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The effect of peer lesson strategy on learning outcomes of building construction and land measurement techniques

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ABSTRACT

Peer Learning is a teaching and learning strategy that involves groups of students working together to solve a problem, complete a task, or create a product. Putting students in groups and telling them to work together does not mean they know how to work cooperatively. This study aims to determine whether there is an effect of peer lesson learning strategies on learning outcomes in building construction subjects and land measurement techniques, concrete characteristics specification material, in-class X students majoring in modeling design, and building information of SMK Negeri 1 Lubuk Pakam. The study used quantitative research with experimental research type. The population size consists of 60 students from two classes and was taken by random sampling. The experimental class was given to the X-A class and the control class was assigned to X-B class. The instrument is used to determine student learning outcomes in the form of a multiple-choice test with 36 questions that have been tested for validity and reliability through point biseral correlation techniques. Data analysis used the t-test formula. The results show that the average post-test score obtained from the experimental class was 75.35 with a high category of 73.33% and the control class was 61.46 with a sufficient category of 76.67%. From the results of the hypothesis testing analysis with a significance level of 5%, the post-test values of the two classes were calculated t_count > t_table (6.27227 > 1.671). Ha accepted that a significant effect shows regarding the learning outcomes of building construction, and land measurement techniques were more effectively taught with peer lesson learning strategies than conventional learning models.

Keywords: Learning Outcomes, Peer Lesson Strategy, Building Construction, Land Measurement Techniques

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INTRODUCTION

Peer Learning is the process in which students learn with other students (Goldschmid & Goldschmid, 1976). This is usually facilitated through teaching and learning activities such as student-led workshops, study groups, peer-to-peer learning partnerships, and group work (Ramaswamy et al., 2001). Some benefits include the development of student collaboration and

communication skills, enhancement of student confidence, and the ability to take control of their learning (Chickering, 1991).

The crystallization of education for a better future, of course, begins with an effort to reconstruct the structure of the educational process itself (Yusuf, 2018). In the dynamics of modern learning, one of the most important components is the teacher, where educators play a very important role in the quality of education implemented (Wijaya et al., 2016). One of the formal education institutions that is expected to realize the goals of national education is the Vocational High School (SMK) which produces students who are skilled, capable, and ready to work in the business world (Sudira, 2016).

One of the majors in the field of expertise at SMK is building engineering which has expertise and competencies namely modeling design and building information systems (Syafei, 2019). Building modeling and information design competency is defined as a basic science in the field of building planning, implementation, and repair, which produces competitive technicians in the field of building drawings, and equips students with skills that are by the competencies of building drawing techniques, and students are taught to be competent in doing work as draftsmen in planning and implementing buildings, and being able to be entrepreneurial independently (Hutagaol et al., 2021).

In the competency of building modeling and information design expertise, there is one of the productive subjects, namely building construction and land measurement techniques (Haryanto, 2023). In building construction, land and measurement techniques lessons containing basic concepts for building planners to understand materials, specifications, characteristics of materials and work in a building, where students are expected to have knowledge, skills, and abilities in building construction which can be a provision for students who can later be applied and developed in the field, especially in the labor market (Arizona, 2021). The subjects of building construction and land measurement techniques require students to be able to know the properties, characteristics, types, and classification of building materials, and the process of working on building materials.

Based on the results of observations that have been made on building modeling and information design students in classes X-A and X-B as well as conducting interviews and documentation of the subject teacher, it is found that the teacher's teaching method which is felt by students to be teacher-centered (teacher oriented) which assumes that the teacher becomes the only main source and all-knowing, while students only accept what is given by the teacher. This is what causes learning outcomes not to match expectations because students only acquire theoretical knowledge and act passively (Bargh, 1980).

This can be seen from the daily test scores of class X students which showed that some students still have difficulties in understanding the subjects of building construction and land measurement

techniques. Based on the Minimum Completeness Criteria (KKM) set by the school found a total score of 75, this can be seen from the results of the 2019/2020 daily test scores in class X-A there was 51.43% incompetent, 37.15% belongs to fairly competent, 10% categorized as competent, 1.42% very competent. Based on the Minimum Learning Completeness Standard (SKBM) set by the school, a class is said to have achieved competence if students in the class have a score of 75 and classically complete if all classes are ≥ 75%.

From the information that has been obtained, it can be concluded that the cause of low student scores due to not mastering the concept of the material perfectly. In this case, an alternative learning design is needed that can raise students' enthusiasm, so that students can participate actively during class learning, namely the peer lesson learning design. The peer lesson strategy is a strategy to support peer teaching in the classroom (Agustiani, 2023). This strategy places all teaching responsibilities on all class members (Arif, 2016). The peer lesson strategy is used to stimulate students' interest in engaging in the learning process (Aswanto, 2021). The peer lesson strategy stimulates students to be more active in understanding the material individually or in groups by learning together and teaching about the material obtained so that they get a deep impression and are more focused on what they learned (Libarkin, 2001).

Peer Lesson strategy is an active learning strategy, students will learn and work in small groups of 6 students with a heterogeneous group structure (mixed membership according to achievement level, gender, and ethnicity (Nurhasanah et all, 2022). In the peer lesson learning strategy, students more easily understand the concept of the subject matter that has been discussed with their group mates (Astin, 1984). Each group works and learns together to complete the material, after which it will present the results of its group discussion to other groups (Johnson, 2016). The result is that each group member has understood the subject matter (Crowe et al., 2015).

Given that this research was conducted during the COVID-19 pandemic, teachers are required to be more creative in carrying out teaching and learning activities. The Peer Lesson strategy with online media is a new method for e-learning or distance learning. This strategy with online media will be very helpful for students in teaching material to classmates because it is very effective to use without being limited by space and time. The effectiveness of the peer lesson strategy with online media is that we immerse the students in experiences that include teamwork with peers, self-evaluation exercises, simulation of real-world conditions, and helping them to become better (Wagner, 2005).

METHOD

This research used quantitative research with experimental methods involving two classes given different treatments, where the independent variables in this study were peer lesson learning strategies carried out in experimental groups and conventional learning models to control classes.

The place of research was conducted by researchers at SMK Negeri 1 Lubuk Pakam, Jalan Galang Kel. Merbau Pagar Tiga, Deli Serdang regency. The choice of this location as a research site was because no one has ever conducted research with the peer lesson learning strategy before at this school. This research process was carried out on class X students in the 2020/2021 academic year, with teaching materials for concrete specifications and characteristics which were carried out for 9 meetings. The subjects in this study were 60 students from 2 classes X SMK Negeri 1 Lubuk Pakam.

The instrument that is used in this research was a written test of cognitive aspects (knowledge). The test used for cognitive aspects included a multiple choice test consisting of four choices with the correct answer which gave a score of 1 and the wrong answer a score of 0. The test results were analyzed using the t-test, which had previously been through the Liliefors normality test to determine normally distributed samples, and homogeneity tests using the F test or Barlet test to determine whether the samples taken came from populations with the same variance.

RESULTS AND DISCUSSION

1) Validity Test Stage

   Before the instrument questions are distributed to students, the instrument questions are first validated using the biseral point correlation technique with the help of the Microsoft Office Excel program (Sugiyono, 2013). The results of the validation of the learning outcomes instrument questions can be seen in the following table:

Table 1. Results of Validation of Learning Outcome Question Instruments

Question Number	R-count	R-table	Description
1	0,428	0,361	Valid
2	0,443	0,361	Valid
3	-0,411	0,361	Invalid
4	0,518	0,361	Valid
5	0,453	0,361	Valid
6	0,015	0,361	Invalid
7	0,506	0,361	Valid
8	0,629	0,361	Valid
9	-0,0116	0,361	Invalid
10	0,116	0,361	Invalid
11	0,552	0,361	Valid
12	0,499	0,361	Valid

13	0,465	0,361	Valid
14	0,550	0,361	Valid
15	0,179	0,361	Invalid
16	0,406	0,361	Valid
17	0,502	0,361	Valid
18	0,365	0,361	Valid
19	0,398	0,361	Valid
20	-0,040	0,361	Invalid
21	0,421	0,361	Valid
22	0,418	0,361	Valid
23	0,403	0,361	Valid
24	0,416	0,361	Valid
25	0,105	0,361	Invalid
26	0,413	0,361	Valid
27	0,064	0,361	Invalid
28	0,558	0,361	Valid
29	0,474	0,361	Valid
30	0,480	0,361	Valid
31	0,433	0,361	Valid
32	0,377	0,361	Valid
33	0,395	0,361	Valid
34	0,469	0,361	Valid
35	0,367	0,361	Valid
36	0,412	0,361	Valid
37	0,405	0,361	Valid
38	0,377	0,361	Valid
39	0,401	0,361	Valid
40	0,428	0,361	Valid
41	0,401	0,361	Valid
42	0,405	0,361	Valid
43	-0,089	0,361	Invalid
44	0,388	0,361	Valid
45	0,377	0,361	Valid

From the results of validation using the biseral point correlation technique of 45 items arranged, there were 9 invalid items, namely numbers 3, 6, 9, 10, 15, 20, 25, 27, 43. So 36 valid items were used to capture research data.

2) Reliability Test Stage

After the validation test, the reliability test was carried out to see the consistency of the test being carried out (Ahyar et al., 2020). The Kuder-Richardson formula known as KR-20 was used to find reliability. The results can be seen in the following table:

Table 2. Reliability Results of Learning Outcomes Question Instruments

Question	Item of Reliability Scores	Criteria
Learning Outcomes	0,85	Very High

From the above calculations, the price of the reliability index of the learning outcomes test of building construction subjects and soil measurement techniques for concrete specifications and characteristics was 0.85. The reliability of the test obtained from the calculation results has consulted with the correlation index. So, it is known that the reliability index of the concrete classification and characteristics learning outcomes test can be categorized in a very high category.

3) Test the Difficulties Level and Distinguishing Power of Questions

A good question is a question that has average measurement, it is not too easy and not difficult. The level of difficulty of each item can be seen from the question difficulties of index price, namely questions with P = 0.00 to P = 0.30 as the difficult questions; while the questions with P = 0.31 to P = 0.70 are medium; then, the questions with P = 0.71 to P = 1.00 are easy (Lebagi, 2014). To calculate the differentiating power of the learning outcomes test of building construction subjects and soil measurement techniques on the material of concrete specifications and characteristics, the Biddrich formula was used with the question index with D: 0.00 - 0.20 as a poor category; D: 0.21 - 0.40 as a fair category; D: 0.41 - 0.70 with the good category; D: 0.71 - 1.00 as a very good category (Büyüközkan et al., 2007). The results of the test level of difficulties and differentiation can be seen in the following table:

Table 3. Difficulties Level and Different Power of Questions

Question Number	Difficulties Level	Discriminating Power
1	Easy	Bad
2	Easy	Good
3	Easy	Good
4	Medium	Bad
5	Easy	Good
6	Medium	Good
7	Medium	Good
8	Easy	Bad

9	Medium	Good
10	Easy	Bad
11	Easy	Enough
12	Easy	Bad
13	Easy	Good
14	Medium	Bad
15	Medium	Enough
16	Easy	Bad
17	Easy	Bad
18	Easy	Bad
19	Easy	Bad
20	Medium	Good
21	Easy	Bad
22	Easy	Enough
23	Easy	Bad
24	Easy	Bad
25	Easy	Bad
26	Medium	Good
27	Easy	Bad
28	Medium	Enough
29	Easy	Enough
30	Easy	Good
31	Medium	Enough
32	Easy	Bad
33	Medium	Bad
34	Medium	Good
35	Medium	Bad
36	Easy	Enough

Based on the results of the analysis for the level of difficulty of the questions, 23 questions were declared as easy criteria, and 13 ones declared as moderate. Then from the results of the calculation of the differential power of the question obtained a bad category consists of 18 questions, while 7 questions as enough category, and 11 questions the good ones.

4) Variable Dependency Level

The level of variable tendency uses the ideal average (Mi) and ideal standard deviation (Sdi) (Pujilestari, 2020). The summary of the results of the level of variable tendency is as follows:

Table 4. Post-Test Tendency Level Using Peer Lesson Learning Strategy Group

Score	F	(%)	Category
> 27	22	73,33 %	High
> 18 - 27	8	26,67 %	Enough
> 9 - 18	0	0%	Medium
< 9	0	0%	Low
Total	30	100%	

From the table above, there were 30 students in one class who used the peer lesson-learning strategy, 22 students (73.33%) received a high score, and 8 students (26.67%) received an average score. So, the level of tendency of learning outcomes using the Peer Lesson learning strategy can be categorized into the high category:

Table 5. Post-Test Tendency Level Using Conventional Learning Model Group

Score	F	(%)	Category
> 27	4	13.33 % _	High
> 18 - 27	23	76, 67 %	Enough
> 9 - 18	3	10%	Medium
< 9	0	0%	Low
Total	30	100%	

As a total of 30 students in one class used the conventional learning model, 4 students (13.33%) had a high category, 23 students (76.67%) had an average, and 3 students (10%) as poor ones. So, the level of tendency of learning outcomes using the conventional learning model was included in the fair category.

5) Normality Test Stage

The normality test using with the Liliefors test on student learning outcomes was conducted in experimental and control classes. The sample was to be normally distributed if L-count ≤ L-table (Utami, 2021). A summary of the normality test results of student learning outcomes in learning the basics of building construction can be seen in the following table:

Table 6. Normality Test Results

T-count	T-table	Class	Conclusion
0.036 7	0.161	Class Pre Test Peer Lesson Strategy	H0 Accepted Normal Distributed Data
0.1389	0.161	Class Post Test Peer Lesson Strategy	
0.0729	0.161	Class Pre Test Conventional Model	
0.0382	0.161	Class Post Test Conventional Model	

Based on the table, the price of L-count = 0.0367; 0.1389; 0.0729; 0.0382. while from the L-table for Liliefors with the number of samples (N) = 30, and the real level α = 0.05 is 0.161. If the L-count value is compared with the L-table value, it is known that L-count < L-table, it can be concluded that the data from the post-test and pre-test results of class X students in the building construction, and land measurement Engineering subjects on the material of concrete characteristic specifications were normally distributed.

6) Homogeneity Test Stage

The data that has been tested for normality needs to be investigated for homogeneity before proving the research hypothesis, to find out that the samples taken come from a population with the same variance (Granato et al., 2014). The homogeneity test in this study used the F test called the Barlet test. The homogeneity test was carried out by comparing the largest variance with the smallest ones which resulted in Fcount. After that F-count was consulted in the F-table with a significant level of 5% (Saputra et al., 2021). The results of homogeneity testing can be seen in the following table:

Table 7. Homogeneity Test Results

Class	Variance	F-count	F-table	Status
Pre-test Experiment Class	53.95517241	1.17	1.95	Homogeneous
Control Class Pre-Test	63.42643678			
Post-Test Experiment Class	54.71264368	1.73	1.95	Homogeneous
Control Class Post-Test	94.94712644			

Description:
Experiment Class: Group of students taught using peer lesson learning strategy.
Control Class: Group of students taught using conventional learning.

After testing, the F-count value was 1.17 and the F-table value (30.30) was significant at 5% which was 1.95, it can be concluded that F-count < F-table (1.17 < 1.95) which means that the learning outcomes data using the peer lesson learning strategy and outcomes used the conventional learning model in building construction subjects, and land measurement techniques with material specifications and characteristics of concrete were homogeneous.

7) Data Hypothesis Testing Stage

Hypothesis testing used in this study is the t-test, where one party was used to analyze whether or not there was an effect of the Peer Lesson learning strategy on the results of building construction subjects and land measurement techniques on the teaching material of concrete specifications and characteristics. Hypothesis testing can be seen in the following table:

Table 8. Hypothesis Testing Results

Statistics	Learning strategies Peer Lessons	Learning model conventional
N	30	30
The highest score	83	81
Lowest Value	50	45
Average	75.35	61,46
Difference	54.71264368	94.94712644
∑	2260	1844
Standard Deviation	7.396799556	9.744081611
T-count	6,272	
T-table	1671	
Status	Ha Accepted	

Based on the hypothesis test calculation table, it is known that T-Table = 1.671, then T-Count = 6.272, so it can be concluded that the learning outcomes of students who used the Peer Lesson learning strategy were higher than those who used the conventional learning model.

CONCLUSIONS

The results showed that: (1) there was a significant influence on the learning outcomes of building construction, and land measurement techniques on the material specifications and characteristics of concrete using peer lesson learning strategies, seen from the price of t_count> t_table is 6.27227> 1.671 at a significant level α = 0.05, then Ha is accepted. (2) The learning outcomes of students taught by using conventional learning models were not better than those who used peer lesson learning strategies in building construction subjects on the material of concrete specifications and characteristics in class X SMK Negeri 1 Lubuk Pakam. Proven by the data findings, using the peer lesson learning strategy shows that 22 students (73.33%) got high scores, while conventional learning obtained only 4 students (13.33%) who got high scores.

REFERENCES

Agustiani. (2023). Peningkatan Hasil Belajar Menerapkan Pengetikan (Keyboarding) pada Mata Pelajaran Teknologi Perkantoran Melalui Strategi Peer Lessons Lessons Siswa Kelas X OTKP 2 SMK Negeri 1 Ponorogo. *Dimensi Pendidikan Dan Pembelajaran*, *ISSN 2303*-(1), 1–18.

Ahyar, H., Maret, U. S., Andriani, H., Sukmana, D. J., & Mada, U. G. (2020). *Metode Penelitian Kualitatif & Kuantitatif* (A. Husnu Abadi, A.Md. (ed.); Issue March). CV. Pustaka Ilmu. https://www.pustakailmu.co.id

Arif, R. (2016). Pengaruh Penerapan Model Pembelajaran Kooperatif Tipe Stad Terhadap Hasil Belajar Siswa. *Buana Matematika : Jurnal Ilmiah Matematika Dan Pendidikan Matematika*, *6*(1:), 11–18. https://doi.org/10.36456/buanamatematika.v6i1:.371

Arizona, D. P. (2021). Literature Review : Studi Tentang Pengembangan Modul pada Mata Pelajaran Dasar-Dasar Konstruksi Bangunan. *Jurnal Pendidikan Tambus*, *5*(2), 4699–4707.

Astin, A. W. (1984). Student Involvement : A Developmental Theory for Higher Education. *Journal of College Student Development*, *40 No 5*(July), 518–529.

Aswanto, A. A. (2021). Penerapan Pembelajaran Peer Teaching Method dalam Upaya Peningkatan Hasil Belajar Teknik Elektronika Industri yang Memuat Pemasangan PCB pada Siswa Kelas XI TEI-1 SMK Negeri 3 Boyolangu Tulungagung. *Jurnal Terapan Pendidikan Dasar Dan Menengah*, *I*(1), 174–183.

Bargh. (1980). On the Cognitive Benefits of Teaching. *Educational Psychology*, *72*, *No 5,*.

Büyüközkan, G., Ruan, D., & Feyziog, O. (2007). Evaluating E-Learning Web Site Quality in a Fuzzy Environment. *International Journal Of Intelligent Systems*, *22*, 567–586.

Chickering. (1991). *Appendix A Seven Principles For Good Practice In Undergraduate Education* (No. 47). Jossey-Base Inc.

Crowe, J. A., Silva, T., & Ceresola, R. (2015). The Effect of Peer Review on Student Learning Outcomes in a Research Methods Course. *Teaching Sociology*, *43*(3), 201–213. https://doi.org/10.1177/0092055X15578033

Elizabeth Titiek Winanti, Indiah Kustini, R Endro Wibisono, Djoni Irianto, Danayanti Azmi Dewi Nusantara, & Nurhayati Aritonang. (2022). Pelatihan Pengolahan Data Hasil Pengukuran Waterpass, Theodolit, Total Station Bagi Guru Teknik Konstruksi Dan Properti Smk Wilayah Kabupaten Jombang & Sekitarnya. *Jurnal Abadimas Adi Buana*, *5*(02), 242–252. https://doi.org/10.36456/abadimas.v5.i02.a4598

Goldschmid, B., & Goldschmid, M. L. (1976). Peer Teaching in Higher Education : A Review. *Higher Education*, *5*, 9–33.

Granato, D., Maria, V., Calado, D. A., & Jarvis, B. (2014). Observations on the use of statistical methods in Food Science and Technology. *FRIN*, *55*, 137–149.

https://doi.org/10.1016/j.foodres.2013.10.024

Haryanto, L. (2023). Implementasi Pembelajaran Jarak Jauh Menggunakan Microsoft Teams Dimasa Pandemi Covid-19 pada Mata Pelajaran Dasar-Dasar Konstruksi Bangunan dan Teknik Pengukuran Tanah Kelas X DPIB Semester Gasal Tahun Ajaran 2021/2022 di SMK Negeri 2 Wonogiri. *Jurnal Pendidikan Teknik Sipil*, *4*(2), 197–210. https://doi.org/10.21831/jpts.v4i2.54086

Hutagaol, P., Putri, N., & Siregar, A. (2021). *Pengaruh Model Pembelajaran Kooperatif Dan Motivasi Belajar Terhadap Hasil Belajar Dasar – Dasar Konstruksi Bangunan Dan Teknik Pengukuran Tanah Pada Siswa Kelas X Program Keahlian Desain Permodelan Dan Informasi Bangunan Di Smk Negeri 5 Medan*. *1*, 7–15.

Johnson. (2016). *Active Learning: Cooperation in the College Classroom* (Issue July). University of Minnesota. https://doi.org/10.5926/arepj1962.47.0

Lebagi, D. (2014). Analyzing Difficulty Level Of Subjective Test. *E-Journal of English Language Teaching Society (ELTS)*, *2*(2), 1–14.

Libarkin, J. C. . (2001). Students Teaching Students : Peer Training in Undergraduate Education. *Journal of College Science Teaching*, *31*(4), 235–239.

Nurhasanah et all. (2022). Pengaruh Model Time Token Dan Peer Teaching Terhadap Keaktifan Dan Hasil Belajar. *Jurnal Pendidikan Matematika*, *Volume 2,* 814–820.

Pujilestari, Y. (2020). *International Journal of Multicultural and Multireligious Understanding The Influence of Learning Organization on Teacher's Job Performance*. 510–519.

Ramaswamy, S., Harris, I., Tschirner, U., Ramaswamy, S., Harris, D., & Tschirner, U. (2001). Education Student Peer Teaching : An Innovative Approach to Instruction in Science and Engineering Education. *Journal of Science Education and Technology*, *10*(2), 165–171.

Saputra, E., Tarigan, D. H., & Andriana, L. (2021). The Effect of Practice Methods on the Ability of Writing Text Complex Procedures of Eleventh-Grade Students of Swasta Swadaya Hamparan Perak Senior High School Academic Year 2020-2021. *Advances in Social Science, Education, and Humanities Research*, *536*(Icsteir 2020), 300–304. https://doi.org/https://doi.org/10.2991/assehr.k.210312.048

Sudira, P. (2016). TVET Abad XXI filosofi, konsep, dan strategi pembelajaran vokasional. In *UNY Press*. UNY Press.

Sugiyono. (2013). *Metode Penelitian Kuantitatif Kualitatif Dan R&D* (19th ed.). ALFABETA, CV. www.cvalfabeta.com

Syafei, M. (2019). Pengaruh Model Pembelajaran Problem Based Learning Terhadap Hasil Belajar Siswa Pada Mata Pelajaran Mekanika Teknik Kelas X Desain Pemodelan Dan Informasi Bangunan Smk Negeri 1 Pariaman. *CIVED: Journal of Civil Engineering and Vocational Education*, *5*(4), 1–6. http://ejournal.unp.ac.id/index.php/cived/article/view/102483

Utami, P. P. (2021). Teacher Work Productivity in Senior High School. *International Journal Of Instruction*, *14*(1), 599–614.

Wagner, M. (2005). Learning by Teaching Others: a Qualitative Study Exploring the Benefits of Peer Teaching. *Landscape Journal*, *24*(2), 198–208. https://doi.org/10.3368/lj.24.2.198

Wijaya, E. Y., Sudjimat, D. A., & Nyoto, A. (2016). Transformasi Pendidikan Abad 21 Sebagai Tuntutan. *Jurnal Pendidikan*, *1*, 263–278.

Yusuf. (2018). Pengantar Ilmu Pendidikan. In *Lembaga Penerbit Kampus IAIN Palopo* (p. 126).