measure raises concerns for the mental health of children and adolescents (Pfeffer Baum, B., 2020). This can be seen from the findings of several recent studies showing an increase a symptom of affected mental health of adolescents, such as anxiety sometimes even led to depression (Racine, N. et al, 2020). This needs to be anticipated because individuals with mental health symptoms tend to show poor motivation in learning (Accordino, D.B. et al, 2020). With increasing anxiety and depression, then there will be a decrease in the achievement motivation of the students. General symptoms can be seen among others are an increased time spent sleeping, using social media, and playing games while a decrease in academic motivation and self-discipline, and more than 75% of the students reported increased stress, mainly related to academic motivation and challenges (Ellen L. Usher, 2021).

The fulfillment of psychological needs, such as a relationship with others, competence, and autonomy (An, M.A.; Han, S.L., Van den Broeck et al, 2016) will increase the individual's intrinsic motivation. The interaction of students with friends and teachers is very limited since the pandemic outbreak, of course, has an impact on student motivation. Social interaction can reduce the negative impact in student motivation during the pandemic (Son, C, et al, 2020). Social interactions can reduce some of the stress caused by the COVID-19 pandemic, including protecting against demotivation (Goldstein, S.E. et al, 2015). Around 80% of adolescent students are indicated that their motivation and capacity for self-discipline in online learning are decrease. (Usher, E. L, 2021). When learning

motivation decreases, students will have difficulty learning well and as a result, their achievement could be unsatisfied (Z. Sheng, et.al., 2008), (D. H. Lim and H. Kim, 2003). Therefore, the motivation of student to learn is very important (O. Boyinbode and A. Tiamiyu, 2020). This is indeed not something easy because every student has different factors for learning motivation. Tempiski (2021) observed medical students and the result showed that their motivation is driven more by their purpose to perform well as well as their professional values instead of their learning interest.

Motivation has an important role to encourage someone to actively do something (A. M. Santoso et al, 2017). The complex part of human psychology and behavior that influences how individuals choose to invest their time is called motivation (R. Burn, 2014). Thus, motivation is one of the important factors in the learning process because motivation can influence students on how to use their time. Students will learn well if they have high learning motivation. Student motivation is closely related to what students need and how students get what they need (P. R. A. Pintrich, 2003). Motivation to learn is encouragement to build the behavior, either from within or outside. These could be achieved through various indicators. These indicators include: the desire to succeed, the drive and need for learning, hopes and aspirations for the future, appreciation, for learning, and a conducive learning environment which make learning activities have the right direction to desired goals.

High school students are one of the most vulnerable populations affected by the COVID-19 impact in the education sector. New academic routines that force the students to study online, via virtual, distancing themselves from teachers and friends make most of them confused and put them in a state of uncertainty. COVID-19 which requires online learning presents new challenges for students, including mental, emotional, and physical challenges (Madrigal, L., & Blevins, 2021). With the shift to using online learning modes, there is a greater need to find out how students are motivated during online learning, which is examined from the gender aspect and student field of study. This contributes to knowing whether gender and majors have different motivations during online lectures, thereby providing feedback for schools to pay attention, control learning, and find out the level of challenge and motivation of students to learn.

As high school students face challenges in this "new normal", then these challenges certainly affect the mental health of students, which ultimately has an impact on poor motivation in learning (Accordino, D.B. et al, 2020). Student motivation has increasingly become a concern since the outbreak of the COVID-19 pandemic, however, academic research on this subject is still very limited (Smith, J., et al, 2021). Therefore, it is difficult to estimate the impact of the COVID-19 pandemic and its effect on student motivation, especially for high school students. This study aims to address gaps in the literature. This study explores the motivation of public high school students in Tangerang, Indonesia. Tangerang City is a city located in Banten Province, Indonesia. This city is located just west of the capital city of Indonesia, namely DKI Jakarta. Tangerang is the largest city in Banten Province. This study took samples from 13 public high schools in Tangerang, Banten Province, Indonesia.

2. Literature Review

Motivation is a process that explains the intensity, direction, persistence, and effort made to achieve goals (Robbins and Judge, 2015). Motivation is a psychological need that can encourage someone to be more active in doing work, so it is important to manage motivation to improve performance (Theresia, 2018). With motivation, a person is encouraged to take an action to achieve a certain goal (Zeid, 2017) and is able to produce new ideas (Rohaizah, 2015, Theresia, 2018). Therefore, motivation will encourage someone to take new actions to better achieve certain goals.

What components can explain the achievement motivation of the students? Motivation is the combination of students' beliefs, attitudes, and intentions about themselves (eg, their chances of success) and situations (eg, values) to act as mediators of behavior for their success (Pintrich and Schrauben, 1992). These beliefs and expectations of success are reflected in the level of students' confidence in their ability to succeed. The main component that influences these expectations is how students evaluate their general abilities or beliefs of competence. In fact, students are constantly assessing their ability to act effectively, and when they come to positive conclusions, they tend to engage in learning with more enthusiasm (Bouffard, T, 2015). Learning assessment depends on various dimensions. One of them is interest to learn, which refers to a state of attention and concentration that is triggered by a learning situation (Renninger, 2016).

Learning motivation has an important role in growing interest or enthusiasm in learning, so students who are strongly motivated have a lot of energy to carry out learning activities (Winkel, 1991). Learning motivation is the overall driving force found in students so that they create a desire to learn and provide direction for these learning activities so that the goals are achieved (W.S. Winkel. 1983). Intrinsic motivation significantly affects organizational

performance during COVID-19 (Camilleri, M.A, 2021). Motivation can be stimulated by external factors but can also arise from within a person. Most of the motivational dimensions remain relatively stable over time. Motivation in this study was measured in 5 aspects, namely general competence, interest to learn, learning usefulness values, mastery target orientation, and performance goal orientation (Ntamakiliro et al, 2000).

a. General competence beliefs

To measure confidence in general competence, a questionnaire containing three dimensions was used, namely: "I am a diligent student in class, I am proud of my grades, I am not as good as other students in the class. The questionnaire uses a scale from 1 (strongly disagree) to 5 (strongly agree). All scores were meant to produce a score that reflects competence ($\alpha = 0.05$).

b. Interest to learn

Assessment of interest to learn using is measured by two dimensions adapted from the research of Teamkiller et al, (2000). The items are: "I am interested in what is learned in class", and "I am often bored in class". The scores of the two items were meant to produce a score that reflects the interest to learn ($\alpha = 0.05$).

c. Learning usefulness value

The learning usefulness value uses two dimensions represented by the questions "Learning in school (even though currently online) is useful for the future and "What is learned in school (even though currently online) will be useful". Responses were given on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). All scores were meant to produce a score that reflects the value of learning utility ($\alpha = 0.05$).

d. Mastery oriented

Mastery target orientation of participants is measured by asking the questions "It is important to understand what is learned in school", "It is important to study as well as possible in school", and "I want to learn as much as possible about my lesson." Responses are given on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). All scores were meant to produce a score reflecting the mastery oriented ($\alpha = 0.05$).

e. Performance Oriented

Orientation of participants' performance oriented by asking the questions "It is important for me to be the best student", "It is important for me to be better than other students". Responses are given on a scale of 5 points ranging from 1 (strongly disagree) to 5 (strongly agree). All scores were meant to produce a score that reflects the performance oriented ($\alpha = 0.05$).

3. Methods

This study used multivariate analysis. A multivariate approach is used because it allows for exploring the performance of variables together and determining the effect of each variable on other variables (Rencher, 2002). One of the techniques in multivariate analysis is Multivariate Analysis of Variance (MANOVA). MANOVA has the advantage of being able to analyze all dependent variables simultaneously, so as to minimize type I error (α) in statistical test decision-making. This study examines the effect of gender and majors (Natural science and social science). on the motivation dimension (general competence belief, Interest to learn, learning usefulness value, mastery target orientation, performance goal orientation). The independent variables in this study were gender and majors, while the dependent variable was the motivation dimension (general competence belief, Interest to learn, value learning utility, mastery target orientation, performance goal orientation). Data analysis used MANOVA, furthermore, a requirements test was carried out before using MANOVA. This requirement test in principle aims to ensure that MANOVA can be used, and the test results can be interpreted correctly. Assumptions that must be tested are populations with multivariate normal distribution and the covariance matrix of the same populations.

4. Data Collection

In this study, researchers used a purposive sampling technique. Purposive sampling is a sampling technique with certain considerations. Because in this study, researchers took research samples by considering the similarity of characteristics and considerations to achieve research objectives. A total of 528 registered students in 13 public high schools in Tangerang filled out the questionnaire and received permission to participate in this study. Questionnaires were distributed online using google forms media. Respondents were given 13 questions, all of which must be filled out correctly and without pressure or coercion from anyone. Researchers distributed questionnaires with the provision that the respondents were active students in their schools. The questionnaires were distributed on February 1, 2021, and completed on February 17, 2021. The number of valid questionnaires was 498 pieces. There were 222 male respondents (44.8%) and 276 female students (55.2%) with 221 students majoring in natural science (44.2%) and social science majors as many as 277 people (55.8%), whose composition (11.8% class 10, 46.8% class 11 and

41.4% class 12). Respondents were informed about the purpose and content of the research by the researcher. Respondents in this study were conducted voluntarily. The following is a Table 1 of respondent information in this study:

Table 1. Respondent information

No	Description		Number	%
1	Gender	Male	222	44.8
		Female	276	55.2
2	Level Class	10	59	11.8
		11	233	46.8
		12	206	41.4
3	Major	Natural Science (IPA)	221	44.4
		Social Science (IPS)	277	55.6
4	School Location	Tangerang districts	4	
		Tangerang City	5	
		South Tangerang City	4	

The questionnaire uses a Likert scale. The Likert scale is a psychometric scale commonly used in questionnaires, and the most widely used scale in research is in the form of surveys. When responding to questions on a Likert scale, respondents determine their level of agreement with a statement by choosing one of the available options on a scale of 1 to d. 5.

5. Results and Discussion

5.1. Descriptive Analysis

The results of processing descriptive statistical data can be seen in Figure 1 and Figure 2.

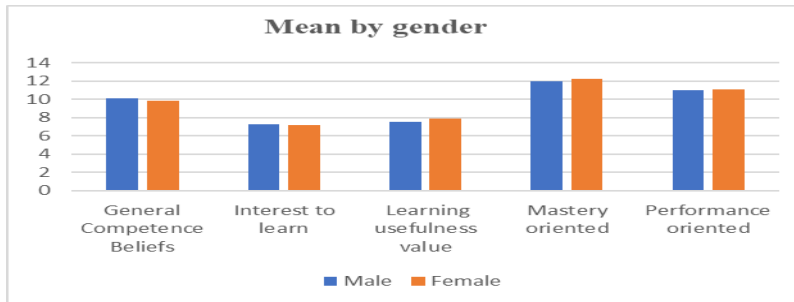


Figure 1. Mean motivation score by gender

From Figure 1, the highest indicator of motivation based on gender is mastery oriented, while the lowest indicator is interest to learn. This shows that students feel it is important to be mastery in what is learned, and it is important to achieve better performance in school, while the interest to learn still needs to be improved.

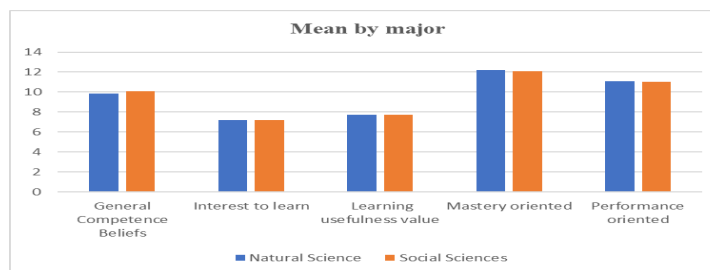


Figure 2. Mean motivation score by major

From Figure 2 the highest indicator of motivation based on major is mastery oriented, while the lowest indicator is interest to learn. This finding shows that the average of the highest indicators of motivation based on gender has the same results as the average of the highest indicators based on major.

In general, from Figures 1 and 2 shows the following results:

- a. General competence beliefs
In the male gender, the mean value of general competence trust is 10.07 while for females it is 9.89 (Figure 1). For students majoring in science, the mean value of general competence trust is 9.85, while in social studies it is 10.07 (Figure 2).
- b. Interest to learn
In the male gender, the mean value of interest to learn is 7.28 while for females it is 7.16 (Figure1). For students majoring in science, the mean Interest to learn value is 7.23, while in social studies it is 7.19 (Figure 2)
- c. Learning usefulness value
In the male gender, the mean value of the learning usefulness value is 7.57 while for the female it is 7.87 (Figure 1). For students majoring in science, the mean learning usefulness value is 7.73, while in social studies it is 7.75 (Figure 2).
- d. Mastery oriented
In the male gender, the mean value of the mastery-oriented is 11.97 while for the female it is 12.28 (Figure1). For students majoring in science, the mean mastery-oriented value is 12.23, while in social studies it is 12.06 (Figure 2).
- e. Performance oriented
In the male gender, the mean performance-oriented score is 11.04 while for the female it is 11.07 (Figure 1). For students majoring in science, the mean performance-oriented value is 11.09, while in social studies it is 11.03 (Figure 2).

From the descriptive analysis, it can be stated that the largest mean value is found in the mastery-oriented indicator, either by gender or by major. While the lowest mean value was found in the indicator on interest to learn. This shows the low interest to learn during the pandemic by using online learning methods.

5.2. Inferential Statistical Analysis

This study uses the Manova test, where Manova is a statistical test used to measure the effect of independent variables on a categorical scale on several dependent variables at the same time on a quantitative data scale.

5.2.1. Covariance variance matrix similarity test

The similarity test of the covariance variance matrix can be carried out using the Box's M Test. The results of the analysis of the variance-covariance matrix similarity test can be seen in table 1.6. If the variance/covariance of each group is the same, it can be concluded that: (1) the sample comes from the same population and (2) the sample variance is the same as the population variance, so that the sample size meets the requirements. The Table 2 below shows the similarity test of the covariance variance matrix.

Table 2. Test of the covariance variance matrix (Gender)

Box's Test of Equality of Covariance Matrices^a	
Box's M	31.091
F	2.050
df1	15
df2	897620.229
Sig.	.09

Based on Table 2 obtained a significance of 0.09 (> 0.05). Thus, it can be concluded that at the 5% significance level the variance of the covariance variables is the same (homogeneous). Likewise, for the homogeneity test based on majors, a significance of 0.082 (> 0.05) was obtained. Thus, it can be concluded that at the 5% significance level the variance of the covariance variables is the same (homogeneous). After the two hypothesis test requirements were met, it was continued with the Manova hypothesis test.

5.2.2. Multivariate Measures

There are several statistical tests used in MANOVA, the most frequently used are Wilks' Lambda, Pillai's trace, Hotelling-Lawley trace, and Roy's largest root. The results of the multivariate test can be seen in the Table 3 and 4.

Table 3. Multivariate tests (by gender)

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	.989	9232.535 ^b	5.000	492.000	.000
	Wilks' Lambda	.011	9232.535 ^b	5.000	492.000	.000
	Hotelling's Trace	93.827	9232.535 ^b	5.000	492.000	.000
	Roy's Largest Root	93.827	9232.535 ^b	5.000	492.000	.000
Gender	Pillai's Trace	.026	2.581 ^b	5.000	492.000	.026
	Wilks' Lambda	.974	2.581 ^b	5.000	492.000	.026
	Hotelling's Trace	.026	2.581 ^b	5.000	492.000	.026
	Roy's Largest Root	.026	2.581 ^b	5.000	492.000	.026

a. Design: Intercept, Gender

b. Exact statistic

Table 3 is the result of the calculation of the multivariate test with a significance of 0.05. The table shows that the four MANOVA statistical tests have the same Sig value, which is 0.026 (< 0.05). This states that there is sufficient evidence to reject H_0 and accept H_a . Thus, gender affects motivation.

Table 4. Multivariate tests (by Major)

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	.989	9214.812 ^b	5.000	492.000	.000
	Wilks' Lambda	.011	9214.812 ^b	5.000	492.000	.000
	Hotelling's Trace	93.646	9214.812 ^b	5.000	492.000	.000
	Roy's Largest Root	93.646	9214.812 ^b	5.000	492.000	.000
Major	Pillai's Trace	.009	.852 ^b	5.000	492.000	.513
	Wilks' Lambda	.991	.852 ^b	5.000	492.000	.513
	Hotelling's Trace	.009	.852 ^b	5.000	492.000	.513
	Roy's Largest Root	.009	.852 ^b	5.000	492.000	.513

a. Design: Intercept +Major

b. Exact statistic

Table 4 is the result of the calculation of the multivariate test with a significance of 0.05. The table shows that the four MANOVA statistical tests have the same Sig value, namely 0.513 (> 0.05). This states that there is sufficient evidence to accept H_0 and reject H_a . Thus, majors do not affect motivation.

The next stage is the Tests of Between-Subjects Effects, which aims to examine the following. Does gender affect general competence beliefs, interest to learn, the learning usefulness value, mastery oriented, and performance

oriented on average? In other words, based on table 5, it will be examined whether the two sexes show differences in general competence beliefs, interest to learn, the learning usefulness value, mastery oriented, and performance oriented.

Table 5. Manova result (by gender)

Tests of Between-Subjects Effects						
Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	General competence beliefs	.040 ^a	1	.040	.028	.869
	Interest to learn	.078 ^b	1	.078	.104	.749
	Learning usefulness value	3.968 ^c	1	3.968	1.572	.220
	Mastery oriented	3.214 ^d	1	3.214	.863	.361
	Performance Oriented	3.214 ^e	1	3.214	.651	.427
Intercept	General competence beliefs	3151.240	1	3151.240	2198.887	.000
	Interest to learn	1215.278	1	1215.278	1628.989	.000
	Learning usefulness value	1962.768	1	1962.768	777.351	.000
	Mastery oriented	4690.414	1	4690.414	1259.344	.000
	Performance Oriented	4028.014	1	4028.014	815.590	.000
Gender	General competence beliefs	.040	1	.040	.028	.869
	Interest to learn	.078	1	.078	.104	.749
	Learning usefulness value	3.968	1	3.968	1.572	.220
	Mastery oriented	3.214	1	3.214	.863	.361
	Performance Oriented	3.214	1	3.214	.651	.427
Error	General competence beliefs	40.127	28	1.433		
	Interest to learn	20.889	28	.746		
	Learning usefulness value	70.698	28	2.525		
	Mastery oriented	104.286	28	3.724		
	Performance Oriented	138.286	28	4.939		
Total	General competence beliefs	3781.000	30			
	Interest to learn	1477.000	30			
	Learning usefulness value	2328.000	30			
	Mastery oriented	5575.000	30			
	Performance Oriented	4829.000	30			
Corrected Total	General competence beliefs	40.167	29			
	Interest to learn	20.967	29			
	Learning usefulness value	74.667	29			
	Mastery oriented	107.500	29			
	Performance Oriented	141.500	29			

From Table 5, it can be seen in the row of the gender variable, that the value of Sig. of the dependent variable, competence belief shows a value of 0.869 (> 0.05). Because of the value of Sig. greater than the significance level of alpha = 0.05, it is concluded that H0 is accepted, this shows that the mean student general competence belief does not show a clear difference between the two sexes. Likewise, the other four indicators show a value of > 0.05. Thus, interest to learn, learning usefulness value, mastery oriented, and performance orientation goal did not show a clear difference between the two sexes.

Furthermore, based on Table 6 the following will be examined. Do the major affect general competence beliefs, interest to learn, the learning usefulness value, mastery oriented, and performance oriented (on mean)? In other words, from the two majors, do they show differences in general competence beliefs, Interest to learn, learning usefulness value, Mastery oriented and performance oriented.

Table 6. Manova result (by major)

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III		Mean Square	F	Sig.
		Sum of Squares	df			
Corrected Model	General competence beliefs	5.855 ^a	1	5.855	2.491	.115
	Interest to learn	.173 ^b	1	.173	.135	.713
	Learning usefulness value	.054 ^c	1	.054	.023	.878
	Mastery oriented	3.428 ^d	1	3.428	.987	.321
	Performance Oriented	.407 ^e	1	.407	.076	.783
Intercept	General competence beliefs	48724.192	1	48724.192	20731.005	.000
	Interest to learn	25558.406	1	25558.406	19910.801	.000
	Learning usefulness value	29412.102	1	29412.102	12841.785	.000
	Mastery oriented	72498.320	1	72498.320	20882.067	.000
	Performance Oriented	60064.455	1	60064.455	11220.536	.000
Major	General competence beliefs	5.855	1	5.855	2.491	.115
	Interest to learn	.173	1	.173	.135	.713
	Learning usefulness value	.054	1	.054	.023	.878
	Mastery oriented	3.428	1	3.428	.987	.321
	Performance Oriented	.407	1	.407	.076	.783
Error	General competence beliefs	1165.751	496	2.350		
	Interest to learn	636.688	496	1.284		
	Learning usefulness value	1136.010	496	2.290		
	Mastery oriented	1722.012	496	3.472		
	Performance Oriented	2655.129	496	5.353		
Total	General competence beliefs	50692.000	498			
	Interest to learn	26531.000	498			
	Learning usefulness value	30962.000	498			
	Mastery oriented	75103.000	498			
	Performance Oriented	63509.000	498			
Corrected Total	General competence beliefs	1171.606	497			
	Interest to learn	636.861	497			
	Learning usefulness value	1136.064	497			
	Mastery oriented	1725.440	497			
	Performance Oriented	2655.536	497			

From the Table 6 can be seen in the row of the major variable, that the value of Sig. of the dependent variable competence belief shows a value of 0.115 (> 0.05). Because of the value of Sig. greater than the significance level of alpha = 0.05, it is concluded that H0 is accepted, this shows that the mean student general competence belief does not show a clear difference between the two majors. Likewise, the other four indicators show a value of > 0.05. Thus, Interest to learn, learning usefulness value, mastery oriented, and performance oriented did not show a clear difference between the two majors.

6. Conclusion

The purpose of this study was to examine whether there is an influence of gender and major factor on students' learning motivation when studying online during the covid-19 pandemic. Analysis on descriptive statistical shows that the largest average value of the motivation variable is found in the mastery-oriented indicator, either by gender or by major. While the lowest average value was found in the indicators of Interest to learn. The findings show that it is important for students to understand what is learned in school and students want to learn as much as possible about their lessons. Besides that, it is interesting that the research findings show a paradox, where it is important for students to learn as well as possible in school, although feelings of boredom are often encountered when studying in

class in online system. This shows students are longing for offline learning that allows interacting with peers and teachers, where they can express enthusiasm when in class, through dynamic face-to-face interactions (Clayton, K.; Blumberg, F, 2010).

The research show that gender affects students' learning motivation when learning online. The average value for the general competence belief indicator (male=10.07, female=9.89) and Interest to learn (male 7.28, female=7.16), which shows the mean value for male are taller than female. Meanwhile, the other 3 indicators show that the mean value of female is greater than that of men, namely the learning usefulness value (female=7.87, male=7.57); Mastery oriented (female=12.28, male=11.97); and for performance oriented (female=11.07, male=11.04).

The research findings show that the major does not affect students' learning motivation when studying online. This shows that the learning motivation of science students and social science students is not influenced by major. The description of the forms of student learning motivation in natural science and social sciences as shown through indicators of competence belief, Interest to learn, learning usefulness value, mastery oriented, and performance oriented are basically not significantly different. Students majoring in natural science and social science have the same desire to understand what is learned in school, want to learn as much as possible about their subject, perseverance in class, pride in their grades even though they are not as good as other students in the class. They also realize that learning in school (although currently online) is useful for the future, and what is learned in school (although currently online) will be useful. Online learning conditions continue to trigger them to become the best students, and strive to be better than other students, because one of the main goals of students in both science and social studies majors is to get the best grades. This is the cause of the emergence of motivation from within students to learn, where students have beliefs about what they should do as students.

However, this study also has some limitations. The main focus of this research is on motivation, without dividing motivation into intrinsic motivation and extrinsic motivation. For further research, it is necessary to consider the motivation variables into intrinsic motivation and extrinsic motivation.

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Biographies

Linda Theresia is a lecturer in Institut Teknologi Indonesia, Indonesia. She received her Doctor in the field of Administrative Science from Universitas Indonesia 2015. She got her master's degree in industrial engineering from Institut Teknologi Bandung, Indonesia in 1997. Her research interests are in the area of Engineering Management, Strategy, Ergonomic & Human Factors.

Gadiah Ranti is a lecturer in Department of Industrial Engineering, Institut Teknologi Indonesia, Indonesia. She received her Magister in the field of Industrial engineering from Universitas Indonesia in 2004. Her research interests are in the area of Quality Improvement and Marketing Management.

Ni Made Sudri is a lecturer in Department of Industrial Engineering, Institut Teknologi Indonesia, Indonesia. She received her Magister in the field of Industrial engineering from Universitas Indonesia in 2004. Her research interests are in the area of Quality Engineering.