BUKTI KORESPONDENSI ARTIKEL PADA JURNALNASIONAL BEREPUTASI

PENGUSUL

Sarwi Asri / 0609128901

UNIVERSITAS NEGERI SEMARANG
2024

Yth. Penilai
Pada Usulan PAK

Bersama dengan surat ini saya bermaksud menyertakan bukti korespondensi proses artikel pada jurnal dengan judul “Effectiveness of Peer Teaching Learning Models in Lathe Machinery Practice Courses for Mechanical Engineering Education Program Students” yang dimuat oleh VANOS Journal of Mechanical Engineering Education Jurnal Index Sinta 4 Vol 9 N0. 1 Mei 2024 ISSN 2528-2611, e-ISSN 2528-2700 hal.: 32-41.

Adapun susunan kronologi bukti korespondensi saya rangkum pada tabel di bawah ini:

No.	Tanggal	Aktivitas
1.	25 Februari 2024	Submit artikel pada jurnal VANOS
2.	1 Maret 2024	Masuk tahap review
3.	18 Maret 2024	Mengirimkan revisi artikel
4.	26 Maret 2024	Artikel disetujui dan membayar fee publish
5.	19 Mei 2024	Artikek pada tahap editing
6.	30 Mei 2024	Publikasi pada Vol. 9 No. 1 Mei 2024

Demikian surat ini saya buat agar menjadi periksa.
Terimakasih

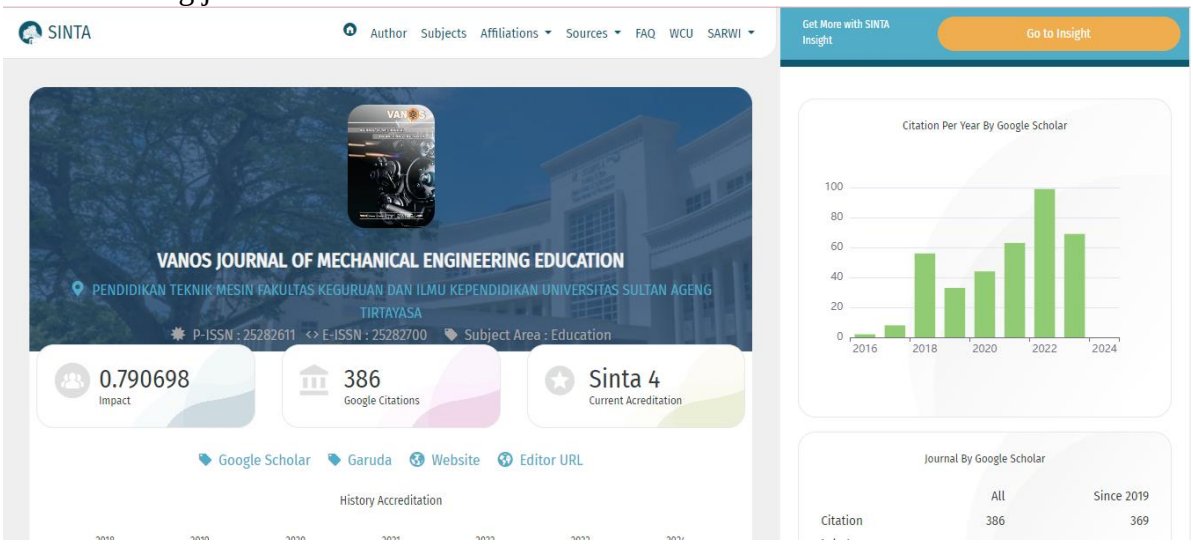
Semarang, 19 Juni 2024
Hormat Saya,

Sarwi Asri

KRONOLOGI KORESPONDENSI PUBLIKASI ARTIKEL PADA JURNAL NASIONAL BEREPUTASI

Judul	:	Effectiveness of Peer Teaching Learning Models in Lathe Machinery Practice Courses for Mechanical Engineering Education Program Students
Jurnal	:	VANOS Journal of Mechanical Engineering Education
Volume	:	9
Nomor	:	1
Tanggal Publikasi	:	30 Mei 2024
e-ISSN	:	2528-2700
Halaman	:	32-41
Penerbit	:	Universitas Sultan Ageng Tirtayasa
Quartile	:	Sinta 4
Google Citation	:	386
Penulis	:	Sarwi Asri, Hanif Hidayat, Muhammad Fariz Nasrullah

Bukti indexing jurnal:



Faculty of Teacher Training and Education
Mechanical Engineering Education

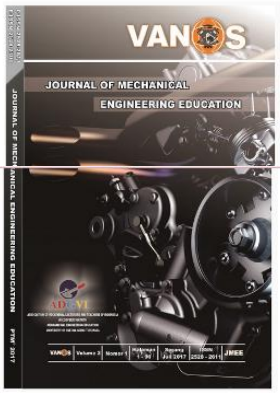
VANOS
Journal of Mechanical Engineering Education
Jurnal Pendidikan Teknik Mesin
ISSN 2528-2611(Printed) | ISSN 2528-2700 (Online)

Indexed In

VANOS Journal of Mechanical Engineering Education

VANOS Journal of Mechanical Engineering Education is a periodical scientific journal that publishes research results in the field of Mechanical and Automotive Engineering Education from lecturers, researchers, teachers, students, practitioners and other relevant stakeholders.

Journals Published every two times a year in May and November, which are published regularly. The VANOS Journal published by Sultan Ageng Tirtayasa University collaborates with the Vocational Teachers and Teachers Association (ADGVI) in 2017. This collaboration is marked by a cooperation agreement in publishing articles with numbers 05.001/ADGVI/III/2021 and B/03/UN34.15/HK.06/2020. The International Standard Serial Number of VANOS is E-ISSN : 2528-2700 and P-ISSN : 2528-2611.



The main objective of this journal is to advance knowledge and dissemination of research on and about vocational education, assessment, evaluation and mechanical engineering of all kinds and on various levels as well as in all fields of education.

The journal invites scientists, teachers, lecturers, practitioners, engineers throughout the world to exchange and disseminate theoretical and practice-oriented topics of Mechanical Engineering Education, Vocational Education, and Mechanical Engineering which covers some areas of research that includes:
1) Mechanical Engineering Education
2) Automotive Engineering Education
3)Technical and Vocational Education and Training (TVET),
4) Vocational Education,
5) Mechanical Engineering, Automotive Engineering
6) Vocational High School (mechanical engineering, automotive engineering, electrical engineering, heavy equipment, etc.)

the journal has indexed by: Portal Garuda, SINTA 4, Google Scholar, WorldCat, Index Copernicus, DRJI, scholarsteer, citefactor, etc

Informasi

Article Acceptance

Invite to teacher, lecture, student, researcher, and education expert for article publication in Vanos Journal to Volume 9 Number 1 in May 2024. Submit the last manuscript to 7 April 2024.

Dikirimkan: 2024-03-30

Article Publishing

Thank you for your patience in waiting for the publication of vanos journal volume 8 number 2 November 2023. The journal has been published and can be accessed through the page https://jurnal.untirta.ac.id/index.php/vanos/issue/view/1398. We are waiting for your article to be published further in journal vanos volume 9 number 1 May 2024.

Dikirimkan: 2024-03-30

Writing Guidelines

VANOS Journal writing guidelines can be accessed:

http://jurnal.untirta.ac.id/index.php/vanos/about/submissions#authorGuidelines

View my stats
Visitors
29,741 666
6,206 389
4,546 226
2,606 177
708 149
FLAG counter
00000130

RECOMMENDED TOOLS
turnitin
MENDELEY

VANOS
Journal of Mechanical Engineering Education
Jurnal Pendidikan Teknik Mesin
ISSN 2528-2611(Printed) | ISSN 2528-2700 (Online)

Dewan Editorial

Editor-in-Chief

Haris Abizar, ID Scopus: 57208627065 ID Sinta: 6101318 ID Google Scholar: dB6PVB8AAAAJ&hl ID ORCID: 0000-0001-5917-9656 Mechanical Engineering Education, Teacher Training and Education Faculty, Sultan Ageng Tirtayasa University, Ciwaru Raya Street, Number 25 Serang Banten, Indonesia

Editorial Board

Mr Soffan Nurhaji, ID Scopus: 57205058544 ID Google Scholar: q-HQYKwAAAAJ&hl ID Sinta: 5984084 ID Orcid: 0000-0002-3142-3052 Mechanical Engineering Education, Teacher Training and Education Faculty, Sultan Ageng Tirtayasa University, Ciwaru Raya Street, Number 25 Serang Banten, Indonesia
Mr Sulaeman Deni Ramdani, ID Scopus: 57212167561 ID Sinta: 75949 ID Scholar: aR60yzEAAAAJ&hl ID Orcid: 0000-0001-8544-170X Pendidikan Teknik Mesin Fakultas Keguruan dan Ilmu Pendidikan Universitas Sultan Ageng Tirtayasa Jl. Ciwaru Raya No. 25 Cipocok Jaya Serang, Indonesia
DEDDY SUPRIYATNA, Pendidikan Teknik Mesin Universitas Sultan Ageng Tirtayasa, Indonesia
Mr. Valiant Lukad Perdana Sutrisno, ID Scopus :57203957269 ID Sinta : 6652159 ID Google Scholar : bC-xrz0AAAAJ&hl ID ORCID : 0000-0003-2463-596X Mechanical Engineering Education, Universitas Sebelas Maret, Indonesia, Indonesia
setuju setuju, ID Scopus: 57199204612 ID Sinta: 5975883 ID Google Scholar: QFU2GG4AAAAJ&hl ID ORCID: 0000-0003-4765-9067 Pendidikan Teknik Mesin, Fakultas Keguruan dan Ilmu Pendidikan, Universitas Sarjanawiyata Tamansiswa, Jogyakarta, Indonesia
Muhammad Nurtanto, ID Scopus: 57205063285 ID Sinta: 5976787 ID Scholer: gvXrZNgAAAAJ&hl ID Orcid: 0000-0002-6357-7152 Mechanical Engineering Education, Teacher Training and Education Faculty, Sultan Ageng Tirtayasa University, Ciwaru Raya Street, Number 25 Serang Banten, Indonesia
Atep Iman, ID Google Scholar: iNp6JAgAAAAJ&hl ID Sinta: 6697560 ID Orcid: 0000-0003-4285-3012 Mechanical Engineering Education, Teacher Training and Education Faculty, Sultan Ageng Tirtayasa University, Ciwaru Raya Street, Number 25 Serang Banten, Indonesia
Moh Fawaid, ID Scopus: 57208472416 ID Google Scholar: jJPp8AAAAJ&hl ID Sinta: 5979228 ID Orcid: 0000-0002-6289-4957 Mechanical Engineering Education, Teacher Training and Education Faculty, Sultan Ageng Tirtayasa University, Ciwaru Raya Street, Number 25 Serang Banten, Indonesia

Graphic Design

Supriyanto Supriyanto, Universitas Sultan Ageng Tirtayasa, Indonesia
Khairul Munir, Universitas Sultan Ageng Tirtayasa, Indonesia

Secretariat

Iwan Ridwan, Universitas Sultan Ageng Tirtayasa, Indonesia

Fokus dan Ruang Lingkup

VANOS Journal of Mechanical Engineering Education contains the results of research related to the development of curriculum, teaching, learning, policy, media, and evaluation in the field of Technology and Vocational Education, Mechanical Engineering Education, Automotive Engineering Education, Mechanical Engineering, Automotive Engineering

Kebijakan Bagian

Articles

☑ Naskah Terbuka ☑ Diindeks ☑ Telah di-Peer review

Proses Peer Review

The research manuscript submitted to this online journal will be blind review with peer-reviewed at least 2 (two) reviewers. The accepted research articles will be available online following the journal peer-reviewing process. Language used in this journal is English.

Kebijakan Akses Terbuka

This journal provides immediate open access to its content on the principle that making research freely available to the public supports a greater global exchange of knowledge.

Pengarsipan

This journal utilizes the LOCKSS system to create a distributed archiving system among participating libraries and permits those libraries to create permanent archives of the journal for purposes of preservation and restoration. More...

Publication Etics

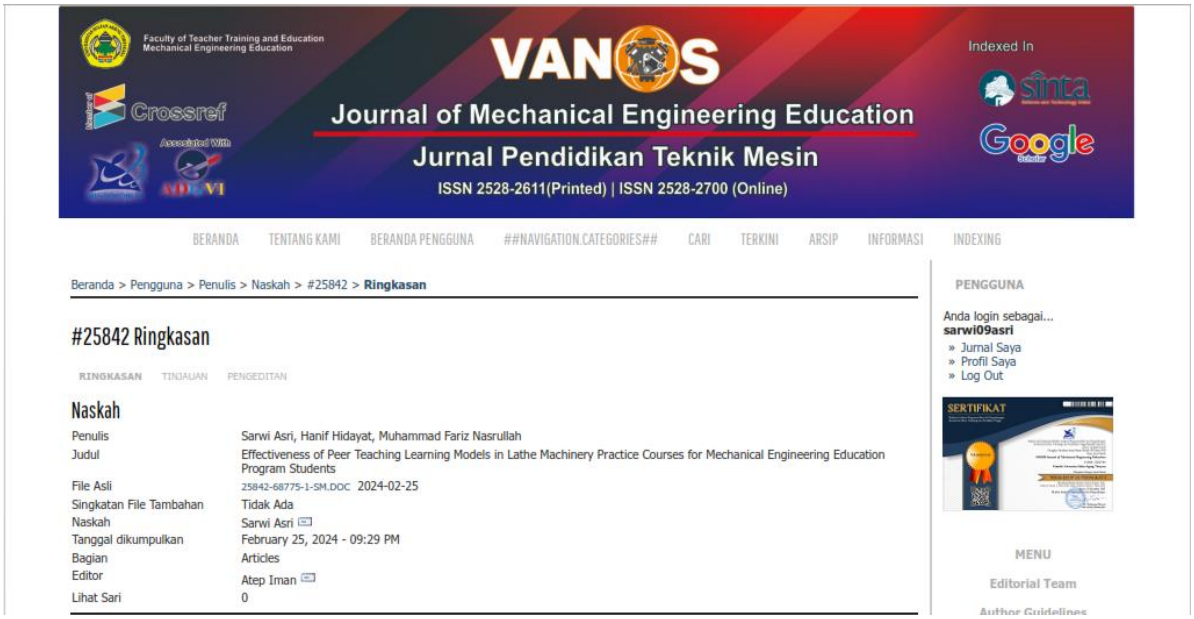
Journal VANOS (P-ISSN 2528-2611 da E-ISSN 2528-2700) is a blind review with peer-reviewed journal published by Department of Mechanical Engineering Education, Faculty of Teacher Training and Education, University of Sultan Ageng Tirtayasa in collaboration with Asosiasi Dosen dan Guru Vokasi Indonesia (ADGVI) - Association of Indonesian Vocational Educators (AIVE). The publication ethics of VANOS Journal of Mechanical Engineering Education as follows:

1. The manuscript presents complete and original information as well as objective data.
2. Quotation source and reference cited in the manuscript must be in the bibliography.
3. The manuscript is written concisely and clearly for efficiency.
4. The manuscript has never been published in another journal.
5. Everyone involved in the research (students, supervisors, and other members) should be included in the team of writers.
6. A writer who passed away should be included as a co-author.
7. Authors must avoid fabrication (make up the data and results of a study).
8. Authors must avoid falsification (manipulating research materials, equipment, process, changing the data or intentionally discarding data or results).
9. Authors should avoid Plagiarism (taking ideas, processes, results or words without citing the sources).
10. Authors should avoid Fragmentation (breaking research data into different themes of manuscript so that the discussion cannot become in-depth)
11. The manuscript should not use copied materials from another article without permission.
12. All materials/quotation earned from previous research, involving similar writers related to previous publications must be cited properly.

View my stats
Visitors
29,742 666
6,206 389
4,546 226
2,606 177
708 149
FLAG counter
00000130

RECOMMENDED TOOLS
turnitin

RINCIAN KRONOLOGI KORESPONDENSI PUBLIKASI ARTIKEL PADA JURNAL NASIONAL BEREPUTASI



Faculty of Teacher Training and Education
Mechanical Engineering Education

VANOS
Journal of Mechanical Engineering Education
Jurnal Pendidikan Teknik Mesin
ISSN 2528-2611(Printed) | ISSN 2528-2700 (Online)

Indexed In

BERANDA TENTANG KAMI BERANDA PENGGUNA ##NAVIGATION.CATEGORIES## CARI TERKINI ARSIP INFORMASI INDEXING

Beranda > Pengguna > Penulis > Naskah > #25842 > **Ringkasan**

#25842 Ringkasan

RINGKASAN TINJAUAN PENGEDITAN

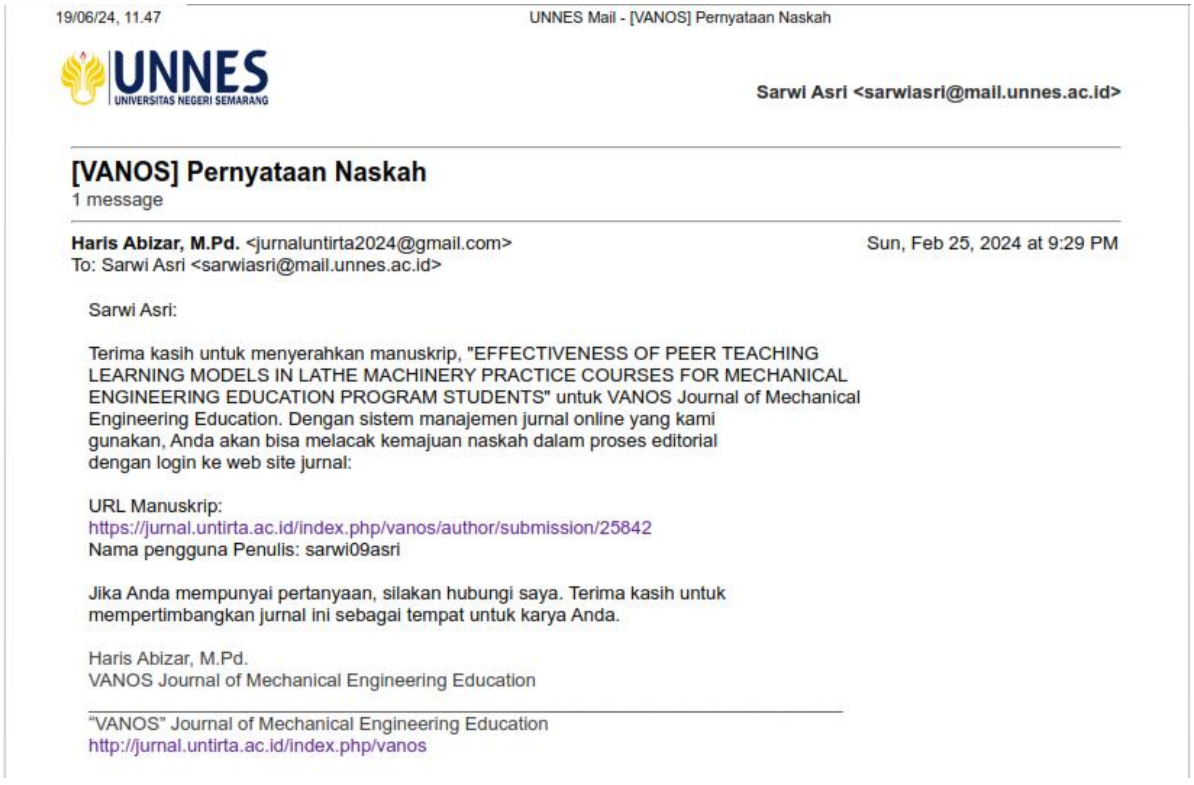
Naskah

Penulis	Sarwi Asri, Hanif Hidayat, Muhammad Fariz Nasrullah
Judul	Effectiveness of Peer Teaching Learning Models in Lathe Machinery Practice Courses for Mechanical Engineering Education Program Students
File Asli	25842-68775-1-SM.DOC 2024-02-25
Singkatan File Tambahan	Tidak Ada
Naskah	Sarwi Asri
Tanggal dikumpulkan	February 25, 2024 - 09:29 PM
Bagian	Articles
Editor	Atep Iman
Lihat Sari	0

PENGGUNA

Anda login sebagai...
sarwi09asri
» Jurnal Saya
» Profil Saya
» Log Out

MENU
Editorial Team
Author Guidelines



19/06/24, 11.47 UNNES Mail - [VANOS] Pernyataan Naskah

UNNES
UNIVERSITAS NEGERI SEMARANG

Sarwi Asri <sarwiasri@mail.unnes.ac.id>

[VANOS] Pernyataan Naskah

1 message

Haris Abizar, M.Pd. <jurnaluntirta2024@gmail.com> Sun, Feb 25, 2024 at 9:29 PM
To: Sarwi Asri <sarwiasri@mail.unnes.ac.id>

Sarwi Asri:

Terima kasih untuk menyerahkan manuskrip, "EFFECTIVENESS OF PEER TEACHING LEARNING MODELS IN LATHE MACHINERY PRACTICE COURSES FOR MECHANICAL ENGINEERING EDUCATION PROGRAM STUDENTS" untuk VANOS Journal of Mechanical Engineering Education. Dengan sistem manajemen jurnal online yang kami gunakan, Anda akan bisa melacak kemajuan naskah dalam proses editorial dengan login ke web site jurnal:

URL Manuskrip:
https://jurnal.untirta.ac.id/index.php/vanos/author/submission/25842
Nama pengguna Penulis: sarwi09asri

Jika Anda mempunyai pertanyaan, silakan hubungi saya. Terima kasih untuk mempertimbangkan jurnal ini sebagai tempat untuk karya Anda.

Haris Abizar, M.Pd.
VANOS Journal of Mechanical Engineering Education

"VANOS" Journal of Mechanical Engineering Education
http://jurnal.untirta.ac.id/index.php/vanos

Faculty of Teacher Training and Education
Mechanical Engineering Education

VANOS
Journal of Mechanical Engineering Education
Jurnal Pendidikan Teknik Mesin
ISSN 2528-2611(Printed) | ISSN 2528-2700 (Online)

Indexed In

#25842 Review

Naskah

Penulis	Sarwi Asri, Hanif Hidayat, Muhammad Fariz Nasrullah
Judul	Effectiveness of Peer Teaching Learning Models in Lathe Machinery Practice Courses for Mechanical Engineering Education Program Students
Bagian	Articles
Editor	Atep Iman

Peer Review

Tahapan 1

Versi Review	25842-68776-2-RV.DOC 2024-03-01
Dimulai	2024-03-01
Terakhir Dimodifikasi	2024-03-01
File yang diunggah	Reviewer B 25842-69041-1-RV.DOC 2024-03-01 Reviewer A 25842-69069-1-RV.DOC 2024-03-01

Keputusan Editor

Keputusan	Terima Langganan 2024-03-26
Beritahu Editor	Rekam Email Editor/Penulis 2024-03-26
Versi Editor	25842-68936-1-ED.DOC 2024-03-01 25842-68936-2-ED.DOCX 2024-03-01
Versi Penulis	25842-69040-1-ED.DOCX 2024-03-18 HAPUS
Unggah Versi Penulis Version	Pilih File Tidak ada file yang dipilih Unggah

This work is licensed under a Creative Commons Attribution 4.0 International License.

VANOS
JOURNAL OF MECHANICAL ENGINEERING EDUCATION
http://jurnal.untirta.ac.id/index.php/vanos
ISSN 2528-2611, e-ISSN 2528-2700
Vol.2, No.2, Desember 2017, Hlm.x-x.

EFFECTIVENESS OF PEER TEACHING LEARNING MODELS IN LATHE MACHINERY PRACTICE COURSES FOR MECHANICAL ENGINEERING EDUCATION PROGRAM STUDENTS

Sarwi Asri[1], Hanif Hidayat[2], Muhammad Fariz Nasrullah[3]

[1,2,3]Mechanical Engineering Education, Faculty of Engineering,
Universitas Negeri Semarang

UNNES Sekaran Campus, Gunungpati Semarang, Central Java, Indonesia
sarwiasri@mail.unnes.ac.id

Accepted: 13 March 2016. Approved: 23 March 2016. Published: 23 April 2016 (Cambria 10, Centered)

ABSTRACT

The peer teaching learning model provides an opportunity for students to give each other knowledge to their peers. Peer teaching is a student-centred learning method. The purposes of this study are (1) to learn about the competence of students' lathe practice after applying the learning model of peer teaching and (2) to know about the improvement of the competency of students' lathe practice after applying the peer-teaching learning model. The method used in this research is quasi-experimental. The data analysis used is normality test, homogeneity test, t-test, and N-Gain test. The results of the research show that (1) the competence of lathe practice of the students who apply a peer teaching learning model is in moderate categorized and (2) the application of a peer learning model is effective to improve the lathe practical competence of the students.

Keywords: peer teaching, competence, lathe practice.

INTRODUCTION

Universitas Negeri Semarang (UNNES) is one of the institute of education. Lembaga Pendidikan Tenaga Keguruan (LPTK) is a public or private college designated by the government to organize the Bachelor of Education Program (PSP) and Teacher Profession Education (PPG) to meet the needs of educators who are competent in Indonesia. LPTK consists of colleges under the auspices of the Ministry of Education, Culture, Research and Technology (Kemdikbud, 2021). As a competent teacher printing agency, LPTK is decisive in improving the quality of education, because teachers are an important player in advancing Indonesian education.

One of the faculties that exists at UNNES is the Faculty of Engineering which has 15 courses of study. One of its courses is the Mechanical Engineering Educational Studies Program. The Engineering Engineering Education Study Program is one of the curricula of candidate teachers in vocational secondary schools especially in the field of machining and manufacturing.

The Engineering Lathe Practice Course is one of the compulsory courses taught in the Mechanical Engineering Education Study Program. The learning access on this course is that students are able to do work with a blower machine. A variety of practical skills are taught from basic to advanced. Basic materials are orientation of the machine, operational standards of machine use procedures, identification of auxiliary tools, and health and safety at work. Advanced materials are the operation of machine with a variety of competencies such as facing, turning, tapper, groove and threading.

The background of students in the Mechanical Engineering Education Study Program comes from high school and vocational school graduates. Students with a machining vocational school background can be assumed to have the ability to practice lathes. Meanwhile, students with a high school background do not yet have the ability to practice lathes. The distribution of the number of students with high school and vocational school backgrounds is not balanced. The number of students with a high school background is greater than students with a vocational school background.

The observation results showed that some students had difficulty carrying out lathe practices. This difficulty is especially felt by students who have a high school background. Practical Study Group 3 (Practical Group 3) has 14 students from high school backgrounds and 5 students from machining vocational school backgrounds. Practical Study Group 4 (Practical Group 4) has 15 students from high school backgrounds and 7 people from machining vocational school backgrounds. Forming small groups in class will help distribute students from different backgrounds evenly.

The classroom learning that has been carried out so far has not been able to bridge

the existing problems. Limited time and the large number of competencies that must be achieved in each course almost make it impossible for students to repeat basic concepts. One way that can be done to solve this problem is by implementing the peer teaching learning method.

The classroom learning that has been carried out so far has not been able to bridge the existing problems. Limited time and the large number of competencies that must be achieved in each course almost make it impossible for students to repeat basic concepts. One way that can be done to solve this problem is by implementing the peer teaching learning method.

Peer teaching is actually not a new learning method in the world of education. Peer teaching learning or what is commonly known as peer tutoring learning is a student-centered learning method. (Febianti, 2014) believes that with a pleasant atmosphere, all students' attention and concentration is focused on the learning process, so that a serious but relaxed learning atmosphere can be created. Peer teaching is expected to be able to facilitate first semester students to prepare for the physics education courses they will take. Peer teaching learning model as valuable learning approach and effective that has been applied to various approaches such as medical, dentistry and various ophthalmology health college. That matter possible because of the model peer teaching learning build a learning environment which allows students feel comfortable to express various difficulties in the process learning (Evans, 2009). The peer teaching learning model can be applied to vocational learning. In order not to disrupt students' regular lecture schedules and the nature of peer teaching learning is only to help students master basic physics concepts, peer teaching learning should be carried out outside of regular lecture hours.

Based on these considerations, peer teaching research was conducted on fourth semester students of the Mechanical Engineering Education Study Program. The aims of this research are (1) to determine students' lathe practice competency after implementing the peer teaching learning model and (2) to determine the increase in students' lathe practice competency after implementing peer teaching learning.

METHODS

The sample used in this research was the Practical Class 3 and Practical Class 4 classes of students from the Mechanical Engineering Education Study Program, totaling 41 students. The entire research sample was divided into two groups, namely the Practical Group 3 as the control class and the Practical Group 4 as the experimental class. The sampling technique used was Purposive Sampling.

The method used in this research is quasi-experimental. Quasi Experimental has a control class, but it does not function fully to

control external variables that influence the implementation of the experiment. The research design used in this research is Nonequivalent Control Group Design. In this design, one experimental group and one comparison group are used. The research began by giving a pre-test to both groups.

The next stage was given treatment to both groups and ended with giving a post test to both groups. An overview of Nonequivalent Control Group Design can be seen in Table 1.

Table 1. Nonequivalent Control Group Design.

O_1	**X**	**O_2**
O_3	-	**O_4**

Note:

O1 : Pre test experiment group

X : Peer Teaching Course

O2 : Post test experiment group

O3 : Pre test control group

\- : without treatment

O4 : Post test control group

(Sugiyono, 2012)

The data collection technique in this research is to use a test technique consisting of a pre-test and post-test. The pre-test is used to measure students' initial ability students' initial abilities in mastering initial turning practice competencies in the experimental group and control group. The post test is used to measure students' final abilities in lathe practice competency in the experimental group and control group. The post test results were used as a comparison between the experimental group and the control group.

Data analysis in this research was N-Gain Test, Normality Test, Homogeneity Test and T-Test. The N-Gain test was used to determine the increase in student learning outcomes in both groups. To determine that the data that has been collected is normally distributed, a normality test is used. The homogeneity test functions to determine whether the two groups are homogeneous or not. The normality test and homogeneity test are requirements for the next statistical test, namely the t-test. The t-test is needed as a statistical test to test the hypothesis, namely whether or not there are differences in learning outcomes between the two groups.

RESULTS AND DISCUSSION

The peer teaching learning model is a learning model that allows students to share their knowledge with their peers or teach their peers. Peer assisted learning is a learning method that allows students to discuss actively and cooperatively. Peer teaching is a procedure of students teaching other students. There are two types of implementation of peer teaching, the first type is teachers and learners of the same age. The second type is a teacher who is older than the learner (Burgess, 2014). There are several terms in the peer teaching method, namely, tutors are students who act as lecturers who teach or provide assessments, and tutees are students who are taught or given assessments.

Students who have a vocational school background in machining become tutors for their classmates. Before implementing the lesson, observation and selection are carried out for prospective tutors. The tutor selection test is used so that tutors who will join in peer teaching learning really have the knowledge needed so that the peer teaching learning program can run smoothly. Students who become tutors have an advantage because they have the opportunity to learn to teach in class.

Tutees in this research are students who have a high school or non-machining vocational school background. Tutees are chosen with the aim of preparing students to engage in learning at college. Students are expected to have provisions when facing lathe practice lecture material. It is also hoped that the differences in the teaching and learning process in high school and university can be bridged by this program. The implementation of the peer teaching learning model in this research was carried out outside regular lecture hours. The peer teaching learning model meeting schedule is determined based on an agreement between the tutor and tutee. Peer teaching can also be carried out during lathe practice lectures. The tutor helps the tutee in supervising and providing guidance when carrying out practice.

The data normality test aims to test whether the data being tested is normally distributed or not. Conditions and normal distribution are requirements for testing hypotheses using parametric statistics. The Kolmogorov-Smirnov normality test was used in this study. The results of the Normality Test in this study show that the Asiymp.Sig (2-tailed) significance value of 0.085 is greater than 0.05. So according to the basis for decision making in the Kolmogorov-Smirnov normality test, it can be concluded that it is normally distributed.

The results of the pre-test and post-test homogeneity test show that the value of Fcount = 1.572 < Ftable = 2.217. Based on these results, the two sample data are declared homogeneous.

The t-test is a statistical test used to test the truth or falsity of the null hypothesis which states that between two sample means taken randomly from the same population, there is no significant difference.

The results of the t-test in this study were tcount = 3.367 > ttable 2.022. This means that the peer teaching learning model is effectively used to improve students' lathe practical competence.

The Gain Test (<g>) is used to determine the increase in cognitive learning outcomes before and after learning using the peer teaching learning model is calculated using a normalized gain score.

$$N - Gain = \frac{Posttest\ Score - Pretest\ Score}{Maximum\ Score - Pretest\ Score}$$

Normalized gain score <g> is a suitable method for analyzing pre-test and post-test results. The level of normalized score gain is

categorized into three categories (Hake, 1998), namely:

High : (<g>) > 0.7

Moderate : 0.7 (<g>) 0.3

Low : (<g>) < 0.3

The N-Gain test in this research can be seen in Table 2.

Table 2. N-Gain Test Results for Experimental Group and Control Group

Groups	Pretest Average	Posttest Average	Max Score	<g>
Experiment	68,15	82,10	92	0,438
Control	73,81	81,18	87	0,281

Based on Table 2, the N-Gain value in the experimental group was obtained at 0.438. This value can be categorized as medium gain. This means that there is an increase in the moderate category for students' lathe practice competency after receiving peer teaching method treatment. The peer teaching method can help less active students become more active in the learning process so that it can help these students understand lessons so that they can improve learning achievement (Robi, 2018). The N-Gain value for the control class was 0.281, this means that although there was an increase in student learning outcomes, this increase was very small.

The peer teaching learning model is very appropriate for getting students' participation as a whole and individually. This strategy gives each student the opportunity to act as a teacher for his friends. With this strategy, students who have not wanted to be involved will participate in learning actively (Anggorowati, 2011). Because the age difference between tutors and tutees is not too great, peer teaching also provides students with the opportunity to study and work without pressure (Young, 2019). The peer teaching learning model facilitates students with different abilities. Students who are more responsive to the material being studied can show concern and responsibility for their friends. So that students can actualize their abilities.

Peer teaching learning can be done more relaxed but still meaningful. Learning atmosphere in the peer teaching pattern is a stimulus for developing discussions between tutors and tutees so that both parties can practice critical thinking when facing difficult questions. Peer teaching provide opportunities for tutors to gain knowledge and new skills. That matter possible because by teaching, the tutors apply knowledge into reality so it will deepen your insight the tutor himself (Rees et al, 2016). Apart from improving learning outcomes, interaction between tutors and tutees also has a positive impact on both. These positive impacts include increasing self-confidence, improving problem-solving abilities, increasing cooperation between students and improving communication building skills (Scott, 2019). Peer teaching learning is a technique that can help students to understand various different concepts, developing computing capabilities and values moral, social and emotional

especially their abilities are deep express ideas (Vasay, 2010).

CONCLUSIONS

Based on the results and discussion, it can be concluded that the results of the research show that the competence of lathe practice of the students who apply a peer teaching learning model is moderately categorized and the application of a peer learning model is effective to improve the lathe practical competence of the students.

REFERENCE

Anggorowati, Ningrum P. (2011). Penerapan Model Pembelajaran Tutor Sebaya pada Mata Pelajaran Sosiologi. Jurnal Komunitas, 3(1). DOI: https://doi.org/10.15294/komunitas.v3i1.2303

Burgess A, Mcgregor D, Mellis C. (2014). Medical students as peer tutors : a systematic review. BMC Med Educ. 14(1).1– 8.

Evans, D. J. R., & Cuffe, T. (2009). Near-peer teaching in anatomy: An approach for deeper learning. Anatomical Sciences Education, 2(5), 227–233. Retrieved from https://onlinelibrary.wiley.com/doi/pdf/10.1002/ase.110

Febianti, Yopi Nisa. (2014). Peer teaching (Tutor Sebaya) Sebagai Metode Pembelajaran Untuk Melatih Siswa Mengajar. Jurnal Edunomik, 2(2). 80-87.

Keputusan Menteri Nomor 52/P/2021 Perubahan Atas Keputusan Menteri Pendidikan Nasional Nomor 126/P/2010 tentang penetapan Lembaga Pendidikan Tenaga Kependidikan Penyelenggaraan Pendidikan Profesi Guru bagi Guru dalam Jabatan". JDIH Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi Republik Indonesia. 2011-03-25. Diakses tanggal 2022-08-07.

Rees, E. L., Quinn, P. J., Davies, B., & Fotheringham, V. (2016). How does peer teaching compare to faculty teaching? A systematic review and meta-analysis. Medical Teacher, 38(8), 829–837. Retrieved from http://elib.vums.ac.ir/bitstream/Hannan/21780/1/2016 MT Volume 38 Issue 8.

Robi Romansyah. (2018). Penerapan Metode Pembelajaran Tutor Sebaya Dalam Meningkatkan Hasil Belajar Siswa Pada Mata Diklat Teknik Dasar Otomotif Pada Siswa Kelas X Program Keahlian Teknik Kendaraan Ringan SMKN I Sumatra Barat, 1.

Scott. Carole A. (2019). How Peer Mentoring Fosters Graduate Attributes. Journal of Peer Learning, 12(3). 29-44.

Sugiyono. (2012). Metode Penelitian Kuntitatif Kualitatif dan R&D. Bandung: Alfabeta.

Vasay, E. T. (2010). The effects of peer teaching in the performance of students in mathematics. Einternational Scientific Research Journal, 2(2), 161–171. Retrieved fromhttp://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.682.7395&rep=rep1&type=pdf

Young. Dallin George. (2019). An Exploration Of The Connection Between Participation In Academic Peer Leadership Experiences And Academic Success. Journal of Peer Learning Volume 12(4).45-60.

UNNES
UNIVERSITAS NEGERI SEMARANG

Sarwi Asri <sarwiasri@mail.unnes.ac.id>

[VANOS] Review Announcement

1 message

Atep Iman <jurnaluntirta2024@gmail.com> Fri, Mar 1, 2024 at 5:43 PM
To: Sarwi Asri <sarwiasri@mail.unnes.ac.id>

Dear,
Sarwi Asri, etc.
Based on the results of the reviewers, the title of the manuscript:
EFFECTIVENESS OF PEER TEACHING LEARNING MODELS IN LATHE MACHINERY PRACTICE COURSES FOR MECHANICAL ENGINEERING EDUCATION PROGRAM STUDENTS

Revisions Required

Here are the notes from the reviewers:
Reviewer A
1. Whether the title of the article meets the criteria of an effective title?
Answer: 80-100%
2. Whether the abstract of the article meets the appropriate abstract criteria?
Answer: 80-100%
3. Whether the introduction present a clear and structured problem?
Answer: 80-100%
4. Whether the research methodology of the article meets the appropriate methodology of research?
Answer: 80-100%
5. Whether the results and research discussions presented clearly and structured?
Answer: 80-100%
6. Whether the list of research literature listed sufficient and appropriate?
Answer: 66-79%
7. Please give your comment and feedback about this article!
Answer: Please correct some comments in the manuscript.

Reviewer B
1. Whether the title of the article meets the criteria of an effective title?
Answer: 80-100%
2. Whether the abstract of the article meets the appropriate abstract criteria?
Answer: 66-79%
3. Whether the introduction present a clear and structured problem?
Answer: 66-79%
4. Whether the research methodology of the article meets the appropriate methodology of research?
Answer: 80-100%
5. Whether the results and research discussions presented clearly and structured?
Answer: 66-79%
6. Whether the list of research literature listed sufficient and appropriate?
Answer: 56-65%
7. Please give your comment and feedback about this article!
Answer: Overall the manuscript is good, only needs improvements to the abstract, references and more in-depth discussion

Please fix it and send it back no later than March, 20, 2024

Thank you

Editor
VANOS Journal (Journal of Vocational Mechanical Engineering Education)
Department of Vocational Mechanical Engineering Education, Faculty of Teacher Training and Education, Universitas Sultan Ageng Tirtayasa
Ciwaru Raya Street Number 25
Cipocok Jaya, Serang City, Banten, Indonesia
Email: vanos@untirta.ac.id

“VANOS” Journal of Mechanical Engineering Education
http://jurnal.untirta.ac.id/index.php/vanos

VANOS
JOURNAL OF MECHANICAL ENGINEERING EDUCATION
http://jurnal.untirta.ac.id/index.php/vanos
ISSN 2528-2611, e-ISSN 2528-2700
Vol.2, No.2, Desember 2017, Hlm.x-x.

EFFECTIVENESS OF PEER TEACHING LEARNING MODELS IN LATHE MACHINERY PRACTICE COURSES FOR MECHANICAL ENGINEERING EDUCATION PROGRAM STUDENTS

Commented [BPM1]: The manuscript is written in 10-15 pages

ABSTRACT

The peer teaching learning model provides an opportunity for students to give each other knowledge to their peers. Peer teaching is a student-centred learning method. The purposes of this study are (1) to learn about the competence of students' lathe practice after applying the learning model of peer teaching and (2) to know about the improvement of the competency of students' lathe practice after applying the peer-teaching learning model. The method used in this research is quasi-experimental. The data analysis used is normality test, homogeneity test, t-test, and N-Gain test. The results of the research show that (1) the competence of lathe practice of the students who apply a peer teaching learning model is in moderate categorized and (2) the application of a peer learning model is effective to improve the lathe practical competence of the students.

Commented [BPM2]: Sample?

Keywords: peer teaching, competence, lathe practice.

INTRODUCTION

Universitas Negeri Semarang (UNNES) is one of the institute of education. Lembaga Pendidikan Tenaga Keguruan (LPTK) is a public or private college designated by the government to organize the Bachelor of Education Program (PSP) and Teacher Profession Education (PPG) to meet the needs of educators who are competent in Indonesia. LPTK consists of colleges under the auspices of the Ministry of Education, Culture, Research and Technology (Kemdikbud, 2021). As a competent teacher printing agency, LPTK is decisive in improving the quality of education, because teachers are an important player in advancing Indonesian education.

One of the faculties that exists at UNNES is the Faculty of Engineering which has 15 courses of study. One of its courses is the Mechanical Engineering Educational Studies Program. The Engineering Engineering Education Study Program is one of the curricula of candidate teachers in vocational secondary schools especially in the field of machining and manufacturing.

The Engineering Lathe Practice Course is one of the compulsory courses taught in the Mechanical Engineering Education Study Program. The learning access on this course is that students are able to do work with a blower machine. A variety of practical skills are taught from basic to advanced. Basic materials are orientation of the machine, operational standards of machine use procedures, identification of auxiliary tools, and health and safety at work. Advanced materials are the operation of machine with a variety of competencies such as facing, turning, tapper, groove and threading.

The background of students in the Mechanical Engineering Education Study Program comes from high school and vocational school graduates. Students with a machining vocational school background can be assumed to have the ability to practice lathes. Meanwhile, students with a high school background do not yet have the ability to practice lathes. The distribution of the number of students with high school and vocational school backgrounds is not balanced. The number of students with a high school background is greater than students with a vocational school background.

The observation results showed that some students had difficulty carrying out lathe practices. This difficulty is especially felt by students who have a high school background. Practical Study Group 3 (Practical Group 3) has 14 students from high school backgrounds and 5 students from machining vocational school backgrounds. Practical Study Group 4 (Practical Group 4) has 15 students from high school backgrounds and 7 people from machining vocational school backgrounds. Forming small groups in class will help distribute students from different backgrounds evenly.

The classroom learning that has been carried out so far has not been able to bridge

Commented [BPM3]: use terms in English

Commented [BPM4]: All citation uses Mendeley software with IEEE style

the existing problems. Limited time and the large number of competencies that must be achieved in each course almost make it impossible for students to repeat basic concepts. One way that can be done to solve this problem is by implementing the peer teaching learning method.

The classroom learning that has been carried out so far has not been able to bridge the existing problems. Limited time and the large number of competencies that must be achieved in each course almost make it impossible for students to repeat basic concepts. One way that can be done to solve this problem is by implementing the peer teaching learning method.

Peer teaching is actually not a new learning method in the world of education. Peer teaching learning or what is commonly known as peer tutoring learning is a student-centered learning method. (Febianti, 2014) believes that with a pleasant atmosphere, all students' attention and concentration is focused on the learning process, so that a serious but relaxed learning atmosphere can be created. Peer teaching is expected to be able to facilitate first semester students to prepare for the physics education courses they will take. Peer teaching learning model as valuable learning approach and effective that has been applied to various approaches such as medical, dentistry and various ophthalmology health college. That matter possible because of the model peer teaching learning build a learning environment which allows students feel comfortable to express various difficulties in the process learning (Evans, 2009). The peer teaching learning model can be applied to vocational learning. In order not to disrupt students' regular lecture schedules and the nature of peer teaching learning is only to help students master basic physics concepts, peer teaching learning should be carried out outside of regular lecture hours.

Based on these considerations, peer teaching research was conducted on fourth semester students of the Mechanical Engineering Education Study Program. The aims of this research are (1) to determine students' lathe practice competency after implementing the peer teaching learning model and (2) to determine the increase in students' lathe practice competency after implementing peer teaching learning.

METHODS

Commented [BPM5]: Add to research diagram

The sample used in this research was the Practical Class 3 and Practical Class 4 classes of students from the Mechanical Engineering Education Study Program, totaling 41 students. The entire research sample was divided into two groups, namely the Practical Group 3 as the control class and the Practical Group 4 as the experimental class. The sampling technique used was Purposive Sampling.

The method used in this research is quasi-experimental. Quasi Experimental has a control class, but it does not function fully to

control external variables that influence the implementation of the experiment. The research design used in this research is Nonequivalent Control Group Design. In this design, one experimental group and one comparison group are used. The research began by giving a pre-test to both groups.

The next stage was given treatment to both groups and ended with giving a post test to both groups. An overview of Nonequivalent Control Group Design can be seen in Table 1.

Table 1. Nonequivalent Control Group Design.

O_1	**X**	**O_2**
O_3	-	**O_4**

Note:

O1 : Pre test experiment group

X : Peer Teaching Course

O2 : Post test experiment group

O3 : Pre test control group

\- : without treatment

O4 : Post test control group

(Sugiyono, 2012)

The data collection technique in this research is to use a test technique consisting of a pre-test and post-test. The pre-test is used to measure students' initial ability students' initial abilities in mastering initial turning practice competencies in the experimental group and control group. The post test is used to measure students' final abilities in lathe practice competency in the experimental group and control group. The post test results were used as a comparison between the experimental group and the control group.

Data analysis in this research was N-Gain Test, Normality Test, Homogeneity Test and T-Test. The N-Gain test was used to determine the increase in student learning outcomes in both groups. To determine that the data that has been collected is normally distributed, a normality test is used. The homogeneity test functions to determine whether the two groups are homogeneous or not. The normality test and homogeneity test are requirements for the next statistical test, namely the t-test. The t-test is needed as a statistical test to test the hypothesis, namely whether or not there are differences in learning outcomes between the two groups.

RESULTS AND DISCUSSION

The peer teaching learning model is a learning model that allows students to share their knowledge with their peers or teach their peers. Peer assisted learning is a learning method that allows students to discuss actively and cooperatively. Peer teaching is a procedure of students teaching other students. There are two types of implementation of peer teaching, the first type is teachers and learners of the same age. The second type is a teacher who is older than the learner (Burgess, 2014). There are several terms in the peer teaching method, namely, tutors are students who act as lecturers who teach or provide assessments, and tutees are students who are taught or given assessments.

Students who have a vocational school background in machining become tutors for their classmates. Before implementing the lesson, observation and selection are carried out for prospective tutors. The tutor selection test is used so that tutors who will join in peer teaching learning really have the knowledge needed so that the peer teaching learning program can run smoothly. Students who become tutors have an advantage because they have the opportunity to learn to teach in class.

Tutees in this research are students who have a high school or non-machining vocational school background. Tutees are chosen with the aim of preparing students to engage in learning at college. Students are expected to have provisions when facing lathe practice lecture material. It is also hoped that the differences in the teaching and learning process in high school and university can be bridged by this program. The implementation of the peer teaching learning model in this research was carried out outside regular lecture hours. The peer teaching learning model meeting schedule is determined based on an agreement between the tutor and tutee. Peer teaching can also be carried out during lathe practice lectures. The tutor helps the tutee in supervising and providing guidance when carrying out practice.

The data normality test aims to test whether the data being tested is normally distributed or not. Conditions and normal distribution are requirements for testing hypotheses using parametric statistics. The Kolmogorov-Smirnov normality test was used in this study. The results of the Normality Test in this study show that the Asiymp.Sig (2-tailed) significance value of 0.085 is greater than 0.05. So according to the basis for decision making in the Kolmogorov-Smirnov normality test, it can be concluded that it is normally distributed.

The results of the pre-test and post-test homogeneity test show that the value of Fcount = 1.572 < Ftable = 2.217. Based on these results, the two sample data are declared homogeneous.

The t-test is a statistical test used to test the truth or falsity of the null hypothesis which states that between two sample means taken randomly from the same population, there is no significant difference.

The results of the t-test in this study were tcount = 3.367 > ttable 2.022. This means that the peer teaching learning model is effectively used to improve students' lathe practical competence.

The Gain Test (<g>) is used to determine the increase in cognitive learning outcomes before and after learning using the peer teaching learning model is calculated using a normalized gain score.

$$N - Gain = \frac{Posttest\ Score - Pretest\ Score}{Maximum\ Score - Pretest\ Score}$$

Normalized gain score <g> is a suitable method for analyzing pre-test and post-test results. The level of normalized score gain is

categorized into three categories (Hake, 1998), namely:

High : (<g>) > 0.7

Moderate : 0.7 (<g>) 0.3

Low : (<g>) < 0.3

The N-Gain test in this research can be seen in Table 2.

Table 2. N-Gain Test Results for Experimental Group and Control Group

Groups	Pretest Average	Posttest Average	Max Score	<g>
Experiment	68,15	82,10	92	0,438
Control	73,81	81,18	87	0,281

Based on Table 2, the N-Gain value in the experimental group was obtained at 0.438. This value can be categorized as medium gain. This means that there is an increase in the moderate category for students' lathe practice competency after receiving peer teaching method treatment. The peer teaching method can help less active students become more active in the learning process so that it can help these students understand lessons so that they can improve learning achievement (Robi, 2018). The N-Gain value for the control class was 0.281, this means that although there was an increase in student learning outcomes, this increase was very small.

The peer teaching learning model is very appropriate for getting students' participation as a whole and individually. This strategy gives each student the opportunity to act as a teacher for his friends. With this strategy, students who have not wanted to be involved will participate in learning actively (Anggorowati, 2011). Because the age difference between tutors and tutees is not too great, peer teaching also provides students with the opportunity to study and work without pressure (Young, 2019). The peer teaching learning model facilitates students with different abilities. Students who are more responsive to the material being studied can show concern and responsibility for their friends. So that students can actualize their abilities.

Peer teaching learning can be done more relaxed but still meaningful. Learning atmosphere in the peer teaching pattern is a stimulus for developing discussions between tutors and tutees so that both parties can practice critical thinking when facing difficult questions (Mark, 2018). Peer teaching provide opportunities for tutors to gain knowledge and new skills. That matter possible because by teaching, the tutors apply knowledge into reality so it will deepen your insight the tutor himself (Rees et al, 2016). Apart from improving learning outcomes, interaction between tutors and tutees also has a positive impact on both. These positive impacts include increasing self-confidence, improving problem-solving abilities, increasing cooperation between students and improving communication building skills (Scott, 2019). Peer teaching learning is a technique that can help students to understand various different concepts, developing computing capabilities and values moral, social and emotional especially their

abilities are deep express ideas (Vasay, 2010).

CONCLUSIONS

Based on the results and discussion, it can be concluded that the results of the research show that the competence of lathe practice of the students who apply a peer teaching learning model is moderately categorized and the application of a peer learning model is effective to improve the lathe practical competence of the students.

REFERENCE

Anggorowati, Ningrum P. (2011). Penerapan Model Pembelajaran Tutor Sebaya pada Mata Pelajaran Sosiologi. Jurnal Komunitas, 3(1). DOI: https://doi.org/10.15294/komunitas.v3i1.2303

Burgess A, Mcgregor D, Mellis C. (2014). Medical students as peer tutors : a systematic review. BMC Med Educ. 14(1).1– 8.

Evans, D. J. R., & Cuffe, T. (2009). Near-peer teaching in anatomy: An approach for deeper learning. Anatomical Sciences Education, 2(5), 227–233. Retrieved from https://onlinelibrary.wiley.com/doi/pdf/10.1002/ase.110

Febianti, Yopi Nisa. (2014). Peer teaching (Tutor Sebaya) Sebagai Metode Pembelajaran Untuk Melatih Siswa Mengajar. Jurnal Edunomik, 2(2). 80-87.

Keputusan Menteri Nomor 52/P/2021 Perubahan Atas Keputusan Menteri Pendidikan Nasional Nomor 126/P/2010 tentang penetapan Lembaga Pendidikan Tenaga Kependidikan Penyelenggaraan Pendidikan Profesi Guru bagi Guru dalam Jabatan". JDIH Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi Republik Indonesia. 2011-03-25. Diakses tanggal 2022-08-07.

Mark, Janet Liou. (2018). The Peer-Led Team Learning Leadership Program For First Year Minority Science, Technology, Engineering, And Mathematics Students. Journal Of Peer Learning Volume 11(5).65-75.

Rees, E. L., Quinn, P. J., Davies, B., & Fotheringham, V. (2016). How does peer teaching compare to faculty teaching? A systematic review and meta-analysis. Medical Teacher, 38(8), 829–837. Retrieved from http://elib.vums.ac.ir/bitstream/Hannan/21780/1/2016 MT Volume 38 Issue 8.

Robi Romansyah. (2018). Penerapan Metode Pembelajaran Tutor Sebaya Dalam Meningkatkan Hasil Belajar Siswa Pada Mata Diklat Teknik Dasar Otomotif Pada Siswa Kelas X Program Keahlian Teknik Kendaraan Ringan SMKN I Sumatra Barat, 1.

Scott. Carole A. (2019). How Peer Mentoring Fosters Graduate Attributes. Journal of Peer Learning, 12(3). 29-44.

Sugiyono. (2012). Metode Penelitian Kuntitatif Kualitatif dan R&D. Bandung: Alfabeta.

Vasay, E. T. (2010). The effects of peer teaching in the performance of students in mathematics. Einternational Scientific Research Journal, 2(2), 161–171. Retrieved fromhttp://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.682.7395&rep=rep1&type=pdf

Young. Dallin George. (2019). An Exploration Of The Connection Between Participation In Academic Peer Leadership Experiences And Academic Success. Journal of Peer Learning Volume 12(4).45-60.

Commented [BPM6]: 30 references from national and international (book, journal, etc)
References uses mendeley software with IEEE style

VANOS
JOURNAL OF MECHANICAL ENGINEERING EDUCATION
http://jurnal.untirta.ac.id/index.php/vanos
ISSN 2528-2611, e-ISSN 2528-2700
Vol.2, No.2, Desember 2017, Hlm.x-x.

EFFECTIVENESS OF PEER TEACHING LEARNING MODELS IN LATHE MACHINERY PRACTICE COURSES FOR MECHANICAL ENGINEERING EDUCATION PROGRAM STUDENTS

ABSTRACT

The peer teaching learning model provides an opportunity for students to give each other knowledge to their peers. Peer teaching is a student-centred learning method. The purposes of this study are (1) to learn about the competence of students' lathe practice after applying the learning model of peer teaching and (2) to know about the improvement of the competency of students' lathe practice after applying the peer-teaching learning model. The method used in this research is quasi-experimental. The sample used in this research was 41 students of the Practical Class from the Mechanical Engineering Education Study Program. The data analysis used is normality test, homogeneity test, t-test, and N-Gain test. The results of the research show that (1) the competence of lathe practice of the students who apply a peer teaching learning model is in moderate categorized and (2) the application of a peer learning model is effective to improve the lathe practical competence of the students.

Keywords: peer teaching, competence, lathe practice.

INTRODUCTION

Universitas Negeri Semarang (UNNES) is one of the institute of education. Teacher Training Institute (LPTK) is a public or private college designated by the government to organize the Bachelor of Education Program (PSP) and Teacher Profession Education (PPG) to meet the needs of educators who are competent in Indonesia. LPTK consists of colleges under the auspices of the Ministry of Education, Culture, Research and Technology [1]. As a competent teacher printing agency, LPTK is decisive in improving the quality of education, because teachers are an important player in advancing Indonesian education.

One of the faculties that exists at UNNES is the Faculty of Engineering which has 15 courses of study. One of its courses is the Mechanical Engineering Educational Studies Program. The Engineering Engineering Education Study Program is one of the curricula of candidate teachers in vocational secondary schools especially in the field of machining and manufacturing.

The Engineering Lathe Practice Course is one of the compulsory courses taught in the Mechanical Engineering Education Study Program. The learning access on this course is that students are able to do work with a blower machine. A variety of practical skills are taught from basic to advanced. Basic materials are orientation of the machine, operational standards of machine use procedures, identification of auxiliary tools, and health and safety at work. Advanced materials are the operation of machine with a variety of competencies such as facing, turning, tapper, groove and threading.

The background of students in the Mechanical Engineering Education Study Program comes from high school and vocational school graduates. Students with a machining vocational school background can be assumed to have the ability to practice lathes. Meanwhile, students with a high school background do not yet have the ability to practice lathes. The distribution of the number of students with high school and vocational school backgrounds is not balanced. The number of students with a high school background is greater than students with a vocational school background.

The observation results showed that some students had difficulty carrying out lathe practices. This difficulty is especially felt by students who have a high school background. Practical Study Group 3 (Practical Group 3) has 14 students from high school backgrounds and 5 students from machining vocational school backgrounds. Practical Study Group 4 (Practical Group 4) has 15 students from high school backgrounds and 7 people from machining vocational school backgrounds. Forming small groups in class will help distribute students from different backgrounds evenly.

The classroom learning that has been carried out so far has not been able to bridge the existing problems. Limited time and the large number of competencies that must be

achieved in each course almost make it impossible for students to repeat basic concepts. One way that can be done to solve this problem is by implementing the peer teaching learning method.

The classroom learning that has been carried out so far has not been able to bridge the existing problems. Limited time and the large number of competencies that must be achieved in each course almost make it impossible for students to repeat basic concepts. One way that can be done to solve this problem is by implementing the peer teaching learning method [2].

Peer teaching is actually not a new learning method in the world of education [3]. Peer teaching learning or what is commonly known as peer tutoring learning is a student-centered learning method [4]. This learning is believes that with a pleasant atmosphere, all students' attention and concentration is focused on the learning process, so that a serious but relaxed learning atmosphere can be created [5]. Peer teaching is expected to be able to facilitate first semester students to prepare for the physics education courses they will take. Peer teaching learning model as valuable learning approach and effective that has been applied to various approaches such as medical, dentistry and various ophthalmology health college [6]. That matter possible because of the model peer teaching learning build a learning environment which allows students feel comfortable to express various difficulties in the process learning [7]. The peer teaching learning model can be applied to vocational learning. In order not to disrupt students' regular lecture schedules and the nature of peer teaching learning is only to help students master basic physics concepts, peer teaching learning should be carried out outside of regular lecture hours [8].

Novelty in peer teaching research in vocational education refers to the exploration of new approaches, methods, or combinations of existing strategies to enhance the effectiveness of peer teaching in vocational education settings. This can include the integration of different pedagogical approaches, the use of technology to facilitate peer larning, or the examination of the impact of peer teaching on specific learning outcomes [9].

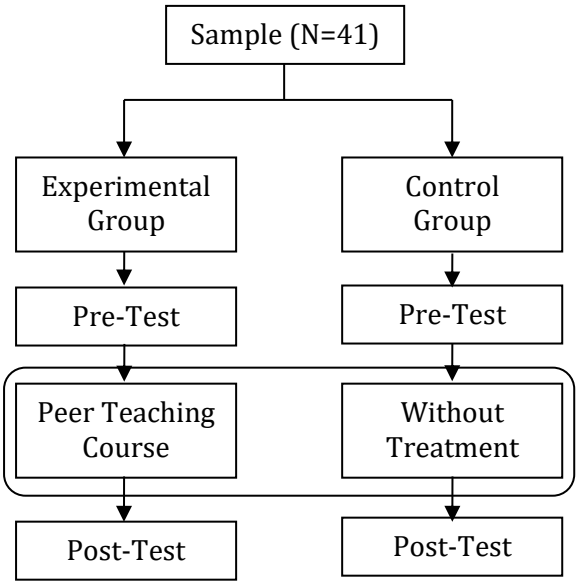
Based on these considerations, peer teaching research was conducted on fourth semester students of the Mechanical Engineering Education Study Program. The aims of this research are (1) to determine students' lathe practice competency after implementing the peer teaching learning model and (2) to determine the increase in students' lathe practice competency after implementing peer teaching learning.

METHODS

The sample used in this research was the Practical Class 3 and Practical Class 4 classes of students from the Mechanical Engineering Education Study Program,

totaling 41 students. The entire research sample was divided into two groups, namely the Practical Group 3 as the control class and the Practical Group 4 as the experimental class. The sampling technique used was Purposive Sampling [10].

The method used in this research is quasi-experimental. Quasi Experimental has a control class, but it does not function fully to control external variables that influence the implementation of the experiment [11]. The research design used in this research is Nonequivalent Control Group Design. In this design, one experimental group and one comparison group are used [12]. The research began by giving a pre-test to both groups. An overview of research diagram can be seen in Picture 1.



Picture 1. Research Diagram

The next stage was given treatment to both groups and ended with giving a post test to both groups [13]. An overview of Nonequivalent Control Group Design can be seen in Table 1.

Table 1. Nonequivalent Control Group Design.

O_1	**X**	**O_2**
O_3	-	**O_4**

Note:

O_1 : Pre test experiment group

X : Peer Teaching Course

O_2 : Post test experiment group

O_3 : Pre test control group

\- : without treatment

O_4 : Post test control group

The data collection technique in this research is to use a test technique consisting of a pre-test and post-test [14]. The pre-test is used to measure students' initial ability students' initial abilities in mastering initial turning practice competencies in the experimental group and control group. The post test is used to measure students' final abilities in lathe practice competency in the experimental group and control group. The post test results were used as a comparison between the experimental group and the control group.

Data analysis in this research was N-Gain Test, Normality Test, Homogeneity Test and T-Test [15]. The N-Gain test was used to determine the increase in student learning outcomes in both groups. To determine that the data that has been collected is normally distributed, a normality test is used. The homogeneity test functions to determine whether the two groups are homogeneous or

not. The normality test and homogeneity test are requirements for the next statistical test, namely the t-test. The t-test is needed as a statistical test to test the hypothesis, namely whether or not there are differences in learning outcomes between the two groups [16].

RESULTS AND DISCUSSION

The peer teaching learning model is a learning model that allows students to share their knowledge with their peers or teach their peers. Peer assisted learning is a learning method that allows students to discuss actively and cooperatively. Peer teaching is a procedure of students teaching other students [17]. There are two types of implementation of peer teaching, the first type is teachers and learners of the same age. The second type is a teacher who is older than the learner [18]. There are several terms in the peer teaching method, namely, tutors are students who act as lecturers who teach or provide assessments, and tutees are students who are taught or given assessments [19].

Students who have a vocational school background in machining become tutors for their classmates. Before implementing the lesson, observation and selection are carried out for prospective tutors. The tutor selection test is used so that tutors who will join in peer teaching learning really have the knowledge needed so that the peer teaching learning program can run smoothly. Students who become tutors have an advantage because they have the opportunity to learn to teach in class.

Tutees in this research are students who have a high school or non-machining vocational school background. Tutees are chosen with the aim of preparing students to engage in learning at college. Students are expected to have provisions when facing lathe practice lecture material. It is also hoped that the differences in the teaching and learning process in high school and university can be bridged by this program [20]. The implementation of the peer teaching learning model in this research was carried out outside regular lecture hours. The peer teaching learning model meeting schedule is determined based on an agreement between the tutor and tutee. Peer teaching can also be carried out during lathe practice lectures. The tutor helps the tutee in supervising and providing guidance when carrying out practice.

The data normality test aims to test whether the data being tested is normally distributed or not. Conditions and normal distribution are requirements for testing hypotheses using parametric statistics [21]. The Kolmogorov-Smirnov normality test was used in this study. The results of the Normality Test in this study show that the Asiymp.Sig (2-tailed) significance value of 0.085 is greater than 0.05. So according to the basis for decision making in the Kolmogorov-Smirnov normality test, it can be concluded that it is normally distributed [22].

The results of the pre-test and post-test homogeneity test show that the value of F_{count} = 1.572 < F_{table} = 2.217. Based on these results, the two sample data are declared homogeneous.

The t-test is a statistical test used to test the truth or falsity of the null hypothesis which states that between two sample means taken randomly from the same population, there is no significant difference.

The results of the t-test in this study were t_{count} = 3.367 > t_{table} 2.022. This means that the peer teaching learning model is effectively used to improve students' lathe practical competence.

The Gain Test (<g>) is used to determine the increase in cognitive learning outcomes before and after learning using the peer teaching learning model is calculated using a normalized gain score. The formula used to determine the Gaint Test is as shown in Equation 1.

$$N - Gain = \frac{Posttest\ Score - Pretest\ Score}{Maximum\ Score - Pretest\ Score}$$

Equation 1. The Gain Test (<g>)

Normalized gain score <g> is a suitable method for analyzing pre-test and post-test results. The level of normalized score gain is categorized into three categories (Hake, 1998), namely:

High : (<g>) > 0.7

Moderate : 0.7 (<g>) 0.3

Low : (<g>) < 0.3

The N-Gain test in this research can be seen in Table 2.

Table 2. N-Gain Test Results for Experimental Group and Control Group

Groups	Pretest Average	Posttest Average	Max Score	<g>
Experiment	68,15	82,10	92	0,438
Control	73,81	81,18	87	0,281

Based on Table 2, the N-Gain value in the experimental group was obtained at 0.438. This value can be categorized as medium gain. This means that there is an increase in the moderate category for students' lathe practice competency after receiving peer teaching method treatment. The peer teaching method can help less active students become more active in the learning process so that it can help these students understand lessons so that they can improve learning achievement [23]. The N-Gain value for the control class was 0.281, this means that although there was an increase in student learning outcomes, this increase was very small.

The peer teaching learning model is very appropriate for getting students' participation as a whole and individually. This strategy gives each student the opportunity to act as a teacher for his friends [24]. With this strategy, students who have not wanted to be involved will participate in learning actively [25]. Because the age difference between tutors and tutees is not too great, peer teaching also provides students with the opportunity to study and work without pressure [26]. The peer teaching learning model facilitates students with different abilities. Students who are more responsive to the material being studied can show concern and responsibility

for their friends. So that students can actualize their abilities [27].

Peer teaching learning can be done more relaxed but still meaningful. Learning atmosphere in the peer teaching pattern is a stimulus for developing discussions between tutors and tutees so that both parties can practice critical thinking when facing difficult questions [28]. Peer teaching provide opportunities for tutors to gain knowledge and new skills. That matter possible because by teaching, the tutors apply knowledge into reality so it will deepen your insight the tutor himself [29]. Apart from improving learning outcomes, interaction between tutors and tutees also has a positive impact on both. These positive impacts include increasing self-confidence, improving problem-solving abilities, increasing cooperation between students and improving communication building skills [30]. Peer teaching learning is a technique that can help students to understand various different concepts, developing computing capabilities and values moral, social and emotional especially their abilities are deep express ideas [31].

CONCLUSIONS

Based on the results and discussion, it can be concluded that the results of the research show that the competence of lathe practice of the students who apply a peer teaching learning model is moderately categorized and the application of a peer learning model is effective to improve the lathe practical competence of the students.

REFERENCE

[1] "Permendikbud-Nomor-38-Tahun-2020".

[2] S. SARUN, "PENINGKATAN HASIL BELAJAR PEMESINAN BUBUT SISWA KELAS XI TPA DENGAN METODE TUTORIAL TEMAN SEBAYA DI SMKN 1 CIKARANG SELATAN KABUPATEN BEKASI," *VOCATIONAL: Jurnal Inovasi Pendidikan Kejuruan*, vol. 2, no. 2, pp. 136–145, 2022.

[3] S. Hai-Jew, *Practical Peer-to-Peer Teaching and Learning on the Social Web*. in Advances in Educational Technologies and Instructional Design. IGI Global, 2021. [Online]. Available: https://books.google.co.id/books?id=NdNJEAAAQBAJ

[4] R. K. Baltzersen, *Effective Use of Collective Peer Teaching in Teacher Education: Maximizing Student Learning*. in Routledge Research in Teacher Education. Taylor & Francis, 2023. [Online]. Available: https://books.google.co.id/books?id=35jeEAAAQBAJ

[5] Y. N. Febianti, "Peer teaching (tutor sebaya) sebagai metode pembelajaran untuk melatih siswa mengajar," *Edunomic Jurnal Pendidikan Ekonomi*, vol. 2, no. 2, 2014.

[6] C. H. Major, M. S. Harris, and T. D. Zakrajsek, *Teaching for Learning: 101 Intentionally Designed Educational Activities to Put Students on the Path to Success*. Taylor & Francis, 2021. [Online]. Available: https://books.google.co.id/books?id=2t4zEAAAQBAJ

[7] D. J. R. Evans and T. Cuffe, "Near-peer teaching in anatomy: An approach for deeper learning," *Anat Sci Educ*, vol. 2, no. 5, pp. 227–233, 2009.

[8] T. O. Oziegbe, *Introducing Peer Tutoring and Reciprocal Peer Tutoring in Colleges in Nigeria*. GRIN Verlag, 2023. [Online]. Available:

https://books.google.co.id/books?id=sHa6EAAAQBAJ

[9] K. J. Graziano, "Peer teaching in a flipped teacher education classroom," *TechTrends*, vol. 61, pp. 121–129, 2017.

[10] R. K. Schutt, *Investigating the Social World: The Process and Practice of Research*. Pine Forge Press, 2009. [Online]. Available: https://books.google.co.id/books?id=Xl4caVEys_kC

[11] C. S. Reichardt and T. D. Little, *Quasi-Experimentation: A Guide to Design and Analysis*. in Methodology in the Social Sciences Series. Guilford Publications, 2019. [Online]. Available: https://books.google.co.id/books?id=LNGlDwAAQBAJ

[12] D. F. Chambliss and R. K. Schutt, *Making Sense of the Social World: Methods of Investigation*. Pine Forge Press, 2010. [Online]. Available: https://books.google.co.id/books?id=C_ykW73SbTcC

[13] S. Sugiono, "Metode penelitian kuantitatif, kualitatif, dan r & d," *Bandung: Alfabeta*, vol. 288, 2016.

[14] M. Zozus, *The Data Book: Collection and Management of Research Data*. in Chapman & Hall/CRC Interdisciplinary Statistics. CRC Press, 2017. [Online]. Available: https://books.google.co.id/books?id=ilAsDwAAQBAJ

[15] J. W. Creswell, *Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research*. in Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research. Pearson, 2015. [Online]. Available: https://books.google.co.id/books?id=6kk-nwEACAAJ

[16] A. Ross and V. L. Willson, *Basic and Advanced Statistical Tests: Writing Results Sections and Creating Tables and Figures*. SensePublishers, 2018. [Online]. Available: https://books.google.co.id/books?id=qCdFDwAAQBAJ

[17] K. Topping, C. Buchs, D. Duran, and H. van Keer, *Effective Peer Learning: From Principles to Practical Implementation*. Taylor & Francis, 2017. [Online]. Available: https://books.google.co.id/books?id=oTQlDwAAQBAJ

[18] A. Burgess, D. McGregor, and C. Mellis, "Medical students as peer tutors: a systematic review," *BMC Med Educ*, vol. 14, pp. 1–8, 2014.

[19] N. Byrne and C. Butcher, *An Introduction to Teaching in UK Higher Education: A Guide for International and Transnational Teachers*. in ISSN. Taylor & Francis, 2020. [Online]. Available: https://books.google.co.id/books?id=FNQHEAAAQBAJ

[20] S. Hidayat and M. Saleh, "Komparasi kemampuan kerja antara lulusan SMA dan SMK di industri permesinan modern," *IKRAITH-EKONOMIKA*, vol. 2, no. 3, pp. 45–56, 2019.

[21] D. E. McNabb, *Research Methods for Political Science: Quantitative, Qualitative and Mixed Method Approaches*. Taylor & Francis, 2020. [Online]. Available: https://books.google.co.id/books?id=E20LEAAAQBAJ

[22] J. Durbin, *Distribution Theory for Tests Based on the Sample Distribution Function*. in CBMS-NSF Regional Conference Series in Applied Mathematics. Society for Industrial and Applied Mathematics, 1973. [Online]. Available: https://books.google.co.id/books?id=zAryCrT1IUYC

[23] R. Romansyah, S. Wakhinuddin, and W. Wagino, "Penerapan Metode Pembelajaran Tutor Sebaya Dalam Meningkatkan Hasil Belajar Siswa Pada Mata Diklat Teknik Dasar Otomotif Pada Siswa Kelas X Program Keahlian Teknik Kendaraan Ringan Smk Negeri 1 Sumatera Barat," *Automotive Engineering Education Journals*, vol. 7, no. 1, 2018.

[24] H. Irawan, "Application of People Tutor Methods to Increase Learning Achievement of Mechanical Measuring Equipment to Basic Automotive Engineering," *VANOS Journal of Mechanical Engineering Education*, vol. 8, no. 1, pp. 55–65, 2023.

[25] N. P. Anggorowati, "Penerapan model pembelajaran tutor sebaya pada mata pelajaran sosiologi," *Komunitas*, vol. 3, no. 1, 2011.

[26] D. G. Young, D. E. Hoffman, and S. Frakes Reinhardt, "An exploration of the connection between participation in academic peer leadership experiences and academic success," *Journal of Peer learning*, vol. 12, no. 1, pp. 45–60, 2019.

[27] A. Wadi SMKN, J. Srikandi, and B. Korespondensi Penulis, "Penggunaan model peer teaching untuk meningkatkan motivasi dan prestasi belajar membuat batik tulis," 2019.

[28] J. Liou-Mark, U. Ghosh-Dastidar, D. Samaroo, and M. Villatoro, "The Peer-Led Team Learning Leadership Program for First Year Minority Science, Technology, Engineering, and Mathematics Students.," *Journal of Peer Learning*, vol. 11, no. 5, pp. 65–75, 2018.

[29] E. L. Rees, P. J. Quinn, B. Davies, and V. Fotheringham, "How does peer teaching compare to faculty teaching? A systematic review and meta-analysis," *Med Teach*, vol. 38, no. 8, pp. 829–837, 2016.

[30] C. A. Scott, A. McLean, and C. Golding, "How peer mentoring fosters graduate attributes.," *Journal of Peer Learning*, vol. 12, no. 3, pp. 29–44, 2019.

[31] E. T. Vasay, "The effects of peer teaching in the performance of students in mathematics," *E-International Scientific Research Journal*, vol. 2, no. 2, pp. 161–171, 2010.

VANOS
JOURNAL OF MECHANICAL ENGINEERING EDUCATION
http://jurnal.untirta.ac.id/index.php/vanos
ISSN 2528-2611, e-ISSN 2528-2700
Vol.2, No.2, Desember 2017, Hlm.x-x.

EFFECTIVENESS OF PEER TEACHING LEARNING MODELS IN LATHE MACHINERY PRACTICE COURSES FOR MECHANICAL ENGINEERING EDUCATION PROGRAM STUDENTS

ABSTRACT

The peer teaching learning model provides an opportunity for students to give each other knowledge to their peers. Peer teaching is a student-centred learning method. The purposes of this study are (1) to learn about the competence of students' lathe practice after applying the learning model of peer teaching and (2) to know about the improvement of the competency of students' lathe practice after applying the peer-teaching learning model. The method used in this research is quasi-experimental. The data analysis used is normality test, homogeneity test, t-test, and N-Gain test. The results of the research show that (1) the competence of lathe practice of the students who apply a peer teaching learning model is in moderate categorized and (2) the application of a peer learning model is effective to improve the lathe practical competence of the students.

Keywords: peer teaching, competence, lathe practice.

Commented [S1]: In the incomplete method section (add samples and data analysis)

INTRODUCTION

Universitas Negeri Semarang (UNNES) is one of the institute of education. Lembaga Pendidikan Tenaga Keguruan (LPTK) is a public or private college designated by the government to organize the Bachelor of Education Program (PSP) and Teacher Profession Education (PPG) to meet the needs of educators who are competent in Indonesia. LPTK consists of colleges under the auspices of the Ministry of Education, Culture, Research and Technology (Kemdikbud, 2021). As a competent teacher printing agency, LPTK is decisive in improving the quality of education, because teachers are an important player in advancing Indonesian education.

One of the faculties that exists at UNNES is the Faculty of Engineering which has 15 courses of study. One of its courses is the Mechanical Engineering Educational Studies Program. The Engineering Engineering Education Study Program is one of the curricula of candidate teachers in vocational secondary schools especially in the field of machining and manufacturing.

The Engineering Lathe Practice Course is one of the compulsory courses taught in the Mechanical Engineering Education Study Program. The learning access on this course is that students are able to do work with a blower machine. A variety of practical skills are taught from basic to advanced. Basic materials are orientation of the machine, operational standards of machine use procedures, identification of auxiliary tools, and health and safety at work. Advanced materials are the operation of machine with a variety of competencies such as facing, turning, tapper, groove and threading.

The background of students in the Mechanical Engineering Education Study Program comes from high school and vocational school graduates. Students with a machining vocational school background can be assumed to have the ability to practice lathes. Meanwhile, students with a high school background do not yet have the ability to practice lathes. The distribution of the number of students with high school and vocational school backgrounds is not balanced. The number of students with a high school background is greater than students with a vocational school background.

The observation results showed that some students had difficulty carrying out lathe practices. This difficulty is especially felt by students who have a high school background. Practical Study Group 3 (Practical Group 3) has 14 students from high school backgrounds and 5 students from machining vocational school backgrounds. Practical Study Group 4 (Practical Group 4) has 15 students from high school backgrounds and 7 people from machining vocational school backgrounds. Forming small groups in class will help distribute students from different backgrounds evenly.

The classroom learning that has been carried out so far has not been able to bridge

Commented [S2]: Explanation to research novelty

the existing problems. Limited time and the large number of competencies that must be achieved in each course almost make it impossible for students to repeat basic concepts. One way that can be done to solve this problem is by implementing the peer teaching learning method.

The classroom learning that has been carried out so far has not been able to bridge the existing problems. Limited time and the large number of competencies that must be achieved in each course almost make it impossible for students to repeat basic concepts. One way that can be done to solve this problem is by implementing the peer teaching learning method.

Peer teaching is actually not a new learning method in the world of education. Peer teaching learning or what is commonly known as peer tutoring learning is a student-centered learning method. (Febianti, 2014) believes that with a pleasant atmosphere, all students' attention and concentration is focused on the learning process, so that a serious but relaxed learning atmosphere can be created. Peer teaching is expected to be able to facilitate first semester students to prepare for the physics education courses they will take. Peer teaching learning model as valuable learning approach and effective that has been applied to various approaches such as medical, dentistry and various ophthalmology health college. That matter possible because of the model peer teaching learning build a learning environment which allows students feel comfortable to express various difficulties in the process learning (Evans, 2009). The peer teaching learning model can be applied to vocational learning. In order not to disrupt students' regular lecture schedules and the nature of peer teaching learning is only to help students master basic physics concepts, peer teaching learning should be carried out outside of regular lecture hours.

Based on these considerations, peer teaching research was conducted on fourth semester students of the Mechanical Engineering Education Study Program. The aims of this research are (1) to determine students' lathe practice competency after implementing the peer teaching learning model and (2) to determine the increase in students' lathe practice competency after implementing peer teaching learning.

Commented [S3]: Use mendeley application

METHODS

The sample used in this research was the Practical Class 3 and Practical Class 4 classes of students from the Mechanical Engineering Education Study Program, totaling 41 students. The entire research sample was divided into two groups, namely the Practical Group 3 as the control class and the Practical Group 4 as the experimental class. The sampling technique used was Purposive Sampling.

The method used in this research is quasi-experimental. Quasi Experimental has a control class, but it does not function fully to

control external variables that influence the implementation of the experiment. The research design used in this research is Nonequivalent Control Group Design. In this design, one experimental group and one comparison group are used. The research began by giving a pre-test to both groups.

The next stage was given treatment to both groups and ended with giving a post test to both groups. An overview of Nonequivalent Control Group Design can be seen in Table 1.

Table 1. Nonequivalent Control Group Design.

O_1	**X**	**O_2**
O_3	-	**O_4**

Note:

O1 : Pre test experiment group

X : Peer Teaching Course

O2 : Post test experiment group

O3 : Pre test control group

\- : without treatment

O4 : Post test control group

(Sugiyono, 2012)

The data collection technique in this research is to use a test technique consisting of a pre-test and post-test. The pre-test is used to measure students' initial ability students' initial abilities in mastering initial turning practice competencies in the experimental group and control group. The post test is used to measure students' final abilities in lathe practice competency in the experimental group and control group. The post test results were used as a comparison between the experimental group and the control group.

Data analysis in this research was N-Gain Test, Normality Test, Homogeneity Test and T-Test. The N-Gain test was used to determine the increase in student learning outcomes in both groups. To determine that the data that has been collected is normally distributed, a normality test is used. The homogeneity test functions to determine whether the two groups are homogeneous or not. The normality test and homogeneity test are requirements for the next statistical test, namely the t-test. The t-test is needed as a statistical test to test the hypothesis, namely whether or not there are differences in learning outcomes between the two groups.

RESULTS AND DISCUSSION

Commented [S4]: add citations to the discussion

The peer teaching learning model is a learning model that allows students to share their knowledge with their peers or teach their peers. Peer assisted learning is a learning method that allows students to discuss actively and cooperatively. Peer teaching is a procedure of students teaching other students. There are two types of implementation of peer teaching, the first type is teachers and learners of the same age. The second type is a teacher who is older than the learner (Burgess, 2014). There are several terms in the peer teaching method, namely, tutors are students who act as lecturers who teach or provide assessments, and tutees are students who are taught or given assessments.

Students who have a vocational school background in machining become tutors for their classmates. Before implementing the lesson, observation and selection are carried out for prospective tutors. The tutor selection test is used so that tutors who will join in peer teaching learning really have the knowledge needed so that the peer teaching learning program can run smoothly. Students who become tutors have an advantage because they have the opportunity to learn to teach in class.

Tutees in this research are students who have a high school or non-machining vocational school background. Tutees are chosen with the aim of preparing students to engage in learning at college. Students are expected to have provisions when facing lathe practice lecture material. It is also hoped that the differences in the teaching and learning process in high school and university can be bridged by this program. The implementation of the peer teaching learning model in this research was carried out outside regular lecture hours. The peer teaching learning model meeting schedule is determined based on an agreement between the tutor and tutee. Peer teaching can also be carried out during lathe practice lectures. The tutor helps the tutee in supervising and providing guidance when carrying out practice.

The data normality test aims to test whether the data being tested is normally distributed or not. Conditions and normal distribution are requirements for testing hypotheses using parametric statistics. The Kolmogorov-Smirnov normality test was used in this study. The results of the Normality Test in this study show that the Asiymp.Sig (2-tailed) significance value of 0.085 is greater than 0.05. So according to the basis for decision making in the Kolmogorov-Smirnov normality test, it can be concluded that it is normally distributed.

The results of the pre-test and post-test homogeneity test show that the value of Fcount = 1.572 < Ftable = 2.217. Based on these results, the two sample data are declared homogeneous.

Commented [S5]: What is mean?

The t-test is a statistical test used to test the truth or falsity of the null hypothesis which states that between two sample means taken randomly from the same population, there is no significant difference.

The results of the t-test in this study were tcount = 3.367 > ttable 2.022. This means that the peer teaching learning model is effectively used to improve students' lathe practical competence.

The Gain Test (<g>) is used to determine the increase in cognitive learning outcomes before and after learning using the peer teaching learning model is calculated using a normalized gain score.

$$N - Gain = \frac{Posttest\ Score - Pretest\ Score}{Maximum\ Score - Pretest\ Score}$$

Normalized gain score <g> is a suitable method for analyzing pre-test and post-test results. The level of normalized score gain is

categorized into three categories (Hake, 1998), namely:

High : (<g>) > 0.7

Moderate : 0.7 (<g>) 0.3

Low : (<g>) < 0.3

The N-Gain test in this research can be seen in Table 2.

Table 2. N-Gain Test Results for Experimental Group and Control Group

Groups	Pretest Average	Posttest Average	Max Score	<g>
Experiment	68,15	82,10	92	0,438
Control	73,81	81,18	87	0,281

Based on Table 2, the N-Gain value in the experimental group was obtained at 0.438. This value can be categorized as medium gain. This means that there is an increase in the moderate category for students' lathe practice competency after receiving peer teaching method treatment. The peer teaching method can help less active students become more active in the learning process so that it can help these students understand lessons so that they can improve learning achievement (Robi, 2018). The N-Gain value for the control class was 0.281, this means that although there was an increase in student learning outcomes, this increase was very small.

The peer teaching learning model is very appropriate for getting students' participation as a whole and individually. This strategy gives each student the opportunity to act as a teacher for his friends. With this strategy, students who have not wanted to be involved will participate in learning actively (Anggorowati, 2011). Because the age difference between tutors and tutees is not too great, peer teaching also provides students with the opportunity to study and work without pressure (Young, 2019). The peer teaching learning model facilitates students with different abilities. Students who are more responsive to the material being studied can show concern and responsibility for their friends. So that students can actualize their abilities.

Peer teaching learning can be done more relaxed but still meaningful. Learning atmosphere in the peer teaching pattern is a stimulus for developing discussions between tutors and tutees so that both parties can practice critical thinking when facing difficult questions (Mark, 2018). Peer teaching provide opportunities for tutors to gain knowledge and new skills. That matter possible because by teaching, the tutors apply knowledge into reality so it will deepen your insight the tutor himself (Rees et al, 2016). Apart from improving learning outcomes, interaction between tutors and tutees also has a positive impact on both. These positive impacts include increasing self-confidence, improving problem-solving abilities, increasing cooperation between students and improving communication building skills (Scott, 2019). Peer teaching learning is a technique that can help students to understand various different concepts, developing computing capabilities and values moral, social and emotional especially their

abilities are deep express ideas (Vasay, 2010).

CONCLUSIONS

Based on the results and discussion, it can be concluded that the results of the research show that the competence of lathe practice of the students who apply a peer teaching learning model is moderately categorized and the application of a peer learning model is effective to improve the lathe practical competence of the students.

REFERENCE

Anggorowati, Ningrum P. (2011). Penerapan Model Pembelajaran Tutor Sebaya pada Mata Pelajaran Sosiologi. Jurnal Komunitas, 3(1). DOI: https://doi.org/10.15294/komunitas.v3i1.2303

Burgess A, Mcgregor D, Mellis C. (2014). Medical students as peer tutors : a systematic review. BMC Med Educ. 14(1).1– 8.

Evans, D. J. R., & Cuffe, T. (2009). Near-peer teaching in anatomy: An approach for deeper learning. Anatomical Sciences Education, 2(5), 227–233. Retrieved from https://onlinelibrary.wiley.com/doi/pdf/10.1002/ase.110

Febianti, Yopi Nisa. (2014). Peer teaching (Tutor Sebaya) Sebagai Metode Pembelajaran Untuk Melatih Siswa Mengajar. Jurnal Edunomik, 2(2). 80-87.

Keputusan Menteri Nomor 52/P/2021 Perubahan Atas Keputusan Menteri Pendidikan Nasional Nomor 126/P/2010 tentang penetapan Lembaga Pendidikan Tenaga Kependidikan Penyelenggaraan Pendidikan Profesi Guru bagi Guru dalam Jabatan". JDIH Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi Republik Indonesia. 2011-03-25. Diakses tanggal 2022-08-07.

Mark, Janet Liou. (2018). The Peer-Led Team Learning Leadership Program For First Year Minority Science, Technology, Engineering, And Mathematics Students. Journal Of Peer Learning Volume 11(5).65-75.

Rees, E. L., Quinn, P. J., Davies, B., & Fotheringham, V. (2016). How does peer teaching compare to faculty teaching? A systematic review and meta-analysis. Medical Teacher, 38(8), 829–837. Retrieved from http://elib.vums.ac.ir/bitstream/Hannan/21780/1/2016 MT Volume 38 Issue 8.

Robi Romansyah. (2018). Penerapan Metode Pembelajaran Tutor Sebaya Dalam Meningkatkan Hasil Belajar Siswa Pada Mata Diklat Teknik Dasar Otomotif Pada Siswa Kelas X Program Keahlian Teknik Kendaraan Ringan SMKN I Sumatra Barat, 1.

Scott. Carole A. (2019). How Peer Mentoring Fosters Graduate Attributes. Journal of Peer Learning, 12(3). 29-44.

Sugiyono. (2012). Metode Penelitian Kuntitatif Kualitatif dan R&D. Bandung: Alfabeta.

Vasay, E. T. (2010). The effects of peer teaching in the performance of students in mathematics. Einternational Scientific Research Journal, 2(2), 161–171. Retrieved fromhttp://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.682.7395&rep=rep1&type=pdf

Young. Dallin George. (2019). An Exploration Of The Connection Between Participation In Academic Peer Leadership Experiences And Academic Success. Journal of Peer Learning Volume 12(4).45-60.

Commented [S6]: Use mendeley application (IEEE style). References need to be added

Faculty of Teacher Training and Education
Mechanical Engineering Education
VANOS
Journal of Mechanical Engineering Education
Jurnal Pendidikan Teknik Mesin
ISSN 2528-2611(Printed) | ISSN 2528-2700 (Online)
Indexed In

#25842 Pengeditan

Naskah

Penulis	Sarwi Asri, Hanif Hidayat, Muhammad Fariz Nasrullah
Judul	Effectiveness of Peer Teaching Learning Models in Lathe Machinery Practice Courses for Mechanical Engineering Education Program Students
Bagian	Articles
Editor	Atep Iman

Proses Copyedit

INSTRUKSI COPYEDITING

Copy editor: Mr Sulaeman Deni Ramdani

METADATA REVIEW	PERMINTAAN	SEDANG BERLANGSUNG	LENGKAP
1. Copyedit Awal	2024-05-15	2024-05-19	2024-05-19
File: 25842-69969-2-CE.DOCX 2024-05-19			
2. Copyedit Penulis	2024-05-19	2024-05-19	2024-05-19
File: 25842-70160-1-CE.DOCX 2024-05-19			
Pilih File Tidak ada file yang dipilih Unggah			
3. Copyedit Akhir	2024-05-19	2024-05-19	2024-05-19
File: 25842-70161-1-CE.DOCX 2024-05-19			

Komentar Copyedit: Tidak ada komentar

Layout

Editor Layout: Atep Iman

Versi Layout	PERMINTAAN	SEDANG BERLANGSUNG	LENGKAP	LIHAT
25842-70162-1-LE.DOCX 2024-05-19	2024-05-19	2024-05-19	2024-05-19	

Format Galley	FILE	
1. PDF (English) LIHAT PROOF	25842-70163-3-PB.PDF 2024-05-19	0

File Tambahan	FILE
	Tidak Ada

Komentar Layout: Tidak ada komentar

Proses Proofread

Proofreader: Sulaeman Deni Ramdani

METADATA REVIEW	PERMINTAAN	SEDANG BERLANGSUNG	LENGKAP
1. Penulis	2024-05-19	2024-05-19	2024-05-19
2. Proofreader	2024-05-19	2024-05-19	2024-05-19
3. Editor Layout	2024-05-19	2024-05-19	2024-05-19

Koreksi Proofreading: Tidak ada komentar INSTRUKSI PROOFING

This work is licensed under a Creative Commons Attribution 4.0 International License.

UNNES
UNIVERSITAS NEGERI SEMARANG

Sarwi Asri <sarwiasri@mail.unnes.ac.id>

[VANOS] Editor Decision

1 message

Atep Iman <jurnaluntirta2024@gmail.com> Tue, Mar 26, 2024 at 11:17 PM
To: Sarwi Asri <sarwiasri@mail.unnes.ac.id>

Sarwi Asri:

We have reached a decision regarding your submission to VANOS Journal of Mechanical Engineering Education, "EFFECTIVENESS OF PEER TEACHING LEARNING MODELS IN LATHE MACHINERY PRACTICE COURSES FOR MECHANICAL ENGINEERING EDUCATION PROGRAM STUDENTS".

Our decision is to: Accept Submission

Atep Iman
ID Google Scholar: iNp6JAgAAAAJ&hl
ID Sinta: 6697560
ID Orcid: 0000-0003-4285-3012
Mechanical Engineering Education, Teacher Training and Education Faculty,
Sultan Ageng Tirtayasa University, Ciwaru Raya Street, Number 25 Serang
Banten
Phone 085722391916
atepiman@untirta.ac.id

"VANOS" Journal of Mechanical Engineering Education
http://jurnal.untirta.ac.id/index.php/vanos

UNNES
UNIVERSITAS NEGERI SEMARANG

Sarwi Asri <sarwiasri@mail.unnes.ac.id>

Pengumuman Manuskrip

1 message

Journal of Mechanical Enginering Education <vanos@untirta.ac.id> Tue, Mar 26, 2024 at 2:07 PM
To: sarwiasri@mail.unnes.ac.id

Kepada
Sarwi Asri, dkk
Universitas Negeri Semarang

Berikut ini kami sampaikan surat LoA dari manuskrip yang telah diterima di jurnal Vanos. Adapun, ketentuan untuk publikasi manuskrip penulis dapat dilihat lebih lanjut pada surat yang kami lampirkan.

Best Regards
Chief Editor VANOS JMEE
Mechanical Engineering Education
University of Sultan Ageng Tirtayasa
Campus II: Jl. Raya Ciwaru No.25 Serang

1._SURAT_KETERANGAN_DITERIMA_(Sarwi Asri dkk).pdf
507K

VANOS
JOURNAL OF MECHANICAL ENGINEERING EDUCATION
Sekretariat: JI, Raya Jakarta Km. 4 Serang, Kampus II JI. Raya Ciwaru No 25 Serang
Email: vanos@untirta.ac.id; Homepage: http://jurnal.untirta.ac.id/index.php/vanos
P-ISSN 2528-2611, E-ISSN 2528-2700

SURAT KETERANGAN

Nomor: 03/UN43.2.18/V/IX/VANOS/2024

Kepada

Sarwi Asri, dkk

Universitas Negeri Semarang

Berdasarkan penilaian manuskrip oleh tim Editor dan Reviewer, maka manuskrip saudara yang berjudul:

Effectiveness of Peer Teaching Learning Models in Lathe Machinery Practice Courses for Mechanical Engineering Education Program Students

Dinyatakan **diterima *(accepted)*** untuk diterbitkan di Jurnal *VANOS (Journal of Mechanical Engineering Education)* **Volume 9 Nomor 1, Mei 2024**. Adapun proses pembayaran publikasi dapat dilihat di **lampiran**.

Demikian surat ini disampaikan untuk digunakan sebagaimana mestinya, kami ucapkan terimakasih telah berpartisipasi dalam penerbitan manuskrip di Jurnal Vanos.

Serang, 26 Maret 2024

Editor In Chief,

Haris Abizar, M.Pd.
NIP. 198610062019031008

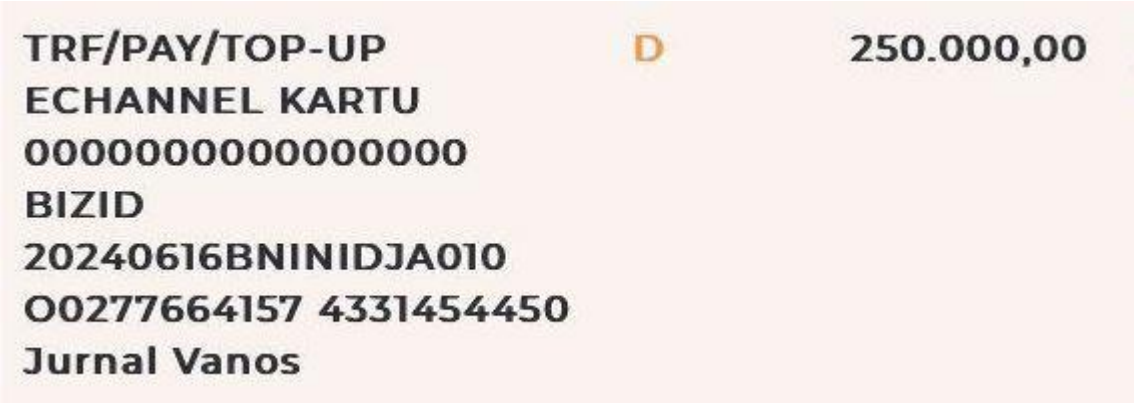
VANOS
JOURNAL OF MECHANICAL ENGINEERING EDUCATION
Sekretariat: JI, Raya Jakarta Km. 4 Serang, Kampus II JI. Raya Ciwaru No 25 Serang
Email: vanos@untirta.ac.id; Homepage: http://jurnal.untirta.ac.id/index.php/vanos
P-ISSN 2528-2611, E-ISSN 2528-2700

Lampiran

Proses publikasi bagi penulis yang manuskrip dinyatakan diterima maka:

1. Penulis dikenakan biaya sebesar Rp 250.000,- (*dua ratur lima puluh ribu rupiah*).
2. Pengiriman melalui rekening Bank Syariah Indonesia (BSI) nomor 4331454450 a.n. Atep Iman.
3. Bukti pembayaran dapat diinfokan ke nomor 085722391916 a.n. Atep Iman atau Email: vanos@untirta.ac.id

Bukti Pembayaran pada Jurnal VANOS:



VANOS
JOURNAL OF MECHANICAL ENGINEERING EDUCATION
http://jurnal.untirta.ac.id/index.php/vanos
ISSN 2528-2611, e-ISSN 2528-2700
Volume 9, Number 1, May 2024, Pages 32 - 41

Effectiveness of Peer Teaching Learning Models in Lathe Machinery Practice Courses for Mechanical Engineering Education Program Students

Sarwi Asri[1], Hanif Hidayat[2], Muhammad Fariz Nasrullah[3]

[1,3]Mechanical Engineering Education, Faculty of Engineering, Universitas Negeri Semarang, Indonesia
UNNES Sekaran Campus, Gunungpati Semarang, Central Java, Indonesia
[2]Automotive Engineering Education, Faculty of Engineering, Universitas Negeri Semarang, Indonesia
UNNES Sekaran Campus, Gunungpati Semarang, Central Java, Indonesia

Corresponding author: sarwiasri@mail.unnes.ac.id

Received: 25 February 2024. Accepted: 26 March 2024. Published: 30 May 2024

ABSTRACT

The peer teaching learning model provides an opportunity for students to give each other knowledge to their peers. Peer teaching is a student-centred learning method. The purposes of this study are (1) to learn about the competence of students' lathe practice after applying the learning model of peer teaching and (2) to know about the improvement of the competency of students' lathe practice after applying the peer-teaching learning model. The method used in this research is quasi-experimental. The sample used in this research was 41 students of the Practical Class from the Mechanical Engineering Education Study Program. The data analysis used is normality test, homogeneity test, t-test, and N-Gain test. The results of the research show that (1) the competence of lathe practice of the students who apply a peer teaching learning model is in moderate categorized and (2) the application of a peer learning model is effective to improve the lathe practical competence of the students.

Keywords: Peer Teaching, Competence, Lathe Practice

INTRODUCTION

Universitas Negeri Semarang (UNNES) is one of the institute of education. Teacher Training Institute (LPTK) is a public or private college designated by the government to organize the Bachelor of Education Program (PSP) and Teacher Profession Education (PPG) to meet the needs of educators who are competent in Indonesia. LPTK consists of colleges under the auspices of the Ministry of Education, Culture, Research and Technology [1]. As a competent teacher printing agency, LPTK is decisive in improving the quality of education, because teachers are an important player in advancing Indonesian education.

One of the faculties that exists at UNNES is the Faculty of Engineering which has 15 courses of study. One of its courses is the Mechanical Engineering Educational Studies Program. The Engineering Engineering Education Study Program is one of the curricula of candidate teachers in vocational secondary schools especially in the field of machining and manufacturing.

The Engineering Lathe Practice Course is one of the compulsory courses taught in the Mechanical Engineering Education Study Program. The learning access on this course is that students are able to do work with a blower machine. A variety of practical skills are taught from basic to advanced. Basic materials are orientation of the machine, operational standards of machine use procedures, identification of auxiliary tools, and health and safety at work. Advanced materials are the operation of machine with a variety of competencies such as facing, turning, tapper, groove and threading.

The background of students in the Mechanical Engineering Education Study Program comes from high school and vocational school graduates. Students with a machining vocational school background can be assumed to have the ability to practice lathes. Meanwhile, students with a high school background do not yet have the ability to practice lathes. The distribution of the number of students with high school and vocational school backgrounds is not balanced. The number of students with a high school background is greater than students with a vocational school background.

The observation results showed that some students had difficulty carrying out lathe practices. This difficulty is especially felt by students who have a high school background. Practical Study Group 3 (Practical Group 3) has 14 students from high school backgrounds and 5 students from machining vocational school backgrounds. Practical Study Group 4 (Practical Group 4) has 15 students from high school backgrounds and 7 people from machining vocational school backgrounds. Forming small groups in class will help distribute students from different backgrounds evenly.

The classroom learning that has been carried out so far has not been able to bridge the existing problems. Limited time and the large number of competencies that must be

achieved in each course almost make it impossible for students to repeat basic concepts. One way that can be done to solve this problem is by implementing the peer teaching learning method.

The classroom learning that has been carried out so far has not been able to bridge the existing problems. Limited time and the large number of competencies that must be achieved in each course almost make it impossible for students to repeat basic concepts. One way that can be done to solve this problem is by implementing the peer teaching learning method [2].

Peer teaching is actually not a new learning method in the world of education [3]. Peer teaching learning or what is commonly known as peer tutoring learning is a student-centered learning method [4]. This learning is believes that with a pleasant atmosphere, all students' attention and concentration is focused on the learning process, so that a serious but relaxed learning atmosphere can be created [5]. Peer teaching is expected to be able to facilitate first semester students to prepare for the physics education courses they will take. Peer teaching learning model as valuable learning approach and effective that has been applied to various approaches such as medical, dentistry and various ophthalmology health college [6]. That matter possible because of the model peer teaching learning build a learning environment which allows students feel comfortable to express various difficulties in the process learning [7]. The peer teaching learning model can be applied to vocational learning. In order not to disrupt students' regular lecture schedules and the nature of peer teaching learning is only to help students master basic physics concepts, peer teaching learning should be carried out outside of regular lecture hours [8].

Novelty in peer teaching research in vocational education refers to the exploration of new approaches, methods, or combinations of existing strategies to enhance the effectiveness of peer teaching in vocational education settings. This can include the integration of different pedagogical approaches, the use of technology to facilitate peer larning, or the examination of the impact of peer teaching on specific learning outcomes [9].

Based on these considerations, peer teaching research was conducted on fourth semester students of the Mechanical Engineering Education Study Program. The aims of this research are (1) to determine students' lathe practice competency after implementing the peer teaching learning model and (2) to determine the increase in students' lathe practice competency after implementing peer teaching learning.

RESEARCH METHOD

The sample used in this research was the Practical Class 3 and Practical Class 4 classes of students from the Mechanical Engineering Education Study Program, totaling 41

students. The entire research sample was divided into two groups, namely the Practical Group 3 as the control class and the Practical Group 4 as the experimental class. The sampling technique used was Purposive Sampling [10].

The method used in this research is quasi-experimental. Quasi Experimental has a control class, but it does not function fully to control external variables that influence the implementation of the experiment [11]. The research design used in this research is Nonequivalent Control Group Design. In this design, one experimental group and one comparison group are used [12]. The research began by giving a pre-test to both groups. An overview of research diagram can be seen in Picture 1.

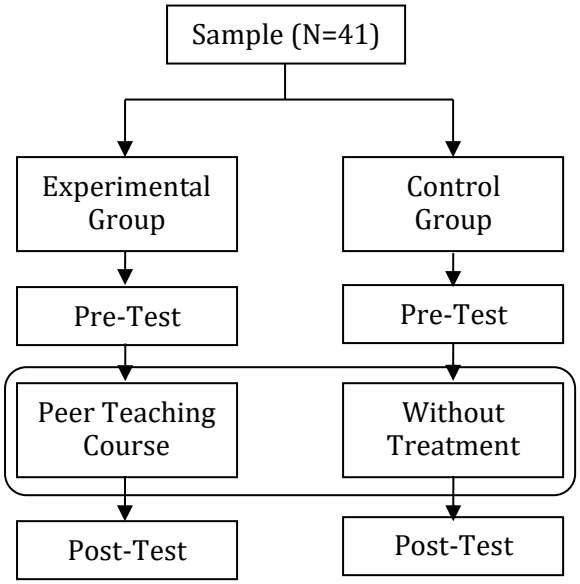


Figure 1. Research diagram

The next stage was given treatment to both groups and ended with giving a post test to both groups [13]. An overview of Nonequivalent Control Group Design can be seen in Table 1.

Table 1. Nonequivalent control group design

O_1	**X**	**O_2**
O_3	-	**O_4**

Note:

O_1 : Pretest experiment group

X : Peer Teaching Course

O_2 : Post test experiment group

O_3 : Pretest control group

\- : without treatment

O_4 : Post test control group

The data collection technique in this research is to use a test technique consisting of a pre-test and post-test [14]. The pre-test is used to measure students' initial ability students' initial abilities in mastering initial turning practice competencies in the experimental group and control group. The post test is used to measure students' final abilities in lathe practice competency in the experimental group and control group. The post test results were used as a comparison between the experimental group and the control group.

Data analysis in this research was N-Gain Test, Normality Test, Homogeneity Test and T-Test [15]. The N-Gain test was used to determine the increase in student learning outcomes in both groups. To determine that the data that has been collected is normally distributed, a normality test is used. The homogeneity test functions to determine whether the two groups are homogeneous or not. The normality test and homogeneity test

are requirements for the next statistical test, namely the t-test. The t-test is needed as a statistical test to test the hypothesis, namely whether or not there are differences in learning outcomes between the two groups [16].

RESULT AND DISCUSSION

The peer teaching learning model is a learning model that allows students to share their knowledge with their peers or teach their peers. Peer assisted learning is a learning method that allows students to discuss actively and cooperatively. Peer teaching is a procedure of students teaching other students [17]. There are two types of implementation of peer teaching, the first type is teachers and learners of the same age. The second type is a teacher who is older than the learner [18]. There are several terms in the peer teaching method, namely, tutors are students who act as lecturers who teach or provide assessments, and tutees are students who are taught or given assessments [19].

Students who have a vocational school background in machining become tutors for their classmates. Before implementing the lesson, observation and selection are carried out for prospective tutors. The tutor selection test is used so that tutors who will join in peer teaching learning really have the knowledge needed so that the peer teaching learning program can run smoothly. Students who become tutors have an advantage because they have the opportunity to learn to teach in class.

Tutees in this research are students who have a high school or non-machining vocational school background. Tutees are chosen with the aim of preparing students to engage in learning at college. Students are expected to have provisions when facing lathe practice lecture material. It is also hoped that the differences in the teaching and learning process in high school and university can be bridged by this program [20]. The implementation of the peer teaching learning model in this research was carried out outside regular lecture hours. The peer teaching learning model meeting schedule is determined based on an agreement between the tutor and tutee. Peer teaching can also be carried out during lathe practice lectures. The tutor helps the tutee in supervising and providing guidance when carrying out practice.

The data normality test aims to test whether the data being tested is normally distributed or not. Conditions and normal distribution are requirements for testing hypotheses using parametric statistics [21]. The Kolmogorov-Smirnov normality test was used in this study. The results of the Normality Test in this study show that the Asiymp.Sig (2-tailed) significance value of 0.085 is greater than 0.05. So according to the basis for decision making in the Kolmogorov-Smirnov normality test, it can be concluded that it is normally distributed [22].

The results of the pre-test and post-test homogeneity test show that the value of F_{count} = 1.572 < F_{table} = 2.217. Based on these results, the two sample data are declared homogeneous.

The t-test is a statistical test used to test the truth or falsity of the null hypothesis which states that between two sample means taken randomly from the same population, there is no significant difference.

The results of the t-test in this study were t_{count} = 3.367 > t_{table} 2.022. This means that the peer teaching learning model is effectively used to improve students' lathe practical competence.

The Gain Test (<g>) is used to determine the increase in cognitive learning outcomes before and after learning using the peer teaching learning model is calculated using a normalized gain score. The formula used to determine the Gaint Test is as shown in Equation 1.

$$N - Gain = \frac{Posttest\ Score - Pretest\ Score}{Maximum\ Score - Pretest\ Score}$$

Equation 1. The Gain Test (<g>)

Normalized gain score <g> is a suitable method for analyzing pre-test and post-test results. The level of normalized score gain is categorized into three categories (Hake, 1998), namely:

High : (<g>) > 0.7

Moderate : 0.7 (<g>) 0.3

Low : (<g>) < 0.3

The N-Gain test in this research can be seen in Table 2.

Table 2. N-gain test results for experimental group and control group

Groups	Pretest Average	Posttest Average	Max Score	<g>
Experiment	68,15	82,10	92	0,438
Control	73,81	81,18	87	0,281

Based on Table 2, the N-Gain value in the experimental group was obtained at 0.438. This value can be categorized as medium gain. This means that there is an increase in the moderate category for students' lathe practice competency after receiving peer teaching method treatment. The peer teaching method can help less active students become more active in the learning process so that it can help these students understand lessons so that they can improve learning achievement [23]. The N-Gain value for the control class was 0.281, this means that although there was an increase in student learning outcomes, this increase was very small.

The peer teaching learning model is very appropriate for getting students' participation as a whole and individually. This strategy gives each student the opportunity to act as a teacher for his friends [24]. With this strategy, students who have not wanted to be involved will participate in learning actively [25]. Because the age difference between tutors and tutees is not too great, peer teaching also provides students with the opportunity to study and work without pressure [26]. The peer teaching learning model facilitates students with different abilities. Students who are more responsive to the material being

studied can show concern and responsibility for their friends. So that students can actualize their abilities [27].

Peer teaching learning can be done more relaxed but still meaningful. Learning atmosphere in the peer teaching pattern is a stimulus for developing discussions between tutors and tutees so that both parties can practice critical thinking when facing difficult questions [28]. Peer teaching provide opportunities for tutors to gain knowledge and new skills. That matter possible because by teaching, the tutors apply knowledge into reality so it will deepen your insight the tutor himself [29]. Apart from improving learning outcomes, interaction between tutors and tutees also has a positive impact on both. These positive impacts include increasing self-confidence, improving problem-solving abilities, increasing cooperation between students and improving communication building skills [30]. Peer teaching learning is a technique that can help students to understand various different concepts, developing computing capabilities and values moral, social and emotional especially their abilities are deep express ideas [31].

CONCLUSION

Based on the results and discussion, it can be concluded that the results of the research show that the competence of lathe practice of the students who apply a peer teaching learning model is moderately categorized and the application of a peer learning model is effective to improve the lathe practical competence of the students.

REFERENCES

[1] "Permendikbud-Nomor-38-Tahun-2020".

[2] S. SARUN, "PENINGKATAN HASIL BELAJAR PEMESINAN BUBUT SISWA KELAS XI TPA DENGAN METODE TUTORIAL TEMAN SEBAYA DI SMKN 1 CIKARANG SELATAN KABUPATEN BEKASI," *VOCATIONAL: Jurnal Inovasi Pendidikan Kejuruan*, vol. 2, no. 2, pp. 136–145, 2022.

[3] S. Hai-Jew, *Practical Peer-to-Peer Teaching and Learning on the Social Web*. in Advances in Educational Technologies and Instructional Design. IGI Global, 2021. [Online]. Available: https://books.google.co.id/books?id=NdNJEAAAQBAJ

[4] R. K. Baltzersen, *Effective Use of Collective Peer Teaching in Teacher Education: Maximizing Student Learning*. in Routledge Research in Teacher Education. Taylor & Francis, 2023. [Online]. Available: https://books.google.co.id/books?id=35jeEAAAQBAJ

[5] Y. N. Febianti, "Peer teaching (tutor sebaya) sebagai metode pembelajaran untuk melatih siswa mengajar," *Edunomic Jurnal Pendidikan Ekonomi*, vol. 2, no. 2, 2014.

[6] C. H. Major, M. S. Harris, and T. D. Zakrajsek, *Teaching for Learning: 101 Intentionally Designed Educational Activities to Put Students on the Path to Success*. Taylor & Francis, 2021. [Online]. Available: https://books.google.co.id/books?id=2t4zEAAAQBAJ

[7] D. J. R. Evans and T. Cuffe, "Near-peer teaching in anatomy: An approach for deeper learning," *Anat Sci Educ*, vol. 2, no. 5, pp. 227–233, 2009.

[8] T. O. Oziegbe, *Introducing Peer Tutoring and Reciprocal Peer Tutoring in Colleges in Nigeria*. GRIN Verlag, 2023. [Online]. Available: https://books.google.co.id/books?id=sHa6EAAAQBAJ

[9] K. J. Graziano, "Peer teaching in a flipped teacher education classroom," *TechTrends*, vol. 61, pp. 121–129, 2017.

[10] R. K. Schutt, *Investigating the Social World: The Process and Practice of Research*. Pine Forge Press, 2009. [Online]. Available: https://books.google.co.id/books?id=Xl4caVEys_kC

[11] C. S. Reichardt and T. D. Little, *Quasi-Experimentation: A Guide to Design and Analysis*. in Methodology in the Social Sciences Series. Guilford Publications, 2019. [Online]. Available: https://books.google.co.id/books?id=LNGlDwAAQBAJ

[12] D. F. Chambliss and R. K. Schutt, *Making Sense of the Social World: Methods of Investigation*. Pine Forge Press, 2010. [Online]. Available: https://books.google.co.id/books?id=C_ykW73SbTcC

[13] S. Sugiono, "Metode penelitian kuantitatif, kualitatif, dan r & d," *Bandung: Alfabeta*, vol. 288, 2016.

[14] M. Zozus, *The Data Book: Collection and Management of Research Data*. in Chapman & Hall/CRC Interdisciplinary Statistics. CRC Press, 2017. [Online]. Available: https://books.google.co.id/books?id=ilAsDwAAQBAJ

[15] J. W. Creswell, *Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research*. in Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research. Pearson, 2015. [Online]. Available: https://books.google.co.id/books?id=6kk-nwEACAAJ

[16] A. Ross and V. L. Willson, *Basic and Advanced Statistical Tests: Writing Results Sections and Creating Tables and Figures*. SensePublishers, 2018. [Online]. Available: https://books.google.co.id/books?id=qCdFDwAAQBAJ

[17] K. Topping, C. Buchs, D. Duran, and H. van Keer, *Effective Peer Learning: From Principles to Practical Implementation*.

Taylor & Francis, 2017. [Online]. Available: https://books.google.co.id/books?id=oTQlDwAAQBAJ

[18] A. Burgess, D. McGregor, and C. Mellis, "Medical students as peer tutors: a systematic review," *BMC Med Educ*, vol. 14, pp. 1–8, 2014.

[19] N. Byrne and C. Butcher, *An Introduction to Teaching in UK Higher Education: A Guide for International and Transnational Teachers*. in ISSN. Taylor & Francis, 2020. [Online]. Available: https://books.google.co.id/books?id=FNQHEAAAQBAJ

[20] S. Hidayat and M. Saleh, "Komparasi kemampuan kerja antara lulusan SMA dan SMK di industri permesinan modern," *IKRAITH-EKONOMIKA*, vol. 2, no. 3, pp. 45–56, 2019.

[21] D. E. McNabb, *Research Methods for Political Science: Quantitative, Qualitative and Mixed Method Approaches*. Taylor & Francis, 2020. [Online]. Available: https://books.google.co.id/books?id=E20LEAAAQBAJ

[22] J. Durbin, *Distribution Theory for Tests Based on the Sample Distribution Function*. in CBMS-NSF Regional Conference Series in Applied Mathematics. Society for Industrial and Applied Mathematics, 1973. [Online]. Available: https://books.google.co.id/books?id=zAryCrT1IUYC

[23] R. Romansyah, S. Wakhinuddin, and W. Wagino, "Penerapan Metode Pembelajaran Tutor Sebaya Dalam Meningkatkan Hasil Belajar Siswa Pada Mata Diklat Teknik Dasar Otomotif Pada Siswa Kelas X Program Keahlian Teknik Kendaraan Ringan Smk Negeri 1 Sumatera Barat," *Automotive Engineering Education Journals*, vol. 7, no. 1, 2018.

[24] H. Irawan, "Application of People Tutor Methods to Increase Learning Achievement of Mechanical Measuring Equipment to Basic Automotive Engineering," *VANOS Journal of Mechanical Engineering Education*, vol. 8, no. 1, pp. 55–65, 2023.

[25] N. P. Anggorowati, "Penerapan model pembelajaran tutor sebaya pada mata pelajaran sosiologi," *Komunitas*, vol. 3, no. 1, 2011.

[26] D. G. Young, D. E. Hoffman, and S. Frakes Reinhardt, "An exploration of the connection between participation in academic peer leadership experiences and academic success," *Journal of Peer learning*, vol. 12, no. 1, pp. 45–60, 2019.

[27] A. Wadi SMKN, J. Srikandi, and B. Korespondensi Penulis, "Penggunaan model peer teaching untuk meningkatkan motivasi dan prestasi belajar membuat batik tulis," 2019.

[28] J. Liou-Mark, U. Ghosh-Dastidar, D. Samaroo, and M. Villatoro, "The Peer-Led Team Learning Leadership Program for First Year Minority Science, Technology, Engineering, and Mathematics Students.," *Journal of Peer Learning*, vol. 11, no. 5, pp. 65–75, 2018.

[29] E. L. Rees, P. J. Quinn, B. Davies, and V. Fotheringham, "How does peer teaching compare to faculty teaching? A systematic review and meta-analysis," *Med Teach*, vol. 38, no. 8, pp. 829–837, 2016.

[30] C. A. Scott, A. McLean, and C. Golding, "How peer mentoring fosters graduate attributes.," *Journal of Peer Learning*, vol. 12, no. 3, pp. 29–44, 2019.

[31] E. T. Vasay, "The effects of peer teaching in the performance of students in mathematics," *E-International Scientific Research Journal*, vol. 2, no. 2, pp. 161–171, 2010.