

# Applying Peer Tutor Learning and Interactive Case Methods in Online Learning Its Effect on Student Activities and Learning Outcomes

*by* Jarot Tri Bowo Santoso

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**Submission date:** 09-May-2023 02:33PM (UTC+0700)

**Submission ID:** 2088387445

**File name:** rning\_Its\_Effect\_on\_Student\_Activities\_and\_Learning\_Outcomes.pdf (838.04K)

**Word count:** 8822

**Character count:** 49657



## International Journal of Educational Methodology

Volume 8, Issue 3, 551 - 565.

ISSN: 2469-9632

<https://www.ijem.com/>

### Applying Peer Tutor Learning and Interactive Case Methods in Online Learning: Its Effect on Student Activities and Learning Outcomes

40 Ahmad Nurkhin<sup>ID</sup>  
Universitas Negeri Semarang, INDONESIA

Jarot Tri Bowo Santoso<sup>ID</sup>  
Universitas Negeri Semarang, INDONESIA

Satsya Yoga Baswara  
Universitas Negeri Semarang, INDONESIA

Harsono<sup>ID</sup>  
Universitas Muhammadiyah Surakarta,  
INDONESIA

Christian Wiradendi Wolor<sup>ID</sup>  
Universitas Negeri Jakarta, INDONESIA

Received: January 19, 2022 • Revised: March 2, 2022 • Accepted: July 31, 2022

**Abstract:** The purpose of this study was to increase student activity and learning outcomes by applying peer tutor learning methods combined with interactive case methods in online learning mode through Electronic Learning Aid (ELF) and Zoom meeting. This study was carried out with a classroom action research (CAR) design in three cycles of implementation. This study was carried out in the even semester of 2020/2021 in the Cost Accounting course. Data collection methods used are documentation, observation, and tests. Student learning activities in online learning through ELF and Zoom meetings have been recorded to show changes and improvements in the quality of student learning activities. The data analysis method used is quantitative descriptive analysis. The application of the peer tutor learning with the interactive case methods has been going well through the Zoom meeting and ELF and is able to have an impact on student activities and learning outcomes in the Cost Accounting course. The increase in student learning activities can be seen in the increased ability of students to ask questions, provide responses or answers, and express opinions or ideas during lectures. Student learning outcomes also experienced a significant increase, which was 7.5%. Students who act as tutors can carry out their duties well.

**Keywords:** Interactive case methods, learning activities, learning outcomes, online learning, peer tutor learning.

**To cite this article:** Nurkhin, A., Santoso, J. T. B., Baswara, S. Y., Harsono, & Wolor, C. W. (2022). Applying peer tutor learning and interactive case methods in online learning: its effect on student activities and learning outcomes. *International Journal of Educational Methodology*, 8(3), 551-565. <https://doi.org/10.12973/ijem.8.3.551>

#### Introduction


The Coronavirus disease (COVID) pandemic has had a significant disruptive impact on society, posing challenges to education provision worldwide. Due to this crisis, governments around the world have temporarily closed educational institutions to help reduce the spread of COVID-19 (Anthony & Noel, 2021). COVID-19 has forced many universities around the world to implement emergency distance teaching as a precautionary measure (Barhoumi et al., 2022). Online learning has been going on for more than two semesters at universities in Indonesia. Online media is considered very effective as a solution to prevent the spread of COVID-19 in the educational environment (Puspitorini, 2020).

Online learning has flexibility in its implementation and is able to encourage the emergence of independent learning and motivation to be more active learning (Sadikin & Hamidah, 2020). However, three important things need to be considered, namely technology support, availability of infrastructure, and perceptions of lecturers and students. All three have a significant relationship to the effectiveness of the online teaching and learning process (Gautam & Gautam, 2021). The readiness of lecturers in online learning must inevitably be improved to improvise online lectures. Student learning styles and lecturers' teaching styles underwent significant changes. Both are required to be able to use computers and the internet in learning (Fuadi et al., 2020). During the COVID-19 pandemic, educators need to harness the power of multimedia tools to draw knowledge from online learning resources such as images, animations, simulations, videos, and hypermedia (Barhoumi et al., 2022).

Online learning in Indonesia was marked by the launch of the "sistem pembelajaran daring Indonesia" (Indonesian online learning system or SPADA) platform in 2014, but it has not been widely used. The COVID-19 pandemic

#### \*Corresponding author:

Ahmad Nurkhin, Universitas Negeri Semarang, Indonesia. ✉ [ahmadnurkhin@mail.unnes.ac.id](mailto:ahmadnurkhin@mail.unnes.ac.id)

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demanding the world of education in Indonesia to take advantage of online learning (Surahman et al., 2020). At the beginning of the pandemic, most of the lecturers and students had some difficulty in utilizing online learning, including at the Universitas Negeri Semarang (UNNES). Phenomena that arise during online learning include less varied student learning activities. Some lecturers only give assignments to students online by uploading the results of assignments that have been completed. Some lecturers rely heavily on face-to-face online meetings via video conferencing applications (Zoom meetings, MS Teams, Google Meet, and others). The interaction between students and lecturers in video conferencing tends to be monotonous. Students feel reluctant to be more interactive with the explanations given by the lecturer. Likewise, the lecturers are also less creative in learning through video conferencing applications. Most of the lecturers have taken advantage of the previously developed learning management system (LMS). However, the activity is still unable to increase students' creative learning activities.

Observing this phenomenon, the researcher took an offer of a solution, namely peer tutor learning. A cooperative learning model oriented to student learning is expected to be able to provide support to overcome this problem. Peer tutor learning is considered the right solution for several reasons. First, there is a group of students who have abilities and competencies that are above average, both academically and non-academically. Second, there are some students who still have awkward attitudes and feelings, both towards the lecturer and the complexity of the bilingual class. Third, learning through Zoom meetings (and online learning in general) creates significant barriers for students who want to study as thoroughly as possible. Students will be lazy in their studies and lectures if they do not receive assistance and supervision from "other parties".

Peer tutor is the hiring of one student to provide one-on-one instruction to other students in completing assigned tasks with the help of tutors and tutees. The peer tutor learning method is an approach method in which students with high absorption from the group of students themselves are empowered to tutor their friends (Reziyustikha, 2017). Peer group learning forms students into small groups to discuss so as to improve higher-order thinking skills (Collier, 1980). The effectiveness of peer tutor has been proven empirically through research. Students in peer teaching with guided classes not only outperformed in the final exam, but also achieved the highest frequency of successful conceptual changes compared to their peers in the other two classes (Ding & Xu, 2014). The results of another study show that peer tutor in Cost Accounting learning is effective. This is indicated by the increase in the learning scores of lecture participants in both the first cycle and second cycle (Nurkhin, 2013). There is a significant increase in student learning outcomes with cooperative learning with a peer tutor approach (Reziyustikha, 2017). Peer learning and group work encourage the formation of self-confidence and activity among students (Pranger, 2016).

The purpose of this study is to increase activity and learning outcomes by applying peer tutor learning methods combined with interactive case methods in online learning mode through Electronic Learning Aid (ELENA) and Zoom meetings. The development of an interactive case method is thought to be suitable for improving students' critical thinking skills as well as their ability to solve problems and come up with solutions. The case method will be more useful if it is combined with peer tutoring learning methods that can solve problems in learning through ELENA and Zoom meetings. There is intensive cooperation and assistance from students who act as tutors. Student-to-student interaction will also be better.

The case method is an option for increasing student activities and learning outcomes because it can increase student activities more intensively. Students will be faced with real cases to solve (Jennings, 2002). Improving long-term memory, improving the quality of decision making, and understanding individual differences are the advantages of case method teaching (Afsouran et al., 2018). Case method development is able to attract students' interest in learning, increase engagement with peers and educators, and improve their learning performance (Song et al., 2022). The case method can act as a boundary object between business practice and management theory, representing management as a science-based profession (Lusoli, 2020).

The combination of peer tutor learning and case methods will bring up more varied student activities. Students will be faced with contextual cases and students will solve these cases with the help of peer tutors. Students will feel more confident and will be able to explore their insights to find solutions to cases that need to be solved. Online learning will be much more effective because of the application of these two methods. Students will get intensive guidance from peer tutors and will finally be able to complete the tasks given by the lecturer. The obstacles faced by students are significantly reduced because of the presence of peer tutors.

## Literature Review

### *The Concept of Peer Tutor Learning Method*

Cooperative learning and interactive learning models are learning models that occur because of a group learning approach. This approach is a logical result of the implementation of a new paradigm in education, which includes, among other things, the recognition that education is no longer seen as simply "pouring water into a glass" or simply filling a child's brain with various theories or scientific concepts, but rather teaching that is more "turning on the light," that is, encouraging, moving, and guiding students so that they can develop their imagination and actual inspiration. Through the concept of cooperative learning, various aspects related to learning activities can be designed and

formulated jointly between teachers and students, and between students and other students (Nata, 2009). Peer group learning will be able to improve higher order thinking skills because students are asked to solve cases in several small groups (Collier, 1980). The learning trajectory is built through the search for knowledge transformation and changes in the distribution of knowledge in peer groups and the material environment (Melander, 2012).

The practice of group mentoring is like that of peer tutoring, offering an attractive alternative to traditional training because it is fast and flexible, cost effective, and encourages relational learning. Groups should be formed that focus on relevant topics related to the needs of students, regardless of whether the groups meet face-to-face or virtually. The advisor must set the direction for the group, create an attractive atmosphere, and provide good resources (Emelo, 2011). The quality of peer tutor learning methods will be greatly influenced by the tutors chosen. Tutors must be carefully and appropriately chosen. Prospective tutors are selected based on several criteria, namely high academic ability, good communication skills, and good interpersonal skills. The selected tutor will have the duties and responsibilities of the tutor, namely leading the group study process, explaining the learning material, providing an explanation of assignments, helping the tutee do the assignment, and leading the group discussion process. In addition, a tour guide keeps a diary for each lesson. The note contains the obstacles faced by the tutee in the learning process (Reziyustikha, 2017)

#### *The Concept of Case Method*

The case method was introduced in 1910 at Harvard University. Some courses in the business administration program utilize several case studies, including some short cases that are less than a thousand words. Cases are generally used as part of a class to develop an understanding of situations, concepts, and techniques. Class sessions usually include a brief period of small group discussion before discussion by the whole class (Jennings, 2002). Case studies were initially used as a pragmatic attempt to attract the attention of managers through the use of written materials about problems or incidents in the organization, which were written by academics and then analyzed by students (Mumford, 2005). The case method is very competent to develop most of the attributes of graduates because it involves a combination of elements of a global perspective, multidisciplinary learning enhances creative and innovative thinking, develops entrepreneurial skills, immerses oneself in a real business organizational environment, develops communication skills, and emphasizes on applying theory to practice through cases. business and analysis (Song et al., 2022).

The case method can be used to: obtain illustrations of specific points, issues, or managerial principles; provide managers with a neutral environment in which they are free to explore problems (because they are not their own); link theory with practice; deal with the complexities of specific situations; develop analysis and synthesis; develop self-analysis, attitude, confidence, and responsibility; develop interpersonal, communication, and listening skills; and develop judgment (Jennings, 2002). Cased method teaching has the potential to immerse participants in realistic managerial situations to detect how they make decisions while having incomplete information, time constraints and conflicting goals. It also enriches each learning hour by adding more examples and experiences in the learning process. The enriched environment stimulates participants to think more deeply and present their opinions more freely. In this method, not only the instructor can see how the participants react differently to a challenge/problem, but also helps the participants to see how their point of view varies on different organizational issues (Afsouran et al., 2018).

#### *Applying Peer Tutor Learning and Interactive Case Methods in Online Learning: It's Impact on Student Activities and Learning Outcomes*

Online learning is the right solution during the COVID-19 pandemic. UNNES lecturers and students have started to get used to online learning which has been running for more than two semesters. However, there are still obstacles encountered by lecturers and students. The main problem that arises is that not many lecturers are able to create variety in online learning. As a result, students experience boredom because learning activities tend to be monotonous. Most lecturers only use video conferencing applications and the interaction between lecturers and students is one-way. There are not many learning activities carried out by students except for assignments given by the lecturer.

Learning innovations that can be carried out by researchers are the application of appropriate learning methods according to the characteristics of online learning through ELENA which has many features. The learning method offered is the peer tutor learning methods and the case method. Peer learning encourages the formation of self-confidence and activity among students (especially among students who are initially less active and less qualified) (Pranger, 2016). As a result, the atmosphere of teaching and learning becomes better. In the long run, this effect promotes homogenization of qualification/competence levels that are initially inhomogeneous at high levels. The implementation of peer tutor learning methods can increase student motivation in learning in the implementation of information and communication technology (ICT) courses (Sintong et al., 2017). Peer tutor learning with the Vee Heuristic strategy can also increase self-confidence, learning activities and student learning outcomes (Putra et al., 2018). The implementation of peer tutor learning methods can increase students' learning confidence (Wisudawati et al., 2019).



The case method can help students to: identify problems, find, and use information for problem solving, be aware of the feelings and beliefs of others and gain a top management perspective, while adding realism to the course. The majority believe that cases have provided real-life examples and insights as a basis for illustrating or inviting application of theoretical concepts (Jennings, 2002). In case method teaching, participants engage with real-world challenges from an action perspective instead of analyzing them from a distance (Afsouran et al., 2018). Compared to a simple method using decision tree classification, this proposed method increases the retrieval rate and attribute annotation precision rate by more than 10%. The proposed method is effective for automatic annotation (Samejima et al., 2015).

Another finding revealed that case study-based learning increased student engagement, with a statistically significant and positive relationship between case-based learning and the four aspects of engagement, namely behavioral, emotional, cognitive, and agent engagement (Raza et al., 2019). Another study found that a Master of Business Administration (MBA) program that uses the case method intensively and consistently fosters politeness in students. Through repeated practice embedded in the case method, students internalize a number of behavioral tendencies that form the basis of civic behavior (Jaén et al., 2014).

The purpose of this study was to increase student learning activities and outcomes by applying peer tutor learning and interactive case methods. The combination of these two learning methods will be able to create more interactive and varied lectures. Students will be faced with real cases that must be solved. Students will get assistance from peer tutors so that they will be able to explore ideas and ideas better. Students will not be awkward when expressing the solutions given to overcome the given cases. Student-to-student interaction will increase significantly.

## Methodology

### Research Design

The type and design of the research used is classroom action research. Researchers also develop learning media that have been developed previously such as learning modules and teaching materials. The learning resources will be packaged more attractively and interactively. Classroom action research (CAR) is a form of reflective study, which is carried out by action actors to increase the rational stability of their actions in carrying out tasks and deepen understanding of conditions in learning practice (Hopkins, 2011). CAR is intended to mend and improve the quality of learning and help empower teachers in solving learning problems in schools (Muslich, 2016).

The research objects are students and lecturers of the Economic Education (Accounting Education) degree program, Faculty of Economics, Universitas Negeri Semarang in the even semesters of 2020-2021. The subject that becomes the development material in this study is cost accounting. The resulting product has been tested to produce a final product that is suitable for use in this study.

### Data Collection and Analysis

Data collection methods used were documentation, observation, and tests. The documentation method was used to record the online learning process through ELENA and Zoom meetings. Observations were aimed at capturing student learning activities and their changes during the research. The test was used to obtain data on student learning outcomes, both before and after the treatment was given. The test items have been tested for validity and reliability by asking the opinions of experts (lecturers of cost accounting courses). This test was used because the test items were essay questions. The experts argued that the test items can be used.

The data analysis method used is quantitative descriptive analysis and paired sample t-test. Activities and learning outcomes were obtained by observation and tests. Student learning activities in online learning through ELENA were recorded to show changes and improvements in the quality of student learning activities. These activities include time notes for collecting assignments, notes on student activities in studying materials and videos that have been uploaded at ELENA, attendance filling activities, student activity logs at ELENA, and other activities. Student learning outcomes were also analyzed to determine whether there is a significant increase or not. The Wilcoxon Signed Rank Test was used to test the difference between the pre-test and post-test because the data were not normally distributed. The test results using the One-Sample Kolmogorov-Smirnov Test show that asymptotic significance (2-tailed) of the pre-test and post-test were 0.000 and 0.043 or less than 0.05. Thus, non-parametric is used in this test. IBM SPSS Statistics 25 software was used for data analysis.

## Results

This study was carried out from April to July 2021. CAR was carried out in three cycles. The chosen course was Cost Accounting (three credits). Researchers have produced two learning videos with the topic of basic concepts of standard cost and standard cost accounting. This learning video was developed from the lecture material that has been studied so far. The following is a description of how the three CAR cycles are implemented.

### Result of the First Cycle Implementation

The activity that the researchers carried out was to analyze the initial conditions and determine the steps to be taken at the implementation stage of the first cycle. Analysis of the initial conditions includes determining the material and design of the implementation of the learning. Determination of the material is based on the results of lectures in the previous year which showed that student learning outcomes were less than satisfactory on standard cost accounting materials. The material is broad enough to make it difficult for students to gain a more comprehensive understanding. Standard cost accounting materials consist of standard cost definition, cost difference analysis, single plan standard cost accounting, partial plan method standard cost accounting, and mix and yield variance. The application of peer tutoring methods and interactive case methods is expected to have a significant impact on student understanding.

### Planning

The researchers determined the learning objectives and the material to be delivered in the first cycle. The targeted objectives of the lectures are: (1) students can understand the concept of standard costs and (2) students are able to analyze the standard cost difference with a one difference, two difference, three difference and four difference approach correctly. Thus, the materials studied by students in the first cycle are the concept of standard costs and the calculation of the difference in standard costs (raw material costs, labor costs, and factory overhead costs). Researchers prepared learning media in the form of presentation slides and learning videos.

The lecture design applied in the first cycle was the use of Zoom meetings with a combination of peer tutor learning and interactive case methods. The researchers determined in advance the students who become tutors to assist the implementation of the applied peer tutoring learning methods. Tutors were selected based on the experience of researchers who have mentored these students in the Introduction to Accounting course. The researchers also asked for input from the study group coordinator in determining peer tutors. Five peer tutors were selected.

Coordination with peer tutors was the next step carried out so that treatment can run smoothly in the implementation of the first cycle. Researchers provide an initial understanding of the lecture material in coordination with peer tutors. Thus, each tutor has understood the material to be studied and delivered to the members of their respective groups. The first coordination was held on May 21, 2021 (see Figure 1). Researchers provided an understanding to peer tutors regarding the implementation of research and the role of tutors during research. In addition, researchers provided an understanding of the material to be studied in the first cycle (standard cost concept and standard cost difference analysis). The tutors were very interactive in the coordination and delivery of this initial material.

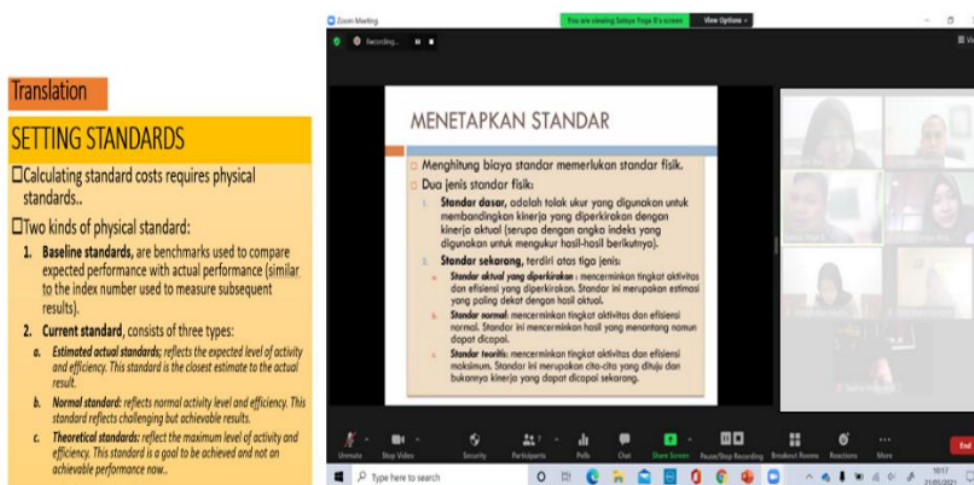


Figure 1. Initial Coordination with Tutor

Researchers prepared materials and practice questions that were uploaded to ELENA. Thus, students can follow the learning in the first cycle well. Live learning through Zoom meetings and materials presented through ELENA were delivered. The first cycle was carried out in two meetings.

### Implementation

The implementation of the first cycle was on May 25, 2021, according to the 2020 Accounting Education Class C Cost Accounting class schedule. Researchers introduced the lecture, then continued with an explanation of the material by

the tutor to each group member. Students were divided into five groups. Each tutor explains the lecture material and carries out interactive questions and answers for approximately one hour. Researchers used the break room feature in the Zoom meeting to divide the class into five breakroom groups. Researchers made observations in all groups to find out the course of the tutor's explanation to each group member.

The screenshot shows a Zoom meeting interface. On the left, there is a slide titled "Contoh:" (Example) with the following content:

PT Rimendi uses a standard cost system. Standard cost data and actual costs in January are as follows:

| Cost     | Standard quantity | Actual quantity | Standard price | Actual price |
|----------|-------------------|-----------------|----------------|--------------|
| Material | 4.000 unit        | 5.000 unit      | Rp 20          | Rp 15        |
| Labor    | 1.000 hour        | 2.000 hour      | Rp 10          | Rp 20        |

The calculation of the variance of the various models is as follows:

Below the slide, there is a table with the following data:

| Biaya        | Kuantitas standar | Kuantitas sesungguhnya | Harga standar | Harga sesungguhnya |
|--------------|-------------------|------------------------|---------------|--------------------|
| Bahan baku   | 4.000 unit        | 5.000 unit             | Rp 20         | Rp 15              |
| Tenaga kerja | 1.000 jam         | 2.000 jam              | Rp 10         | Rp 20              |

The Zoom interface also shows a video feed of participants on the right and a toolbar at the bottom.

Figure 2. The Tutor Explains the Material to Group Members

Students returned to the main room to attend the next lecture session. The tutor also conveyed the results of the lectures in each group. Students were welcome to ask further questions to the lecturer. Researchers attempt to parse lecture material so that students can better understand it. Researcher then provided an initial case to be solved in this first cycle. The activity was presented on ELENA (see Figure 3). Researchers also provided video recordings of meetings at the Zoom meeting at ELENA so that students can replay them to improve their understanding of the lecture material.

The second meeting was held on June 1, 2021, with the target of completing a comprehensive case analysis of variance. Researchers provided an initial explanation of the cases that had to be resolved and continued with discussion in each group. Tutors became leaders in each group and aided in solving cases. Researchers and students discussed cases that have been **43**ne. Researcher then provided additional cases and the results were collected through ELENA. Researchers provided an assessment of the results that have been achieved by students.

The screenshot shows a web browser displaying a learning activity page on ELENA. The page title is "perugasan - analisis biaya standar". The main content area features a video player with a play button and a sidebar on the right with the following text:

**Translation.**

**Assignment: cost standard analysis**

Here the explanation the variance analysis.

The browser address bar shows the URL: 20202.elelena.unnes.ac.id/course/view.php?id=4026. The Windows taskbar at the bottom shows the date and time as 10:28 on 05/09/2021.

Figure 3. Display of Learning Activities at ELENA



### Observation

The implementation of the first cycle (first and second meetings) went well, although student learning activities still needed to be improved. Researchers made observations on the ongoing lecture activities, both activities carried out by tutors and students. In general, each tutor can carry out their role well. Tutors can explain the material clearly to members of each group. Students could interactively follow the tutor's explanation by submitting questions and responses. Tutors and students discussed to gain a better understanding. They were enthusiastic about attending lectures with more students opening their cameras and mobile phones to discuss directly. Student learning activities are measured by seven scales through observation sheets. Student learning activities in the first cycle are presented in the following table.

*Table 1. The Results of Observing Student Learning Activities in The First Cycle*

| No. | Observed learning activities                                    | Average score at the first meeting | Average score at the second meeting | Description               |
|-----|---|------------------------------------|-------------------------------------|---------------------------|
| 1.  | Following the Zoom break room on time                           | 7.00                               | 7.00                                | No difference             |
| 2.  | Expressing opinions or answers to questions from other students | 5.88                               | 5.74                                | Slightly decreased        |
| 3.  | Asking question   | 6.19                               | 6.07                                | Slightly decreased        |
| 4.  | Actively following directions from tutor                        | 6.79                               | 6.81                                | Slightly increased        |
| 5.  | Doing the exercises and assignments given                       | 6.40                               | 6.98                                | Quite an increase         |
|     | <b>Average Score</b>  | <b>6.45</b>                        | <b>6.52</b>                         | <b>Slightly increased</b> |

### Reflection

Overall, the first CAR cycle went well. There were some things that could still be improved. The involvement of students in their respective groups has not shown anything encouraging. Most students were still shy to ask questions and provide answers or feedback when tutors or other students ask questions. Both activities must be improved in the next cycle. Lecturers and tutors should motivate students to be able to express opinions in class well. On the other hand, there are good for students, namely turning on the camera during a Zoom meeting. This indicates the seriousness of students to attend lectures well. This positive thing must be maintained in the next lecture process.

### Result of Second Cycle Implementation

The second cycle was carried out with the aim of the lecture being that students were able to understand standard cost accounting with the single plan and partial plan methods. The material in the second cycle was more complicated than the material in the first cycle. Students are required to be able to distinguish between the two methods (partial plan and single plan) and be able to present standard cost accounting (a journal needed to record transactions that occur starting from the purchase of materials to the sale of finished products).

### Planning

Researchers determined the learning materials and resources that were used by tutors and students during the second cycle. Researchers have made learning videos to help students understand the lecture material. Tutors received an initial explanation from researchers regarding standard cost accounting materials (single plan and partial plan methods) on June 11, 2021 (see Figure 4). Researchers provided explanations slowly so that tutors can understand the material more quickly. When researchers invited discussion of the material, tutors did not hesitate to ask questions or provide responses. Researchers have also prepared practice questions to be done by students in the second cycle. Comprehensive case questions are provided to understand standard cost accounting with two settlement methods.



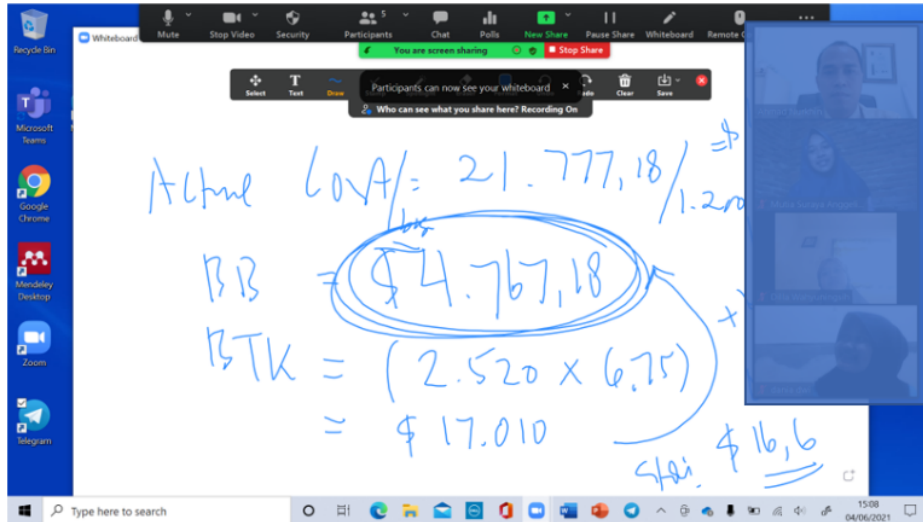


Figure 4. Explanation of Standard Cost Accounting Materials to Tutors

### Implementation

The implementation of the second cycle is on June 15 and 22, 2021. Researchers provided an initial explanation and motivation to students before the class was divided into five break rooms. Tutor then conveyed an explanation of the material to each group member, as in the implementation of the first cycle. Researchers joined the break room to make observations and ensure the explanation by the tutor was expected. The enthusiasm of tutors and students was still visible in the second cycle. They interactively asked and answered questions to understand the lecture material. Tutors tried to explain the material well and students were welcome to respond if there was something that needs to be discussed immediately. The tutor provides an explanation of the material for approximately one hour. Students gathered back into the main room for the next lecture process.

Researchers reviewed the implementation of lectures in the break room and provided opportunities for students to improve understanding. Researchers provided practice questions to be discussed quickly in this main room. Tutors and other students tried to solve the case. At the end of the meeting, researchers provided a comprehensive case to be resolved and discussed at the next meeting. Lecture activities at ELENA are presented in Figure 5 which includes learning resources (video recordings of Zoom meetings) and assignments.

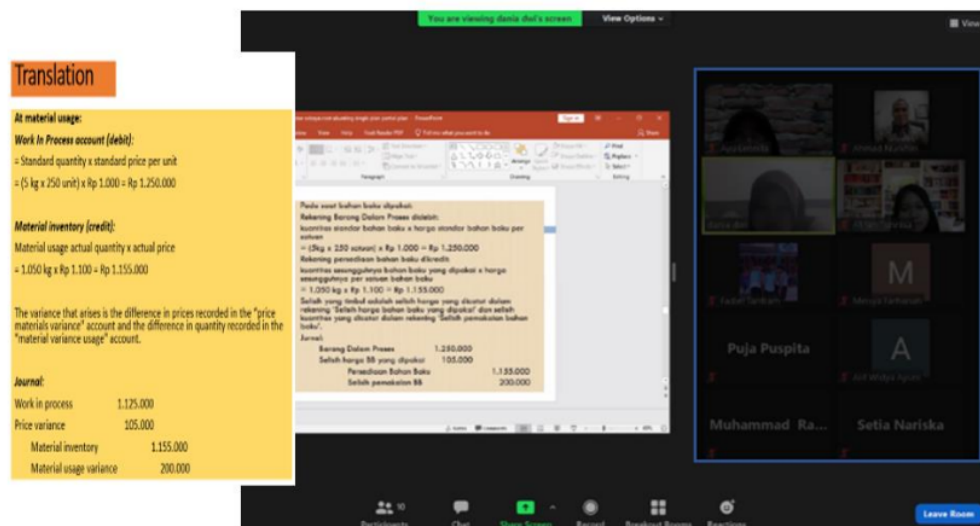


Figure 5. Implementation of the Second Cycle

**Topic 14**

Berikut penjelasan mengenai akuntansi biaya standar (partial dan single plan). selamat belajar.

**Translation:**

The following is an explanation of standard cost accounting (partial and single plan). Have a good study.

Problem of standard cost

soal latihan akuntansi biaya standar

Figure 6. Display of Lecture Activities in The Second Cycle At ELENA

### Observation

Researchers continued to make observations to tutors and students during the implementation of lectures in the second cycle. Researchers used the same instrument to track the progress of student learning activities as they did in the first cycle. The results of the observations are presented in Table 2 below. In the first cycle, two activities that became the material for reflection increased significantly: students were able to express their opinions or feedback in class, and they were able to ask tutors or lecturers questions. This activity shows that students have attended lectures well and are able to understand the material that has been conveyed in class.

Table 2. The Results of Observing Student Learning Activities in the Second Cycle

| No.                  | Observed learning activities                                    | Average score at the first meeting | Average score at the second meeting | Note                    |
|----------------------|---|------------------------------------|-------------------------------------|-------------------------|
| 1.                   | Following the Zoom break room on time                           | 7.00                               | 7.00                                | Similar                 |
| 2.                   | Expressing opinions or answers to questions from other students | 5.84                               | 6.19                                | Significantly increased |
| 3.                   | Asking question   | 6.07                               | 6.16                                | Significantly increased |
| 4.                   | Actively following directions from tutor                        | 7.00                               | 7.00                                | Similar                 |
| 5.                   | Doing the exercises and assignments given                       | 6.58                               | 6.84                                | Increased               |
| <b>Average Score</b> |   | <b>6.50</b>                        | <b>6.60</b>                         |                         |

### Reflection

The second cycle in general can run well. This is because the lecturers and tutors have understood the applied learning method. Tutors can carry out their role in the lecture process and understand the lecture material well. Lecturers and tutors can work together to create an interesting lecture process and provide experience for students, understand the lecture material, and be able to solve the problems given. Students have a strong motivation to continue to attend lectures online through Zoom meetings with discipline (joining meetings on time) and doing assignments well. What was lacking in the second cycle was the tutor's ability to explain material that was more difficult than the material in the first cycle. This makes the tutor must work hard to understand the lecture material and how to convey the explanation to the students in their respective groups.

### Result of Third Cycle Implementation

The third cycle were held on June 29, 2021, with one meeting. The aim of the lectures achieved is that students can analyze the difference in composition and difference in results. The last material about standard cost accounting invites students to analyze the cost difference that occurs if more than one type of raw material is used. The difference is greater than before.

*Planning*

The design of the implementation of the third cycle was somewhat different from the implementation of the first and second cycles. Researchers presented the case to be solved first, followed by a discussion and explanation of the material. Students are expected to be able to solve existing cases by studying the material independently in each group. Researchers did not provide an initial explanation to the tutors. Tutors are only required to study the material and can ask questions if needed.

*Implementation*

The implementation of the third cycle was on June 29, 2021. Researchers provided an initial explanation so that students and tutors completed the existing case for one hour. Students tried to find answers first assisted by tutors in their respective rooms. Students presented their findings and then discussed them as a group. The lecture was continued with material delivered by researchers. Students then solved case problems that have not been successfully solved. Researchers have presented lecture materials at ELENA. The video recording of the explanation of the material was also uploaded to ELENA. Students can review the material that has been delivered in class (see Figure 7).

**Translation:**

**Calculation of cost variance**

**Material mix variance**  
(actual mix – standard mix) x standard price.

**Material yield variance**  
(actual price – standard price) x material standard per unit

**Labour yield variance**  
(actual price – standard price) x labour standard per unit

**Overhead yield variance**  
(actual price – standard price) x overhead standard per unit

**Perhitungan Selisih Biaya**

Selisih Komposisi Bahan Baku (Material Mix Variance)

$$SKpBB = (Kp\ ssg - Kp\ std) \times H\ std$$

Selisih Hasil Bahan Baku (Material Yield Variance)

$$SHsBB = (Hs\ ssg - Hs\ std) \times BBB\ std\ per\ unit\ hasil$$

Selisih Hasil Tenaga Kerja (Labor Yield Variance)

$$SHsTK = (Hs\ ssg - Hs\ std) \times BTK\ std\ per\ unit\ hasil$$

Selisih Hasil Overhead Pabrik

$$SHsOP = (Hs\ ssg - Hs\ std) \times BOP\ std\ per\ unit\ hasil$$

Figure 7. Implementation of the Third Cycle

**Translation:**

**Mix and yield variance**

**Material of mix and yield variance**

Here the explanation about mix and yield variance

**Activity based costing**

Figure 8. Display of ELENA Activity in the Third Cycle



### Observation

Students (both tutors and non-tutors) faced challenges in learning in this third cycle. Together with their respective tutors, students made effort to understand the lecture material and solve the cases given. Students and tutors discussed cases together for one hour. Students and tutors appeared to be serious about solving cases and sharing their perspectives with other students. The implementation of the third cycle becomes more interesting because the tutor was not provided with provisions by the lecturer. Tutors tried to understand better first so they can provide understanding to their respective members. If there are problems, the tutor and other students tried to find sources or materials for solving cases.

3  
Table 3. Results of Observing Student Learning Activities in the Third Cycle

| No.                  | Observed learning activities                                    | Average score | Description |
|----------------------|---|---------------|-------------|
| 1.                   | Following the Zoom break room on time                           | 7.00          | Very well   |
| 2.                   | Expressing opinions or answers to questions from other students | 6.00          | Well        |
| 3.                   | Asking question   | 6.09          | Well        |
| 4.                   | Actively following directions from tutor                        | 7.00          | Very well   |
| 5.                   | Doing the exercises and assignments given                       | 6.93          | Very well   |
| <b>Average Score</b> |   | <b>6.60</b>   | <b>Well</b> |

### Reflection

Learning activities in the third cycle were quite interesting and challenging for students. Tutors and students were required to work together to solve a given case. Each tutor guided the members of their respective groups to be involved in solving cases. Learning activities become more interactive. Students and tutors could take turns asking questions and giving opinions. However, many students turned off their cameras during Zoom meetings. Signal constraints are a major problem for students. This obstacle is not too problematic, because they can still have a good discussion.

### Student Understanding Pre-test and Post-test Results

22  
Student learning outcomes were also tested in this study. Pre-test and post-test were also conducted to determine the changes that occurred regarding student learning outcomes. The pre-test was carried out before the first cycle was carried out. The material of the pre-test was the analysis of the standard cost difference. The post-test was carried out after the third cycle was carried out and used the semester exam schedule. The post-test material was standard cost accounting (starting from determining the difference, accounting for standard costs and the difference in composition and difference in results). Table 4 shows the results of the pre-test and post-test to analyze the difference of student's learning outcome. Table 4 shows the results of the pre-test and post-test. The test results using the Wilcoxon Signed Ranks Test showed Asymp. Sig. (2-tailed) is 0.000 and the Z value is -5,479. It can be stated that there is a significant difference between the pre-test and post-test. That is, the application of peer tutor learning methods and interactive case methods can significantly improve student cost accounting learning outcomes.

13  
Table 4. Results of Pre-Test and Post-Test

|               | Pre-test Results | Post-test Results |
|---------------|------------------|-------------------|
| Minimum score | 70               | 70                |
| Maximum score | 90               | 98                |
| Average score | 83.83            | 90.15             |

7  
The application of peer tutoring learning methods and interactive case methods indicated its success as seen from the increase in post-test scores and the statistical test. Student learning outcomes increased by 7.5%. This means that students can understand the lecture material well when applying the learning method. Students consider tutors to be able to carry out their roles to help students understand the lecture material and solve the cases given together (group discussion). Students are not awkward in expressing their opinions to the tutor. Students are also not shy when asking questions to the tutor. With the same language, tutors can provide good explanations to their respective group members.

### Discussion

18  
The results showed that the implementation of peer tutor learning methods and the interactive case method could increase student activity and learning outcomes in the Cost Accounting course. The application of the two methods is carried out by applying classroom action research in three cycles. Students who have been appointed as tutors are able to carry out their roles well. Tutor students who have been given an understanding in advance are able to re-explain to other students in their group according to the material that has been conveyed by the lecturer to him. In addition, tutor

students can provide a good explanation of the practice questions that are done together. Students and tutors can provide feedback to each other to solve cases given by the lecturer.

The results showed that most student activities had increased. Students were more active in asking questions in the third cycle than the first cycle, although they were better in the second cycle. Students can follow the explanation from the tutor better in the third and second cycles than the first cycle. The activity of doing tasks and exercises was also better in the third and second cycles than the first cycle. This means that students can improve the quality of their learning activities in the application of peer tutoring methods and interactive case methods. Records on activity at ELENA also show the same result. Students can submit assignments according to the specified time limit. Students also download materials uploaded on ELENA and watch ZOOM videos that have also been uploaded on ELENA. Student learning outcomes also showed a significant increase. The results of statistical tests prove that there is a significant difference between the pre-test and post-test. Learning with peer tutor and interactive case method has succeeded in improving student learning outcomes. Students can better understand cost accounting course.

Online learning presents a serious obstacle for students to stay enthusiastic about learning. The application of peer tutoring methods can minimize this problem because with tutors, students are able to create a learning process that is full of intimacy. Tutors and students can establish more flexible interactions and communication to be able to understand the material being studied as well as to solve the available cases. The results of the study are in accordance with previous findings which state that peer tutoring can create good communication patterns between students and tutors to create an interesting atmosphere (Emelo, 2011). The combination with the case method makes students more active in thinking because the tutor invites students to solve cases together. This is in line with the opinion (Afsouran et al., 2018) which states that participants in case method learning can be seen how they think from their respective perspectives. Peer tutor learning can increase learning motivation (Sintong et al., 2017).

Student learning activities during the action given experienced a significant increase. In three cycles of action, students can show learning activities that are more enthusiastic and serious in learning and solving given cases. In the online learning format via ZOOM supported using ELENA, students and tutors try to be active in the learning process. Students do not hesitate to ask tutors, and tutors are also not ashamed to ask lecturers when delivering material. Students and tutors are also actively involved in classical forums to discuss the material and cases studied. This increase in student learning activities is in accordance with the findings of previous researchers who also succeeded in proving that peer tutoring learning was able to increase learning activities because students became more confident (Pranger, 2016). The same results were also found by Putra et al. (2018), peer tutoring learning can increase learning activities..

The combination of peer tutoring learning with the case method makes students more comfortable in learning, so that learning motivation is getting better. Thus, students are increasingly involved in lecture activities. Learning activities such as asking questions get better because students feel there are no problems with tutors. The activity of doing practice questions and assignments also increased significantly. The existence of tutors has an impact on students to jointly solve the given case after understanding the lecture material. Challenging cases are not considered difficult because there are tutors who are able to aid students. The significant impact of the application of the case method is in line with the findings (Song et al., 2022) which indicate that interest in learning, engagement and student performance will increase with the application of the case method. Another opinion also confirms that the case method invites students to deal with real cases (Jennings, 2002).

Student learning outcomes in Cost Accounting courses were also found to have increased significantly. Students can study well with tutors and are able to complete assignments and cases given. Together with tutors and other students, students strive to show good performance. Therefore, the learning outcomes obtained by students are increasing. The results of the study are in line with the findings of previous researchers (Nurkhin, 2013; Reziyustikha, 2017) who applied peer tutoring and proved their impact on improving learning outcomes. In addition to learning outcomes, case method learning can also affect student behavior (Jaén et al., 2014).

## Conclusion

The application of peer tutor learning methods and interactive case methods in online learning through ELENA and Zoom meetings has succeeded in increasing student activity and learning outcomes. Student learning activities improved well after the treatment (involvement of students as tutors). This is indicated by the increase in student activity in the form of asking questions, conveying ideas or opinions, and delivering answers to other students. Students can work together to understand and solve a given case. Judging from the learning outcomes, the implementation of this CAR also shows success. The post-test score is better than the pre-test score or an increase of 7.5%. Improved learning outcomes indicate that students are better able to understand lecture material and solve given cases after the application of peer tutor and interactive case methods. The result of statistical analysis (paired sample t-test using parametric test) proves that there is significant difference between the pre-test and post-test. The t-value is 6.1836, more than t-table 2.0106. The significance value is 0.0000 less than 0.05.

Classroom Action Research has been carried out in the Cost Accounting course (even semester 2020/2021) in three implementation cycles. The first and second cycles were carried out in two meetings while the third cycle was carried

out in one meeting. The first and second cycles were carried out in the same form, namely the lecturer provided understanding to the tutor first, then the tutor delivered an explanation to their respective members. In the third cycle, tutors and students were given cases to solve together. The lecturer did not give an explanation to the tutor first. ELENA was used to supplement online lectures by uploading materials, assignments, and other learning resources, including video recordings of previous Zoom meetings.

### Recommendations

In general, this classroom action research can be carried out well. However, there are some important things that could still be improved. The selection of peer tutors is very important so the process must be carried out carefully and with a lot of consideration. The tutor determination test can be the right instrument so that it can be chosen according to the needs of the lecture process. This test includes the understanding of the material and the ability to provide explanations and the ability to cooperate. Comprehensive observations by lecturers on each lecture activity will further help researchers to obtain more valid information on increasing student learning activities. This means that the treatment given through classroom action research can be observed in more detail. Therefore, researchers can make appropriate improvements. Is it the tutor who is unable to provide explanations, or is it a student whose participation could be improved? The role of lecturers and observers is very important to capture student learning activities.

The next research that can be done is improving the application of peer tutors and case based by adding the variables studied such as students' thinking skills or communication skills. This variable is important to improve because today's students are required to be able to solve problems with the information they have quickly. Likewise, student communication skills are very important and are the demands of the business world and the industrial world. Students must be able to find solutions to problems faced and must also be able to convey to other parties well. Future researchers can also combine other learning methods such as project-based learning so that students have more experience in studying accounting courses. Projects can be made individually or in groups.

### Limitations

The limitation of this study is the use of class action research method to investigate the effect of peer tutor and case method to increase student activities and learning outcomes. The other research methodology like experimental design can use to prove the effectiveness of the use both methods.

### Acknowledgements

We thank to Lembaga Penelitian dan Pengabdian Kepada Masyarakat (LP2M) and Faculty of Economics, Universitas Negeri Semarang for research and publication funding.

### Funding

Research Contract of LP2M UNNES, number 15.26.4/UN37/PPK.3.1/2021.

### Authorship Contribution Statement

Nurkhin: Conceptualization, design, analysis, writing, drafting manuscript. Santoso: Conceptualization, design, analysis, supervision. Baswara: Admin, data acquisition. Harsono: Conceptualization, design, analysis. Wolor: Writing, editing/reviewing, critical revision of manuscript.

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