

An Exploration of Accounting in Merchandising Companies for High School Students in Jakarta, Indonesia

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ABSTRACT

Purpose: This Community Service Activity (PKM) was initiated in response to high school students' limited understanding of the procedural aspects of journalizing transactions for trading companies. The program aims to enhance students' conceptual understanding and journaling skills through an interactive, gamification-based learning approach and to increase their motivation to learn accounting.

Method: The PKM was held at SMA Negeri 2 Jakarta on May 6, 2026, for 90 minutes, targeting 27 eleventh-grade students majoring in Economics and Accounting. The intervention was conducted through interactive lectures, discussions, case studies of trading company transactions, exercises in perpetual-system journalizing, and gamified quizzes. Evaluation was carried out using observation and a Likert-scale questionnaire.

Results and Discussion: Before the intervention, most participants did not understand the differences between the accounting practices of service and merchandising companies, nor were they familiar with the journalizing procedures of the perpetual inventory system. The program was implemented in stages, beginning with an assessment of participants' prior knowledge and concluding with an evaluation of their learning. The results showed an increase in students' understanding, participation, and interest in accounting.

Implications: This program helps improve the quality of accounting education in schools and can be replicated to cover a broader range of topics through ongoing support.

Keywords: gamification; accounting education; community service; journalizing for trading companies; high school students.

1. Introduction

Education is a strategic endeavor to shape an intelligent and high-quality generation capable of facing the challenges of life and the workforce. The role of education is not only to enhance knowledge but also to build character, skills, and critical and creative thinking. In the context of national development, education serves as a pillar driving social, economic, and cultural progress and contributing to long-term stability and well-being. Therefore, improving the quality of education is an urgent necessity to achieve national goals (Lestari & Wijoyo, 2025). One field that plays a crucial role at the intersection of economics and education is accounting. Accounting is not merely studied as theory but as the ability to



record, process, and present financial information accurately. In practice, every stage of the accounting process—from recording transactions to preparing reports—affects the quality of stakeholders' decisions (Reeve *et al.*, 2009).

One of the crucial starting points in accounting is the process of journalizing. Journalizing is the first step in recording financial transactions and thus significantly impacts the accuracy and reliability of financial statements. If the data used is inaccurate and unreliable, there is a risk of errors in evaluating company performance, identifying trends, and planning future business activities (Reeve *et al.*, 2009). The importance of mastering accounting recording skills is also emphasized in community accounting training programs, which demonstrate that a solid understanding of the fundamentals of financial recording is a prerequisite for producing accurate and accountable financial information (Muslim *et al.*, 2025). Therefore, a solid understanding of the journalizing process serves as the foundation for producing high-quality financial statements that are reliable for decision-making.

State High School 2 Jakarta, as a partner in community service activities, is committed to producing competent graduates who are prepared to meet the demands of higher education and the workforce. One of the efforts undertaken is through accounting education that is not only theory-oriented but also focuses on developing practical skills. However, based on the results of the partner's needs assessment, various challenges in accounting education were identified, particularly regarding the journalizing of transactions in a trading company. Students tend to struggle with understanding the systematic flow of transaction recording, distinguishing between different types of transactions, and determining the appropriate journal entry format based on the transaction's characteristics. However, high school accounting instruction often faces challenges when its methods remain overly conventional and monotonous. This situation can lead to students being less engaged in the teaching-learning process and result in low motivation to learn. Consequently, students are not fully engaged in the learning process and struggle to grasp the concepts being taught (Lestari & Wijoyo, 2025). In procedural accounting topics, such as journalizing, comprehension barriers are more pronounced because students must master a step-by-step thought process, rather than merely memorizing.

This issue is exacerbated by the nature of journaling material, which demands both conceptual understanding and procedural skills. When the learning process remains dominated by lecture-based methods and repetitive exercises, students tend to become passive learners, thereby limiting opportunities to explore concepts, engage in discussion, and receive direct feedback. This situation has the potential to reduce student motivation and hinder the achievement of expected competencies. If not addressed promptly, difficulties at the foundational stage of journaling can lead to students having a poor understanding of the accounting cycle as a whole. Accordingly, learning strategies are needed that can create a more engaging and interactive learning environment. An interactive approach is expected to increase student participation while helping them understand concepts more simply. Teaching that prioritizes active engagement allows students to experiment, discuss, and apply their understanding through structured activities (Lestari & Wijoyo, 2025).

Technological advancements have created opportunities to deliver learning that is more interactive, adaptive, and student-centered. The use of digital technology makes the learning process less confined to traditional classrooms and more flexible and relevant to students' needs. In this context, the use of technology-based media, such as multimedia and educational game apps, is one way to make students more active and learn more contextually (Abdullah & Tussadia, 2025).

One interactive learning mechanism is gamification. Gamification adapts game elements to make the learning process more engaging and motivating. In accounting instruction, gamification can

help students stay focused, increase their persistence when working through problems, and accelerate their understanding by allowing them to learn through challenges, feedback, and reinforcement of achievements (Lestari & Wijoyo, 2025). Gamification-based community service experiences have also been reported to increase students' enthusiasm and motivation to learn (Agung *et al.*, 2023; Dewi *et al.*, 2024).

Given the challenges faced by the partner institution, a gamification-based interactive learning approach is considered the most relevant intervention to implement. This approach allows students to have a more enjoyable learning experience through competitive, collaborative, and challenging activities. In addition to boosting motivation to learn, gamification provides students with the opportunity to practice repeatedly in a non-stressful environment, thereby enabling a better understanding of journaling concepts. Therefore, the application of gamification in accounting education is expected to address low student engagement and students' difficulties understanding journalizing material for trading companies.

Learning media function as a means of communication between teachers and students in conveying accounting material, both theoretical and practical. Aghni (2018) notes that learning media have several functions: the communicative function (facilitating communication between the sender and receiver of a message), the motivational function (enhancing the desire to learn by making the material easier to grasp), the meaningfulness function (developing cognitive abilities from basic to advanced levels), and the perception-alignment function (providing a shared perspective among all students). Thus, the use of appropriate media not only aids in the delivery of material but also helps students build a deeper understanding.

In the context of a merchandise trading company accounting, strengthening the fundamentals of accounting becomes increasingly important because transactions center on the management of merchandise (inventory), which determines the cost of goods sold and ultimately affects the period's profit. Inventory is understood as merchandise purchased and held for resale; therefore, its recognition and valuation directly impact the quality of the financial information presented (Kieso *et al.*, 2019; Weygandt *et al.*, 2019). In high school education, this understanding must be transformed into practical skills: students must be able to see the cause-and-effect relationships between purchase transactions, sales, and inventory changes, as well as how this sequence leads to journal entries and the preparation of financial statements.

One key prerequisite is an understanding of inventory recording methods, namely the periodic and perpetual systems. In the periodic system, inventory recording focuses on the period in which sales occur, so the cost of goods sold journal entry generally appears as an adjusting entry at the end of the period. Conversely, in the perpetual system, every purchase and sales transaction is recorded continuously, so the inventory account and cost of goods sold are determined more quickly. Thus, students do not merely memorize journal entry formats but can explain why those entries occur according to the system used.

Based on the above description, this community service program is designed to address the need for improved quality of accounting education in high schools through interactive strategies and educational media that are communicative, motivating, meaningful, and aligned with students' perceptions. This program aligns with the Sustainable Development Goals (SDGs) implemented by the Research and Community Service Institute (LPPM) of Tarumanagara University, particularly in supporting quality education, enhancing student competencies, and preparing human resources ready to compete in the workforce. Through this program, it is hoped that students will gain improved conceptual



understanding and practical skills in preparing journal entries for a trading company. For partner schools, this activity can serve as an innovative alternative for enhancing the quality of the teaching and learning process. For the university, this activity represents a concrete implementation of its tri-dharma by applying knowledge to address community needs. Additionally, to advance educational science and practice, this activity is expected to enrich empirical evidence on the effectiveness of gamification approaches in supporting secondary-level accounting education. The objectives of this PKM are to improve conceptual understanding and journaling skills among students at SMA Negeri 2 Jakarta regarding trading companies, and to evaluate the feasibility of an interactive, gamification-based approach in accounting education for trading companies.

The remaining sections of this article are organized as follows. Section 2 presents a literature review. Section 3 describes the methods. Section 4 presents the results and discussion. Section 5 contains the conclusions and recommendations.

2. Literature Review

2.1 The Concept of Community Service.

Community service is one of the three pillars of higher education, focusing on applying scientific, technological, and research results to address the real needs of the community. Over time, the concept of community service has shifted from being understood as a charitable activity or a one-way transfer of knowledge from higher education institutions to the community to a collaborative process that positions the community as an active partner at every stage. This paradigm shift emphasizes the importance of community involvement in identifying problems, designing solutions, implementing programs, and evaluating the outcomes of activities to foster sustainable change. Amutuhaire (2023) asserts that higher education institutions' social responsibility must be realized through meaningful engagement with the community to generate broader impacts on social development. In line with this, Vázquez-Parra *et al.*, (2021) demonstrate that the success of community service programs is significantly influenced by an equal partnership between higher education institutions and the community, in which both parties play complementary roles in achieving shared goals. A similar perspective is also found in the study by Mthembu *et al.*, (2023), which emphasizes that a participatory approach, open communication, and an understanding of the community's social context are key elements in building effective community-engagement-based programs.

Beyond addressing social issues, community service also serves an educational function that supports contextual learning processes and the development of academic staff competencies. The service-learning approach has become an increasingly adopted strategy as it effectively integrates academic learning with real-world experiences in serving the community. Kristianti *et al.*, (2023) explain that implementing service-learning can enhance the meaningfulness of the learning process through students' direct involvement in activities that provide social benefits. In the Indonesian context, Novita (2025) demonstrates that integrating service-learning with community empowerment can accelerate progress toward the Sustainable Development Goals (SDGs) by strengthening community capacity. On the other hand, the success of community service programs also requires the active involvement of all participants, as high participation improves the quality of the learning experience and helps achieve program objectives (Bergdahl *et al.*, 2024). Therefore, community service must be viewed as an empowering process that is collaborative, participatory, and sustainable, so that it not only benefits the



community as a partner but also strengthens the relevance of higher education institutions in generating innovations and solutions to various issues faced by the community.

2.2 *The Concept of Journalizing in Merchandising Accounting*

Journalizing is the initial stage in the accounting cycle that identifies, analyzes, and records every financial transaction chronologically in a journal before being recorded in the general ledger and reflected in financial statements. The accuracy of the journalizing process is crucial to the quality of the resulting accounting information, as errors at this stage can impact the entire financial reporting process. Rahmiyati (2025) explains that the journal serves as the primary tool for documenting the economic impact of a transaction on the accounting equation, thereby enabling the preparation of reliable financial statements. In line with this, Rinaldi *et al.*, (2024) emphasize that a systematic transaction recording process forms the foundation for generating relevant financial information for decision-making. Strengthening financial recording skills has also proven to be a critical factor in enhancing students' ability to compile financial information systematically and accurately; therefore, an understanding of basic recording processes must be established from the early stages of accounting education (Ikhtiari *et al.*, 2024). In an educational context, understanding journalizing is not merely about memorizing debit and credit formats; it also involves analyzing the substance of transactions and determining their impact on a company's financial position. Bekoe *et al.*, (2018) state that the success of accounting learning is greatly influenced by students' understanding of the logical relationship between business transactions and their accounting records. Therefore, mastery of journalizing concepts is a fundamental competency that students must possess before studying more complex stages of accounting.

In a merchandising company, the journalizing process has distinct characteristics because it relates to the purchase and sale of merchandise, inventory management, and the recognition of the cost of goods sold. Damodaran (2024) explains that a merchandising company generates revenue by buying and selling goods; therefore, the recording of transactions must reflect changes in inventory and their impact on the company's profit. In practice, companies may use either a periodic or perpetual inventory recording system, each of which has different implications for the form of journal entries used. Carlon *et al.*, (2025) state that the choice of inventory recording system affects the timing of cost of goods sold recognition and the inventory information available to management. On the other hand, Atrill & McLaney (2006) emphasize that the ability to record transactions accurately is a critical skill, as accounting information underpins performance evaluation and business planning. Rebele & St. Pierre (2019) also note that effective accounting education should help students understand the rationale behind each recording procedure, rather than merely mechanically following technical rules. Thus, the teaching of journal entries for a merchandising company needs to be directed toward strengthening conceptual understanding and practical skills, enabling students to connect economic transactions with the appropriate recording processes and to understand their contribution to the preparation of high-quality financial statements.

2.3 *Interactive Learning and Gamification in Education*

Interactive learning is an approach that positions students as active participants in the learning process through activities such as discussions, exploration, problem-solving, and immediate feedback. This



approach has emerged as a response to the limitations of conventional learning models, which tend to be teacher-centered and fail to provide sufficient space for students to build understanding independently. In modern educational settings, interactive learning is increasingly supported by digital technology, enabling more adaptive, collaborative, and student-centered learning experiences. One widely applied strategy in this context is gamification—the use of game elements in non-game contexts to enhance motivation and engagement in learning. Khaldi *et al.*, (2023) explain that gamification in learning can create a more engaging learning environment by applying elements such as points, badges, leaderboards, challenges, and reward systems. Dehghanzadeh *et al.*, (2024) also demonstrate that implementing gamification across various educational levels increases participation, persistence, and positive learning experiences. However, the effectiveness of gamification depends not only on the use of game elements but also on educators' ability to design meaningful learning experiences aligned with the intended learning objectives.

Effective gamification implementation requires integration between instructional design, teacher support, and the selection of game elements that align with students' characteristics. Sun *et al.*, (2023) emphasize the importance of teachers' roles in providing scaffolding and support during game-based learning to help students achieve learning objectives effectively. A study by Hong *et al.*, (2024) indicates that personalizing gamification elements—such as tiered challenges, immediate feedback, and reward mechanisms—can enhance the quality of students' learning experiences. In addition to increasing intrinsic motivation, gamification has been shown to strengthen student engagement in learning activities and improve learning outcomes (Srimuliyani, 2023). In the context of developing 21st-century competencies, Hao *et al.*, (2024) found that gamification supports the development of critical thinking, collaboration, and leadership skills through more participatory learning activities. Furthermore, Triantafyllou *et al.* (2025) concluded that *gamification holds great potential as an innovative learning strategy when systematically designed and aligned with learning outcomes*. Therefore, implementing gamification-based interactive learning in education aims not only to enhance the enjoyment of learning but also to sustainably strengthen student engagement, conceptual understanding, and skill mastery.

2.4 The Role of Learning Media in Enhancing Student Understanding

Learning media are tools that facilitate the delivery of information, enabling students to understand abstract material more concretely. In 21st-century educational development, learning media are no longer merely visual aids but essential components that create more interactive, engaging, and student-centered learning experiences. Mansyur *et al.*, (2024) explain that digital media have transformed traditional learning paradigms into more flexible processes that are responsive to students' needs. The appropriate use of learning media enables students to actively engage in the learning process through various forms of information representation, such as text, images, audio, video, animations, and interactive simulations. A systematic review by Staneviciene & Žekienė (2025) indicates that the use of multimedia in learning increases student attention, motivation, and understanding because information is presented through multiple complementary channels. Furthermore, Sartika *et al.*, (2024) emphasize that the development of learning media must consider students' needs, characteristics, and preferences so that the media used can truly support the achievement of learning objectives. Therefore, the selection of learning media should be carried out in a planned manner, taking into account the alignment

between the characteristics of the material, learning objectives, and student conditions so that the learning process can take place more effectively.

The role of instructional media in enhancing students' understanding becomes increasingly evident when the media is designed to be interactive and contextual. Etyarisky & Marsigit (2022) found that interactive multimedia developed using a contextual approach can improve students' conceptual understanding by providing opportunities for independent exploration of the material and immediate feedback. A similar finding is reported by Zubaidah *et al.* (2023), who noted that *multimedia-based learning is effective in accelerating learning* and helping students master the material more effectively at the elementary education level. In a game-based learning environment, Sun *et al.* (2021) emphasized *the importance of integrated support or scaffolding within learning media to enable students to use the media effectively to build deeper understanding*. Furthermore, the quality of learning media is also influenced by educators' ability to design and develop digital materials that align with learning needs. Désiron *et al.*, (2025) concluded that teachers play a strategic role as digital media designers, integrating pedagogical elements, technology, and learner characteristics into a meaningful whole. Thus, learning media functions not only as a tool for conveying information but also as a pedagogical instrument that can enhance student engagement, facilitate knowledge construction, and sustainably strengthen conceptual understanding and learning skills.

3. Method

3.1 Location and time.

The Community Service Program (PKM) was implemented at SMA Negeri 2 Jakarta during the second semester of 2026. This program was a follow-up to a needs assessment survey conducted by the Faculty of Economics and Business at Tarumanagara University (FEB Untar) at the school in January 2026. Based on the results of this needs assessment, the school highlighted the need to strengthen accounting competencies for 11th-grade students, particularly in merchant enterprise accounting, which requires a gradual development of conceptual understanding and practical skills. On this basis, the PKM team and the partner school agreed to organize an accounting training program that would progress from reinforcing foundational concepts to applying the accounting cycle in service and merchant enterprises. The duration of the activity was adjusted to align with the learning schedule set by the partner school, ensuring the program could be implemented effectively without disrupting regular teaching and learning.

3.2 Target audience or partners.

The target audience for this activity was 11th-grade students at SMA Negeri 2 Jakarta who had already covered the basic material on service company accounting in previous lessons. The selection of the partner was based on the need to strengthen students' understanding of journalizing for trading companies, which is more complex than the material previously studied. The characteristics of the participants, who are in a transitional phase from basic understanding to the application of more in-depth accounting concepts, were the primary consideration in designing interactive and contextual learning methods. This PKM activity was carried out by a team from the Untar Faculty of Economics and Business, consisting of one lecturer as team leader and two undergraduate students from the Accounting Program as members. The team leader is a tenured faculty member with experience



teaching courses in Basic Accounting, Cost Accounting, and Management Accounting. Meanwhile, the students' involvement in this activity is part of the implementation of the Merdeka Belajar Kampus Merdeka (MBKM) program, specifically through teaching assistance at educational institutions.

3.3 Activity Schedule

The PKM implementation began with a clear division of tasks among team members. The team leader's responsibilities include conducting a needs assessment survey of the partner institution, drafting the activity proposal, designing learning materials, mentoring the students involved in the teaching activities, and preparing the final report for the Institute for Research and Community Service (LPPM). Meanwhile, the students are tasked with developing learning materials, preparing practice questions on commercial transactions, creating gamified quizzes, and actively participating in classroom learning.

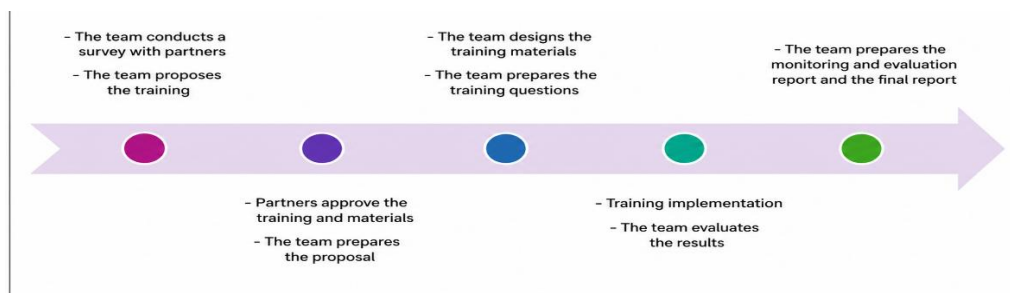


Figure 1. PKM Implementation Flowchart

The stages of the PKM activity were carried out systematically, as shown in Figure 1. The first stage involved identifying students' prior knowledge through a question-and-answer session to assess their understanding of the previously studied accounting material on service companies. The second stage involves presenting material on the characteristics of trading companies, including their differences from service companies and the implications for the accounting recording process. The third stage involves discussing transactions commonly occurring in trading companies along with the journalizing system used, so that students can identify the accounts involved and understand the logic behind each transaction entry. The fourth stage involves evaluating students' understanding by completing a quiz packaged as an interactive, gamified game. The final stage is the provision of feedback via a Likert-scale questionnaire to gather participants' responses regarding the implementation of the activity, perceived benefits, and suggestions for improving the program in the future.

3.4 Intervention Methods.

The intervention methods used in this activity combine an interactive lecture approach, discussions, case demonstrations, practice exercises, and gamification as the primary learning strategies. The interactive lecture approach is used to provide a conceptual foundation regarding trading companies and the journaling process. Furthermore, demonstration and practice methods were used to help students understand how to apply concepts by resolving transaction cases relevant to the learning material. Gamification was used as a learning innovation to increase student motivation, participation, and active engagement during the learning process. Quizzes designed in a game format allowed students to receive immediate feedback, created a more enjoyable learning atmosphere, and encouraged students

to understand the material more deeply. Through the combination of these methods, the PKM activity is expected to address low student engagement and difficulties in understanding trading company journal entries, while also improving the quality of accounting education at partner schools. Table 1 summarizes the methodological approaches used in implementing the PKM activity.

Table 1. Implementation Approach for PKM

Approach Method	Work Procedures	Partner Participation
Student knowledge assessment	The PKM team asked questions to assess the students' prior understanding of accounting for service companies, which they had studied previously.	Students answer questions based on their knowledge.
Explanation of a trading company	The PKM team explained the characteristics of trading companies and how they differ from service companies.	The students attended the presentation and participated in the question-and-answer session.
Discussion of transactions and journalizing systems	The PKM team discussed various transactions of a trading company along with the appropriate journalizing system.	Students follow the discussion and identify the accounts used.
Assessment of student understanding	The PKM team administered an interactive, gamified quiz to assess students' understanding.	Students actively work on the quiz to achieve the best results.
Feedback on the training results	The PKM team distributed Likert-scale questionnaires to evaluate the activity's implementation.	Students fill out the questionnaire and return it to the PKM team.

4. Results and Discussion

4.1 Analysis Results

4.1.1 An initial overview of the partner's situation.

The initial assessment of the participants indicated that they already had a basic understanding of accounting for service companies, but still struggled to grasp the concepts and journalizing procedures for merchandising companies. Preliminary findings from Q&A sessions and pre-training questionnaires indicate that most students are unable to distinguish between the characteristics of service companies and trading companies, particularly regarding the existence of inventory accounts, the cost of goods sold, and transaction recording mechanisms under the perpetual inventory system. This situation aligns with field findings during the observation process, where students tended to hesitate in determining which accounts to debit and credit when presented with case examples of merchant company transactions. These findings suggest that the material on merchant company journal entries is among the topics that require reinforcement through a more interactive, contextual learning approach.

The learning activity was conducted in person on Wednesday, May 6, 2026, in a classroom provided by SMA Negeri 2 Jakarta. The training lasted 90 minutes, from 8:30 AM to 10:00 AM WIB, with 27 eleventh-grade students enrolled in the elective Accounting Economics course participating. The activity was implemented in stages, in accordance with the method developed during the planning phase. The first stage involved identifying students' prior understanding of accounting material they had previously studied. This stage aimed to assess participants' readiness before introducing new material so that delivery strategies could be tailored to students' learning needs.



The second stage focused on presenting material regarding the characteristics of trading companies and their differences from service companies. The PKM team explained the concepts of merchandise inventory, cost of goods sold, and the importance of accurately recording transactions to support the preparation of financial statements. In this stage, students were provided with various simple illustrations to help them understand the relationship between a trading company's operational activities and the accounting recording processes involved. The dialogic approach used allowed students to ask questions and clarify concepts they did not yet understand.

During the transaction discussion phase, the PKM team presented a case study comprising a series of purchase and sale transactions for a trading company, accompanied by an explanation of the perpetual journaling system. Each transaction was analyzed collaboratively, involving students in determining which accounts to debit and credit. Directly involving students in the transaction analysis process aimed to develop logical thinking skills and help them understand the rationale behind each recording procedure. Thus, students do not merely memorize journal entries but also understand the underlying concepts of the journalizing process.

4.1.2 Implementation of Activities.

The implementation process of the activity, as shown in Figure 2, demonstrates the high level of student engagement throughout the learning session. This documentation indicates that students actively participated by listening to explanations, discussing, answering questions, and resolving case studies provided by the PKM team. Figure 2 also serves as evidence of the implementation of an interactive, student-centered learning approach. This approach was chosen to address the tendency toward passive, procedural learning in accounting.

After the material presentation, the PKM team conducted an evaluation using an interactive, gamified quiz. The quiz was designed as a competitive game with a time limit for each question, thereby creating a more dynamic and enjoyable learning atmosphere. The quiz was intended not only to measure students' understanding of the material presented but also to boost motivation to learn by providing challenges and rewards for participants with the highest scores. Student enthusiasm was evident in the high level of participation throughout the activity, with nearly all participants striving to answer the questions quickly and accurately to achieve the best ranking.

Subsequently, the PKM team distributed a Likert-scale evaluation questionnaire to all participants to gather feedback on the activity. The evaluation results indicated a positive change in students' level of understanding following the training. Prior to the activity, the majority of students rated their understanding of the material on commercial journaling as moderate to low. After the training, the distribution of responses shifted toward the high and very high categories, indicating that the learning approach used effectively helped students understand the material better.

In addition to improved understanding, the questionnaire results showed that most participants found the training topics interesting to study. This interest was reflected in the dominance of "agree" and "strongly agree" responses to statements regarding the appeal of the accounting material presented. Furthermore, students also showed a high interest in studying accounting in greater depth after participating in the training. This finding indicates that the use of an interactive gamification-based approach not only impacts the cognitive aspect—such as improved understanding—but also the affective aspect—such as increased motivation and interest in learning accounting.

Based on the overall results of the activity, the main achievements of this PKM program can be identified in three aspects. First, there was an increase in students' conceptual understanding of the characteristics of a trading company and the journalizing process using the perpetual system. Second, the gamification-based interactive learning approach successfully increased student engagement and enthusiasm during the learning process. Third, this activity produced outcomes including increased student interest in further studying accounting and the availability of an innovative learning model that can serve as an alternative in high school accounting education.



Figure 2. Documentation from the training session

The questionnaire results showed a very positive response from the participants (Figure 3). Before attending the training, most students stated that they did not yet understand merchant accounting, particularly the material on journal entries using the perpetual inventory system. After attending the training, 93% of the participants stated that their understanding was clear or very clear. A total of 89% of participants stated that the accounting topics covered were interesting, broadened their knowledge, and increased their interest in studying accounting further.

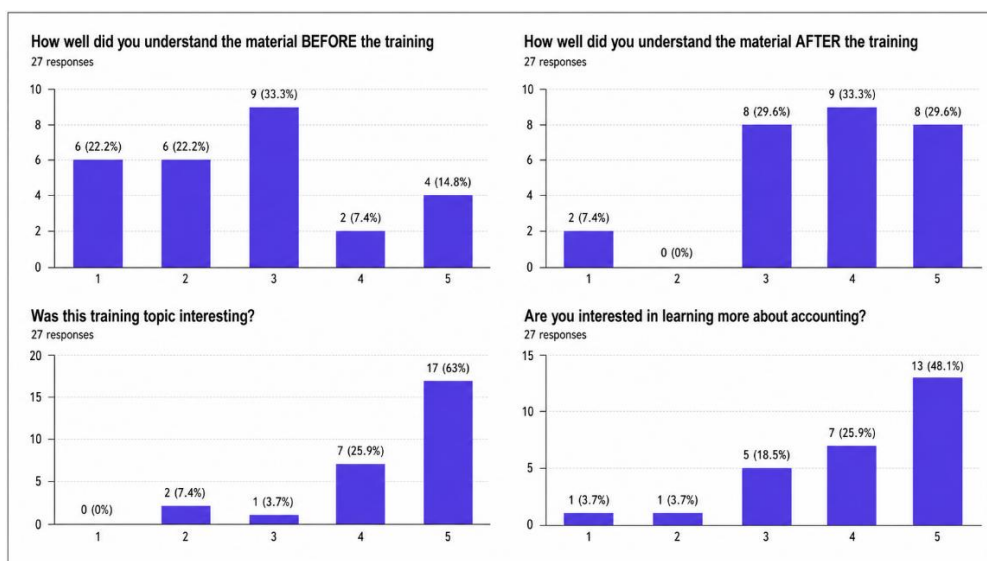


Figure 3. Questionnaire Assessment Results

These findings are consistent with previous research indicating that gamification can make the learning process more engaging, interactive, and learner-centered (Lestari & Wijoyo, 2025). Furthermore, communicative and meaningful learning media have been shown to increase student participation and help align students' understanding of the same material (Aghni, 2018; Sawitri *et al.*, 2024). The success of this PKM program also underscores that an interactive approach can be an effective alternative for addressing the challenges of teaching procedural accounting concepts at the high school level. This activity also supports the implementation of the "Merdeka" curriculum, in which college students are directly involved as part of the teaching team. Student involvement not only benefits high school students as participants but also provides valuable teaching experience for college students who will be future accounting professionals. This reflects a constructive synergy between higher education institutions and the community in building a high-quality educational ecosystem.

4.1.3 Activity Results.

These findings align with previous research indicating that gamification can make the learning process more engaging, interactive, and learner-centered (Lestari & Wijoyo, 2025). Furthermore, communicative and meaningful learning media have been shown to enhance student participation and help align perceptions of the same material (Aghni, 2018; Sawitri *et al.*, 2024). The success of this PKM program reinforces the view that the procedural challenges of accounting education can be addressed through innovative, contextual learning strategies that accommodate the characteristics of today's students.

In addition to the benefits experienced by students as the primary partners in the activity, this program also has a positive impact on the university students involved as members of the PKM team. The students' involvement in the planning process, the development of learning materials, the delivery of instruction, and the evaluation of the activity provides practical experience that supports the development of their professional competencies. Thus, this PKM activity not only improves the quality of learning at partner schools but also serves as a means of implementing Merdeka Belajar Kampus Merdeka (MBKM), strengthening the synergy between higher education institutions and the community to create a higher-quality and sustainable educational ecosystem.

4.2 Discussion

The results of the PKM implementation show that a gamification-based interactive learning approach can positively impact students' understanding and motivation to learn the material on journal entries for mercantile companies. Field findings indicate that before the intervention was implemented, most participants still had difficulty distinguishing between the characteristics of service and mercantile companies, particularly regarding the use of inventory accounts, the cost of goods sold, and journalizing procedures under the perpetual inventory system. This situation is understandable, given that the material on journal entries for trading companies is more complex, as students are not only required to memorize journal formats but also to understand the logical relationships between economic transactions and their impact on the company's financial position. The improvement in students' understanding after the training demonstrates that a more contextual and participatory approach can bridge the gap between theoretical concepts and their practical application. These findings demonstrate that the success of accounting education is determined not only by the quality of the material but also by the delivery strategies employed by educators.

The success of the intervention can be explained through the concept of interactive learning, which positions students as active participants in the learning process. During the activities, students were engaged in discussions, transaction analysis, case study resolution, and game-based quizzes. This engagement allowed students to build understanding through direct learning experiences, thereby optimizing concept internalization. These findings align with the view that interactive learning provides students with opportunities to explore ideas, receive feedback, and develop critical thinking skills through active participation in the learning process. In the context of accounting, such an approach is particularly important because most of the material is procedural in nature and requires repeated practice for students to grasp the logic of recording transactions accurately.

The application of gamification in this PKM activity has also been shown to increase student motivation and enthusiasm for learning. Quizzes packaged as competitive games successfully created a more enjoyable learning atmosphere and reduced the perception that accounting is a difficult and boring subject. From the perspective of learning motivation theory, providing challenges, rewards, and immediate feedback can increase students' engagement in completing learning tasks. This was evident during the activity, where students showed enthusiasm for answering questions quickly and accurately to achieve the highest score. The increased interest among students in pursuing further study of accounting after participating in the training indicates that gamification not only provides short-term benefits, such as enjoyment of learning, but also has the potential to foster intrinsic motivation for the subject.

This finding aligns with previous research showing that gamification can enhance student participation, motivation, and learning outcomes. Lestari and Wijoyo (2025) state that the application of game elements in learning can increase student engagement and create a more meaningful learning experience. Additionally, research (Agung *et al.*, 2023; Dewi *et al.*, 2024) indicates that a gamification-based approach can boost students' enthusiasm for participating in learning activities. The consistency between the results of this PKM activity and previous research strengthens the argument that gamification can serve as an effective alternative learning strategy, particularly for accounting material, which students often find complex. Thus, the use of gamification in accounting education is not merely a trend in educational technology but is grounded in empirical evidence that it improves the quality of learning.

In addition to gamification, the program's success was influenced by the use of communicative and contextual learning media. Material presented through real-world transaction examples and step-by-step case discussions helped students connect abstract concepts with more concrete situations. Learning media designed to align with students' characteristics fostered a shared understanding of the material, thereby minimizing the potential for misconceptions. In this activity, the media used served not only as a tool for conveying information but also as a means to facilitate interaction between the PKM team and the participants. This reinforces the view that effective learning media must support the cognitive, affective, and social aspects of the learning process.

The implementation of the program also faced several challenges that require attention when developing similar activities in the future. The 90-minute training session provided relatively few opportunities for in-depth exploration of the material and practice exercises. Additionally, differences in participants' prior understanding levels required the PKM team to adjust the pace of material delivery so that all students could follow the learning effectively. Another challenge was that some students initially lacked the confidence to participate actively in discussions. Nevertheless, these obstacles can be

minimized through varied teaching methods, clear role assignments within the PKM team, and a learning environment that supports active student participation.

4.2.1 Program Evaluation and Sustainability

The implementation of the PKM received a very positive response from both participants and partner schools. The results of the questionnaire-based evaluation indicated an increase in students' understanding of accounting for trading companies after participating in the training. In addition, the majority of participants felt that the teaching methods were engaging and easy to understand, and that they helped them grasp accounting concepts they had previously found difficult. The high level of student participation during the activity also indicates that the gamification-based interactive approach can create a more conducive and enjoyable learning environment.

The evaluation also highlighted several areas for improvement. Some participants hoped for a longer training duration to allow more time for practice exercises and in-depth case discussions. Furthermore, the development of more diverse learning materials is needed to accommodate various student learning styles. These findings provide important feedback to the PKM team to refine the program design for future implementations.

4.2.2 Program Sustainability Plan

This PKM program is designed not only as a one-time activity but also as a first step toward building a sustainable partnership between universities and schools. Follow-up actions may include conducting advanced training that covers the subsequent stages of the accounting cycle, such as preparing the general ledger, trial balance, adjusting entries, and financial statements. Regular mentoring can also be provided to teachers and students through learning modules and gamification-based media for independent use at school.

In addition to the opportunity to continue at SMA Negeri 2 Jakarta, the intervention model developed in this activity also has the potential to be replicated in other schools facing similar challenges in accounting education. The flexibility of the gamification approach allows for adaptation to various student characteristics and learning materials. Therefore, the continuous development of the program is expected to expand the positive impact of the PKM activity, improve the quality of accounting education at the secondary school level, and strengthen the contribution of higher education institutions to achieving quality and inclusive educational development goals.

5. Concluding Remarks and Recommendation

The Community Service Activity (PKM) conducted at SMA Negeri 2 Jakarta has achieved its stated objective: improving students' conceptual understanding and skills in journaling for trading companies using the perpetual inventory system. Evaluation results indicate an increase in students' understanding after participating in the training, as evidenced by a shift in participants' perceptions from "do not understand" to "understand" of the material presented. Furthermore, the high level of student participation and enthusiasm throughout the activity indicates that the implemented learning approach successfully fostered a more active and meaningful learning environment.



The gamification-based interactive approach used in this activity proved well-suited to the needs and challenges of high school accounting education, particularly for procedural material that requires repeated practice. The combination of interactive material delivery, case study discussions, and assessment through game-based quizzes increased student engagement, facilitated conceptual understanding, and fostered motivation to learn accounting. Thus, this activity not only benefits students by enhancing their knowledge and interest in learning but also contributes to partner schools by providing an alternative, more innovative, and student-centered learning model.

For future program development, it is recommended that mentoring activities be conducted on an ongoing basis, with a broader scope of material covering the entire accounting cycle of a trading company, including the preparation of financial statements. Additionally, developing gamification-based learning materials that teachers and students can use independently should be considered to ensure the program's benefits are felt in the long term. Replicating the activity in other schools with similar characteristics could also expand the program's positive impact in improving the quality of accounting education at the secondary education level.

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