Correlation between student perception of learning model to learning outcomes in instructional methodology course at Universitas Negeri Padang

R Yogica¹, Lufri¹, R Fitri¹, and A Muttaqin²

¹Department of Biology, Faculty of Mathematics and Natural Sciences, Universitas Negeri Padang, Indonesia
²Department of Science Education, Faculty of Mathematics and Natural Sciences, Universitas Negeri Padang, Indonesia

*Corresponding author: relsasyogica.1103992@gmail.com

Abstracts. Education for adults is different from education in secondary schools. The role of the lecturer is not only as a provider of teaching material, but as a learning facilitator. Thus, the basic assumption in adult education is that students have studied or at least have basic knowledge before attending lectures. Based on their basic knowledge, a psychological response appears within them, namely a perception of what will be followed during the lecture process. In the Department of Biology, Padang State University, we have implemented a model that we have developed, this model is a modified jigsaw learning model. Students' perceptions are formed towards this model during lectures. We have calculated using a questionnaire about students' perceptions of the learning model, and also count the correlation between this model and their learning outcomes (LO). We collect data using questionnaires and exam questions. The conclusion from our observations is the correlation value between students' perceptions and their learning scores.

1. Introduction

Education is an activity that last a lifetime. This activity is not only an activity to instill concepts in students about the subject matter, but also how to instill a sense of humanity in them [1]. Then, to realize the results of education are truly qualified humans, all parties must play a role in supporting the success of education. One of them is university.

University is the highest level of formal education. Although most of the financial management is controlled by the state, the government cannot interfere in determining how the implementation of academic activities in it [2]. Educational activities at universities must be carried out as well as possible. One who plays a very important role for this success is a lecturer [3]. Lecturers are the main drivers of learning activities at universities.

The implementation of learning by lecturers cannot be separated from strategy to improve the quality of the process and learning outcomes. Therefore, lecturers apply many innovations in learning as a form of effort for educational reform [4] according to the target. These targets are based on the evaluation of previous activities. At last, the target is getting better over time. This innovation in education is very important to do, because until now education has become one of the bases for improving human quality [5]. One of the innovations that can be applied by lecturers is a modification of the learning model,
according to student needs. We modify the cooperative learning model (Jigsaw) to be applied during learning, so that students understand the concept better. We apply this modified learning model at Universitas Negeri Padang in the Instructional Methodology Course.

On the other hand, university education includes the criteria for adult education. Where most of the student characters have been formed. They already have a sense of need for information, responsibility for mastering information, and strengthening intrinsic motivation [6]. This causes students to have a perception of what they face in learning. Perception will lead them to like or dislike learning activities by considering their past experiences or based on how their senses perceive the stimuli [7]. This is very important for the lecturer to know before deciding whether the learning innovation to be carried out is truly effective or not. This study aims to quantitatively calculate the relationship between students' perceptions of the learning model we use in lectures and their learning outcomes. This research is important to do to determine the direction of innovation in the use of learning models based on student perceptions. Previous research states that there is an effect of perception on new learning outcomes [8].

2. Methods

This research is a correlational research. Correlational research collects data from two or more variables [9] and then calculate the value of the relationship between these variables [10]. Researchers applied the Jigsaw-modified learning model in the research class for one semester. Then at the end of the lecture using a test, the researcher calculates the student's score and by using a questionnaire the researcher calculates the student's perceived value. We have developed this learning model in previous studies, as well as test instruments and questionnaires. By using the correlation formula $R_{xy}$, we calculated the value of the relationship between students' perceptions of the model and their learning outcomes. To increase confidence in the results, we triangulated using Excel (=correl(array1;array2)). The value obtained from the calculation is then interpreted in a way:

- 0.000 – 0.199 : The correlation is very weak
- 0.200 – 0.399 : The correlation is weak
- 0.400 – 0.599 : The correlation is moderate
- 0.600 – 0.799 : The correlation is strong
- 0.800 – 1.000 : The correlation is very strong

We use the $R_{xy}$ formula to calculate the correlation between variables. the formula can be seen in the following formula.

$$R = \frac{n\sum XY - (\sum X)(\sum Y)}{\sqrt{(n\sum X)^2 - (\sum X)^2}(n\sum Y)^2 - (\sum Y)^2)}$$

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3. Results and Discussion

Student learning outcomes for one semester can be seen in Figure 1.

![Figure 1](image1.png)

**Figure 1.** The distribution of student scores after attending the Instructional Methodology Course at Department of Biology, Universitas Negeri Padang using the modified Jigsaw model.

The distribution of students' perceptions of the learning model used for one semester can be seen in Figure 2.

![Figure 2](image2.png)

**Figure 2.** The value of students' perceptions of the learning model used during the Instructional Methodology Course at Biology Department, Universitas Negeri Padang.

In Figure 1, we can see the range of student learning outcomes that we convert to a scale of 4. There are 3 students who get a score of 2.24 to 2.73. There are 14 students with a score of 2.73 to 3.22, 13 students with a value of 3.22 to 3.71 and 7 students from 3.71 to 4.20. The average value obtained by students is 3.30. On a qualitative scale, this score is categorized as very satisfying. This student achievement means that during lectures students can understand concepts well, because of the teacher's competences to teach them [11], so they can answer exam questions well. However, the achievement of student learning outcomes cannot be separated from other factors that influence during learning. For example, physical environmental factors [12] and relationships between colleagues [13], learning based on ICT [14], emotional linked students-teacher [15], self-afficacy beliefs [16-17], school facilities [18].

In Figure 2, we can see the distribution of students' perceptions of the learning model used during lectures. We used a scale 4 questionnaire to assess this, so even this perception score was on a scale 4. The perception value of 2.70 to 3.10 was 15 students, the perception value of 3.10 to 3.50 was 8 students, the value of 3.50 10 students up to 3.90 and a score of 3.90 to 4.30 as many as 4 students. The average student perception score was 3.38. Perceptual differences are not determined by the abilities of each student [19]. The criteria for this perception questionnaire include the suitability of the learning model with the character of the material, the suitability of the learning model with the students' abilities, the suitability of the implementation of the learning model with the availability of time, increased student
interest and motivation, and increased specific abilities in learning. In addition, perception can also increase because of the fun learning [20-21], introduce the pre-learning model [22-23], interaction with teacher [24], type of exam held by the lecturer [25], student’s own beliefs [26].

Figure 3. The relationship between student perceptions of the modified Jigsaw learning model used during learning in the Instructional Methodology Course in Department of Biology, Universitas Negeri Padang.

Figure 3 shows the relationship between perceived value and student learning outcomes in graphical. Meanwhile, based on the calculation using the product moment correlation coefficient formula ($R_{xy}$), we got a quantitative value of 0.57 (moderate correlation). This means that the perception and value of student learning outcomes is correlate [27], even not strongly related, or even very strong. Changes that occur in perceptions may change learning outcomes, but they may also have no effect at all. We estimate that this happens because the scores obtained by students are biased by other things such as the complexity of the material being taught and the students' abilities.

4. Conclusion
This research has revealed a fact about the relationship between students' perceptions of the learning model used and their learning outcomes. Although statistical calculations do not find a strong or very strong relationship, at least this research has proven that there is a relationship between the two variables. The relationship that we found was a moderate relationship, meaning that there was a possibility of changes in the value of learning outcomes along with changes in the learning model used.

References
[1] Idris S and Tabrani Z A 2017 J. Edukasi J. Bimbing. Konseling 3 96–113
[2] Irianto S 2012 Otonomi Perguruan Tinggi, Suatu Keniscayaan (Jakarta: Yayasan Pustaka Obor Indonesia)
[3] Pranitasari D 2019 Keterikatan Kerja Dosen Sebagai Kunci Keberhasilan Perguruan Tinggi (Yogyakarta: Deepublish)
[4] Fadlan L A H 2020 Al-Kahfi J. Pendidik. Agama Islam 5 68–79
[5] Kusnandi K 2019 J. Wahana Pendidik. 4 132–44
[6] Sufirmansyah S 2019 Didakt. Relig. 6 351–70
[7] Rogers B 2017 Perceptions, A Very Short Introduction (Hampshire: Ashford Colour Press Ltd)
[8] Aburub F and Alnawas I 2019 Educ. Inf. Technol. 24 2145–58
[9] Anderson G 2002 Fundamental of Educational Research (London: RoutledgeFarmer)
[10] McBurney D H and White T L 2010 Research Methods (Wadsworth: Cangage Learning)
[11] Fauth B, Decristan J, Decker A-T, Büttner G, Hardy I, Klieme E and Kunter M 2019 Teach. Teach. Educ. 86 102882
[12] Wilson H K and Cotgrave A 2016 Struct. Surv.
[13] Taylor G and Ali N 2017 Educ. Sci. 7 35
[14] Fernandez-Gutierrez M, Gimenez G and Calero J 2020 Comput. Educ. 157 103969
[15] Buric I 2019 Learn. Individ. Differ. 70 12–20
[16] Perera H N and John J E 2020 Contemp. Educ. Psychol. 61 101842
[17] Datu J A D and Yuen M 2020 Child. Youth Serv. Rev. 116 105210
[18] Abott C, Kogan V, Lavertu S and Peskowitz Z 2020 J. Public Econ. 183 104142
[19] Amir M F, Fediyanto N, Rudyanto H E, Nur Afifah D S and Tortop H S 2020 Heliyon 6 e04052
[20] Duffull S B and Peterson A K 2020 Curr. Pharm. Teach. Learn. 12 1348–53
[21] Sun L, Ruokamo H, Siklander P, Li B and Devlin K 2021 Learn. Cult. Soc. Interact. 28 100457
[22] McKinley S K, Sell N M, Saillant N, Coe T M, Lau T, Cooper C M, Haynes A B, Petrusa E and Phitayakorn R 2020 J. Surg. Educ. 77 788–98
[23] Stephen L-A, Kostovich C and O’Rourke J 2020 Clin. Simul. Nurs. 47 25–31
[24] Corbin C M, Downer J T, Ruzek E A, Lowenstein A E and Brown J L 2020 J. Appl. Dev. Psychol. 69 101144
[25] Rudolph M, Gortney J S, Brownfield A, Caldwell D, Castleberry A, Le U M, Medina M S, Sease J M, Trujillo J, Welch A C and Daugherty K K 2020 Curr. Pharm. Teach. Learn. 12 255–64
[26] Wilson K L, Avery J S and Slack J 2020 Nurse Educ. Today 92 104491
[27] Roh Y S, Jang K I and Issenberg S B 2020 Collegian