*Advances in Social Science, Education and Humanities Research, volume 608*
**Proceedings of the 8th International Conference on Technical and Vocational Education and Training (ICTVET 2021)**

# Correlation Between *Online* Learning Obstacles and Students' Learning Outcomes in Engineering Drawing Courses

Yaumal Arbi[1,*], Weni Jumadi[2], Risma Apdeni[3]

[123] *Universitas Negeri Padang*
[*] *Corresponding author. Email: Yaumalarbi@ft.unp.ac.id*

**ABSTRACT**
This research is a quantitative research with a descriptive approach that aims to determine how big the relationship betweenlearning constraints and student learning online outcomes in the Engineering Drawing course. The population of this research is 5 people teaching Engineering Drawing courses and students of the Building Engineering Education Study Program, Civil Engineering Department in 2020 who have taken Engineering Drawing courses as many as 59 people.Data was collected using a scale Likert consisting of 4 answer choices. From the results of data analysis, it can be concluded that the results of the correlation between technology and teacher characteristics on student learning outcomes do not have a significant relationship with obtaining a correlation coefficient score of 0.350 r count. The correlation between technology and student characteristics on student learning outcomes does not have a significant relationship by obtaining a correlation coefficient score of rcount -0.144.

***Keywords:*** *Correlation between Online Learning Obstacles and Students' Learning Outcomes in Engineering Drawing Courses.*

## 1. INTRODUCTION

The Building Engineering Education Study Program is a study program that aims to produce educational graduates who have excellence and competitiveness in attitudes, insights, academic and professional competencies in the field of building engineering. Academically able to improve themselves and adapt to the growth of the world of work and society. Also able to advance Science and Technology (IPTEK) in the fields of civil engineering, buildings, and sanitation plumbing.

The Building Engineering Education Study Program has several courses to prepare these competent graduates. One of the courses is the Engineering Drawing course. The Engineering Drawing course is a compulsory subject in the Building Engineering Education Study Program. Technical Drawing is the language of drawing that engineers and designers use in the industrial world to express and inscribe ideas and ideas[5].

### *1.1 Engineering Drawing Course*

The image symbolizes a tool to reveal the direction of people. Meanwhile[2], technical drawing is a line design frame of mind. Technical drawings contain explanations of objects and constructions in accordance with agreed national and international technical standards. The learning process of Technical Drawing consists of theory which includes the basic principles in engineering drawings of buildings which are then applied to the practice of drawing. The learning materials presented in one semester consist of introduction to drawing tools and outlines (picture headers), symbols, technical drawing etiquette, scale functions, standardization of letters and numbers, projection images, perspective drawings. Engineering drawing courses are the most basic or early courses in the lecture process, so students are required to be able to understand what the lecturer is saying to make it easier for drawing courses at the next level [14].

### *1.2 Learning Outcomes*

With experience and the ability to think, it is also called learning. Spears [1] explains that learning is observing, researching, starting one's own thing, listening, and following directions. Meanwhile [4] learning is the process of achieving a goal or not a mere goal. Strengthening behavior and experience is also known as learning. [7] suggests that individual experience is the result of learning because they interact with their environment so that they will obtain a change in nature and behavior. The cognitive, affective, and psychomotor fields are essentially changes experienced by students in learning outcomes [8]. learning knowledge passed by students is related to student learning outcomes. So learning outcomes are something that is obtained by someone in the form of values, appreciation and awards given from every change he faces[12]. There are three domains of learning outcomes according to Bloom [10], namely the cognitive domain, affective domain, and psychomotor domain.

## 2. METHODS

"Interpreting the population as a generalization area consisting of objects and subjects that have their respective properties and characteristics, the researcher formalizes it for the sake of studying and after making conclusions" [15]. The population in this study is the Engineering Drawing course which will be distributed in a questionnaire as many as 5 people and the Building Engineering Education Study Program students in 2020 who have taken the Engineering Drawing course as many as 63 people. According to [9] suggests that the sample is part of the number and characteristics possessed by the population. Roscoe in explains that the number of samples that can be used in research ranges from 30 to 500 people. From the description above, the samples taken are 5 teachers of Engineering Drawing courses and 63 students from the 2020 Building Engineering Education Study Program students who have taken Engineering Drawing courses, from a predetermined sample of 63 people, 3 of them are on leave from college. and 1 person has dropped out of college so it is not included in the sample. Therefore, the sample in this study was 59 people. The sampling technique in this study is census/total sampling according to [9]: The data collection tool used in this study was in the form of a questionnaire distributed to students and lecturers. After the questionnaires are distributed to students and lecturers, they can fill in the data based on the available answer columns. In addition, to measure and find out the answers to each instrument, a rating scale can be used. The scale is *Likert* used to measure attitudes, opinions and perceptions of a person or group of people about social phenomena. The *Likert* four-scale, scale is used because it has the advantage of being able to capture research data more accurately because the answer category does not have an alternative in the form of neutral or dubious [11].

Validity testing is used to determine the validity or invalidity of an item. The use of the formula to process the validity test data from the questionnaire results that have been filled out by the teacher is the Aiken'S V method [21]. The formula proposed by Aiken'S V is as follows [5].

$$V = s / [n(c-1)] \quad (1)$$

$$S = r – lo \quad (2)$$

Lo = the lowest validity score (for example 1)

C = the highest validity assessment number (for example 5)

R = the number given by the evaluator

The use of the formula to process the validity test data from the questionnaire results that have been filled out by students is determined by using the SPSS application, by collecting data and entering it into the SPSS application. The results obtained when r arithmetic r table at 5% significance then the item can be said to be valid, and if r arithmetic r table then the item is invalid [20]. Reliability deals with issues of trustworthiness or accuracy. A test has a high level of confidence if the test results are relatively constant or more or less the same. Reliability can use the SPSS application by entering data. If the value of *cron bach's alpha* > 0.60, the questionnaire is declared reliable or consistent. If the value of *cron bach's alpha* < 0.60, the questionnaire is declared unreliable or inconsistent [19].

Descriptive analysis aims to describe data from each variable presented in the form of a frequency distribution. To find out the description of the data for each variable, the average score (*Mean*), the (*Median*), mode (*Mode*), maximum value, minimum value and standard deviation (*Std. Deviation*) analysis using *SPSS* version 17.0. Test requirements analysis aims to test whether the collected data meet the requirements for analysis. The normality test was conducted to determine whether the distribution of the data was normally distributed or not. The test was carried out using the *Kolmogorof-Smirnov test* with *Alpha* (0.05). The linearity test is intended to determine whether two variables have a linear relationship or not. In this study, linearity test was carried out using the program *SPSS* Version 17.0. This study has an associative analysis in the form of research hypotheses which were carried out to determine the relationship between technology and teacher characteristics (X1) and the relationship

between technology and student characteristics (X2) on learning outcomes in the Engineering Drawing course (Y). Linear regression analysis was chosen because it consists of one independent variable and one dependent variable. The calculation of the coefficient of determination is carried out to determine the magnitude of the influence of Variable X1 (Technology and Characteristics of Teachers), X2 (Technology and Characteristics of Students), on Variable Y (learning outcomes in the Engineering Drawing course).

## 3. RESULTS AND DISCUSSION

Data description is a method used to find out the results of research by presenting power that is easy to understand and clear, so that conclusions can be drawn. This study consists of two independent variables (X) namely the characteristics of the teacher (XI) and the characteristics of the students (X2), and the dependent variable (Y) the results of learning of *online* Engineering Drawings.

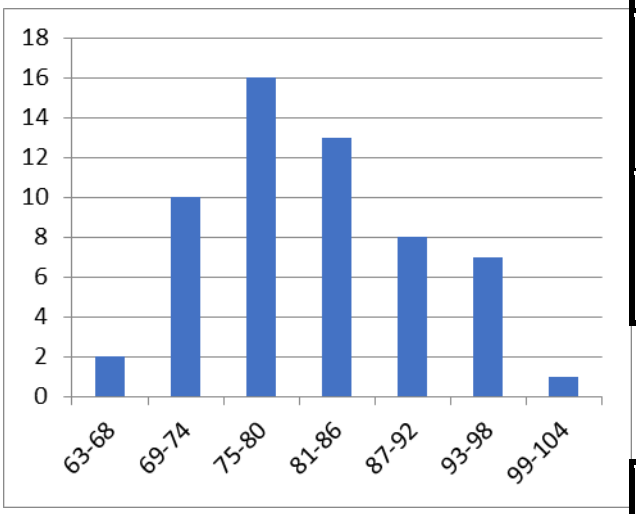


**Figure 1.** Frequency graph and student characteristics

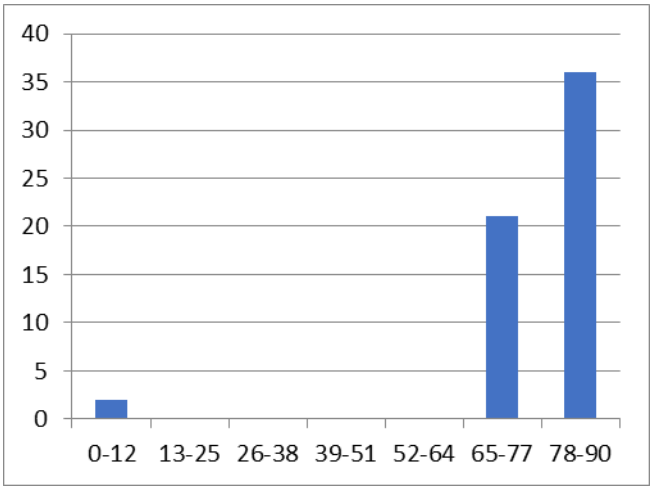


**Figure 2.** Frequency Distribution of Learning Outcomes *Online*

**Table 1.** *Output of* Teacher Test Results

**Correlations**

| | | religusitas | agresifitas |
|---|---|---|---|
| religusitas | Pearson Correlation | 1 | .350 |
| | Sig. (2-tailed) | | .564 |
| | N | 5 | 5 |
| agresifitas | Pearson Correlation | .350 | 1 |
| | Sig. (2-tailed) | .564 | |
| | N | 5 | 59 |

**Table 2.** *Output of* Student Test Results

**Correlations**

| | | religusitas | agresifitas |
|---|---|---|---|
| religusitas | Pearson Correlation | 1 | -.144 |
| | Sig. (2-tailed) | | .277 |
| | N | 59 | 59 |
| agresifitas | Pearson Correlation | -.144 | 1 |
| | Sig. (2-tailed) | .277 | |
| | N | 59 | 59 |

From the analysis requirements test on the normality test, the data from the two variables in this study were normally distributed with a significant probability value for the X1 variable and 1.057 for the Y variable, for the X2 variable it was 0.710 and the Y variable was 1.279. This means that the significant

value of probability 0.05. For the linearity test results, the two variables have a linear pattern with a significant value *(Deviation of Linearity)* X1 is 0.272 0.05 and X2 is 0.142 0.05. After testing requirements analysis, this research is continued by doing a hypothesis with the results of the correlation between X1 and Y is 0.350, the correlation between X2 and Y is 0.144. From the results of the research above, it is related to relevant research from [3], [6] with the conclusion that the research results have no effect on learning outcomes.

## 4. CONCLUSIONS

1. There is no correlations related to *online* learning constraints, teacher characteristics and student learning outcomes in the Engineering Drawing course, Building Engineering Education Study Program.

2. There is no correlations related to *online* learning constraints on student characteristics and student learning outcomes in the Engineering Drawing course of the Building Engineering Education Study Program.

## AUTHORS' CONTRIBUTIONS

Correlation between online learning obstacles and students' learning outcomes in engineering drawing courses.

## REFERENCES

[1] A.M, Sardiman. 2000.Interaksi & Motivasi Belajar Mengajar. Jakarta: Rajawali Press.

[2] Fakhri, Fadhil, dkk. 2018. " Pengembangan Media Pembelajaran Berbasis Animasi Pada Mata Kuliah Gambar Teknik Jurusan Teknik Sipil Universitas Negeri Padang". *Journal of Civil Engineering and Vocational Education.* (Volume 5 nomor 4). Hlm 3-4.

[3] Fajrin, Okky Rachma. (2015). ''Hubungan Tingkat Penggunaan Teknologi Mobile Gadget dan Eksistensi Permainan Tradisional Pada Anak Sekolah Dasar''. *Jurnal Idea Societa* (Volume 2 no 6). Hlm 27-29.

[4] Hamalik, Oemar. (2010). Proses Belajar Mengajar. Jakarta: PT Bumi Aksara

[5] Hendryadi. 2014. ''Content Validity (validitas isi)''.https://teorionline.files.wordpress.com/2014/07/010614-content-validity.pdf diakses 23 Juli 2021.

[6] Karwati, Euis. 2014. Pengruh Pembelajaran Elektronik (Eelarning) terhadap Mutu Belajar Mahasiswa. Jurnal Penelitian Komunikasi Vol. 17 No. 1, Juli 2014: 41-54

[7] Slameto. (2012). Belajar dan Faktor-Faktor yang mempengaruhi. Jakarta: Rineka Cipta.

[8] Sudjana, Nana. 2005. Dasar-dasar Proses\Belajar. Mengajar. Bandung. Sinar Baru. Algensi.

[9] Metode Penelitian Kuantitatif, Kualitatis, dan R&D". Bandung: Alfabeta.

[10] Irwanti.Y.D 2011. Efektivitas Penggunaan Metode Pembelajaran SCL Berbasis Blog Dalam Pembelajaran TIK Untuk Meningkatkan Hasil Belajar Siswa Kelas XI Semester 1 Di SMA Negeri 1 Piyungan Bantul. Yogyakarta: UNY.

[11] S. Syahril, N. Jalinus, R. A. Nabawi, and Y.Arbi, "The Create Skills of Vocational Students to Design a Product: Comparison Project Based Learning Versus Cooperative Learning-Project Based Learning," Adv. Soc. Sci. Educ. Humanit. Res., vol. 299, no. 5th UPI International Conference on Technical and Vocational Education and Training (ICTVET 2018) The, pp. 316–320, 2019.

[12] N. Jalinus, Syahril, R. Azis and Y. Arbi, "How Project-Based Learning and Direct Teaching Models Affect Teamwork and Welding Skills Among Students," International Journal of Innovation, Creativity and Change, vol. 11, no. 11, pp. 85-111, 2020.

[13] O. Pebiani and Y. Arbi, "Faktor Kesulitan Berbasis Dalam Jaringan (Daring) Pada Mata Pelajaran Konstruksi dan Utilitas Gedung Siswa Kelas Xi Smk Negeri 1 Padang", *ASCE*, vol. 2, no. 1, pp. 73-79, May 2021.

[14] R. Putra and Y. Arbi, "Persepsi Mahasiswa Program Studi Pendidikan Teknik Bangunan Unp Menggunakan Program Autocad 2007", *ASCE*, vol. 2, no. 2, pp. 215-220, Jun. 2021.

[15] Kolb, A David and Alice Y. Kolb. The Kolb Learning Style Inventori 4.0: Guide to Theory, Psychometrics Research &Applications, Experience Based Learning Systems, Inc. 2016.

[16] A. Ardiyan, F. Rizal, and R. Apdeni, "Kontribusi Kesiapan Belajar Terhadap Hasil

Belajar Mata Kuliah Gambar Bestek Bangunan Mahasiswa Pendidikan Teknik Bangunan Ft Unp", *ASCE*, vol. 1, no. 1, pp. 1-5, Apr. 2020.

[17] M. Yati and R. Body, "Persepsi Mahasiswa Jurusan Teknik Sipil Ft-UNP Terhadap Pelaksanaa Perkuliahan Gambar Teknik Secara Daring Era Pandemi Covid-19", *ASCE*, vol. 2, no. 1, pp. 181-184, Mar. 2021

[18] Nugroho, G. Bambang. 2020. " Peran Guru Bimbingan dan Konseling Dalam Pendampingan Belajar Siswa Selama Pembelajaran Online". *Jurnal Psiko-Edukasi.* (Volume 18 issue 1). Hlm 75-76.

[19] Pangondian, Roman Ardianto, dkk. 2019. " Faktor- Faktor Yang Mempengaruhi Kesuksesan Pembelajaran Daring dalam Revolusi Industri 4.0". *Seminar Nasional Teknologi Komputer & Sains (SAINTEKS).* www.prosidingseminar-id.com diakses 28 Oktober 2020.

[20] Raharjo, Sahid. 2019. " Cara Melakukan Uji Reliabilitas Alpha Cronbach's Dengan SPSS". www.spssindonesia.com diakses 13 November 2020.

[21] Rose, Sr. M. 2020. "What are Some Key Attributes of Effective Online Teachers?". *Journal of open, flexible and distance learning.* (Volume 22 no 2). Hlm 33.