

THE ESSENCE OF PROJECT-BASED LEARNING INVOLVES USING TECHNOLOGY IN LEARNING FINANCIAL MANAGEMENT

A ESSÊNCIA DA APRENDIZAGEM BASEADA EM PROJETOS ENVOLVE O USO DE TECNOLOGIA PARA APOIAR O APRENDIZADO DE GESTÃO FINANCEIRA

LA ESENCIA DEL APRENDIZAJE BASADO EN PROYECTOS CONSISTE EN UTILIZAR LA TECNOLOGÍA PARA APOYAR EL APRENDIZAJE DE LA GESTIÓN FINANCIERA

 <https://doi.org/10.56238/sevened2025.036-088>

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ABSTRACT

Project-Based Learning (PBL) is one of the recommended methods to improve students' practical problem-solving skills. It is hoped that students can acquire critical thinking skills and a deep understanding of the material. Deep learning is an approach used in the national learning system. This study aims to assess students' perceptions regarding PjBL learning in the MSME financial management course. This study uses a qualitative approach. Data collection techniques use open-ended questionnaires, conducting observations during the learning process, and documentation related to learning files during the method used. Data analysis techniques use the Miles and Huberman model, consisting of data collection, data reduction, data presentation, and drawing conclusions. The results of the study indicate that by implementing PjBL steps in the financial statement analysis project of MSMEs in the production sector, it can facilitate understanding of the calculation components of Cost of Goods Sold (COGS), the difference between business income and other income, analysis of business operating expenses and other expenses, components of current and non-current liabilities, analysis of depreciation expense calculations and overall improve students' competence in preparing financial reports correctly in accordance with SAK EMKM. During the project, the analysis of MSME financial reports was carried out using the assistance of Ms. Excel.

Keywords: Project-Based Learning. Financial Management. Teaching and Learning. Msmes.

RESUMO

A Aprendizagem Baseada em Projetos (PBL) é um dos métodos recomendados para melhorar as habilidades práticas de resolução de problemas dos estudantes. Espera-se que os estudantes desenvolvam pensamento crítico e uma compreensão profunda do conteúdo. A aprendizagem profunda é uma abordagem utilizada no sistema nacional de ensino. Este

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estudo tem como objetivo avaliar as percepções dos estudantes em relação ao aprendizado por meio de PjBL na disciplina de gestão financeira de MPEs. Este estudo utiliza uma abordagem qualitativa. As técnicas de coleta de dados incluem questionários abertos, observações durante o processo de ensino-aprendizagem e documentação relacionada aos materiais utilizados durante a aplicação do método. A análise dos dados segue o modelo de Miles e Huberman, composto por coleta de dados, redução de dados, apresentação dos dados e elaboração de conclusões. Os resultados do estudo indicam que, ao implementar as etapas de PjBL no projeto de análise das demonstrações financeiras de MPEs do setor produtivo, é possível facilitar a compreensão dos componentes de cálculo do Custo das Mercadorias Vendidas (CMV), da diferença entre receita operacional e outras receitas, da análise das despesas operacionais e demais despesas, dos componentes de passivos circulantes e não circulantes, da análise do cálculo da despesa de depreciação e, de forma geral, melhorar a competência dos estudantes na elaboração correta de relatórios financeiros de acordo com o SAK EMKM. Durante o projeto, a análise dos relatórios financeiros das MPEs foi realizada com o auxílio do Microsoft Excel.

Palavras-chave: Aprendizagem Baseada em Projetos. Gestão Financeira. Ensino e Aprendizagem. MPEs.

RESUMEN

El Aprendizaje Basado en Proyectos (PBL) es uno de los métodos recomendados para mejorar las habilidades prácticas de resolución de problemas de los estudiantes. Se espera que los estudiantes desarrollen pensamiento crítico y una comprensión profunda del contenido. El aprendizaje profundo es un enfoque utilizado en el sistema educativo nacional. Este estudio tiene como objetivo evaluar las percepciones de los estudiantes sobre el aprendizaje mediante PjBL en el curso de gestión financiera de MIPYMES. Este estudio utiliza un enfoque cualitativo. Las técnicas de recolección de datos incluyen cuestionarios abiertos, observaciones durante el proceso de enseñanza-aprendizaje y documentación relacionada con los materiales utilizados durante la aplicación del método. El análisis de datos sigue el modelo de Miles y Huberman, que consiste en la recolección de datos, reducción de datos, presentación de datos y elaboración de conclusiones. Los resultados del estudio indican que, al implementar los pasos de PjBL en el proyecto de análisis de los estados financieros de MIPYMES del sector productivo, se puede facilitar la comprensión de los componentes de cálculo del Costo de los Bienes Vendidos (CBV), la diferencia entre ingresos operativos y otros ingresos, el análisis de los gastos operativos y otros gastos, los componentes de pasivos corrientes y no corrientes, el análisis del cálculo del gasto por depreciación y, en general, mejorar la competencia de los estudiantes en la elaboración correcta de informes financieros de acuerdo con el SAK EMKM. Durante el proyecto, el análisis de los informes financieros de las MIPYMES se realizó con la ayuda de Microsoft Excel.

Palabras clave: Aprendizaje Basado en Proyectos. Gestión Financiera. Enseñanza y Aprendizaje. MIPYMES.



1 INTRODUCTION

Combining financial management with other disciplines such as marketing, operations and strategic management can provide a holistic learning experience and prepare students for the complex challenges of managing MSMEs (Delgado and Ayala 2019; Poponi et al. 2019). Working with local MSMEs provides practical experience for students while helping businesses gain new perspectives and innovative solutions (Garrido-Lopez et al. 2018). Through PBL, students develop important skills in financial management, including budgeting, financial planning and resource management, which are critical for MSMEs (Suharsono et al. 2025; Shahiwala 2017).

PBL allows students to engage directly with real financial challenges faced by MSMEs, thus developing practical problem-solving skills (Delgado and Ayala 2019; Garrido-Lopez et al. 2018). PBL emphasizes the active role of learners, requiring them to apply knowledge rather than just passively absorb it. This approach helps students develop practical financial management skills through real-world application (Yulianti 2024; Abinzano et al. 2022). PBL projects often require students to communicate effectively with business owners and stakeholders, thus improving their interpersonal and professional communication skills (Garrido-Lopez et al. 2018).

Successful PBL requires adequate resource support, including access to financial data, mentorship from industry professionals, and institutional support (Shahiwala 2017; Liang et al. 2016). By engaging in projects that mimic real business scenarios, students gain hands-on experience in financial planning, budgeting, and resource management, which are critical for MSMEs (Shahiwala 2017; Reid, Muenzen, and Rezvanian 2020). PBL needs to be integrated into the financial management curriculum, so that students can work on projects related to real financial problems in MSMEs. This integration helps students apply theoretical knowledge to practical scenarios (Delgado and Ayala 2019; Shahiwala 2017).

Some of the benefits of PBL applications include encouraging critical and creative thinking, which are essential for effective financial decision-making and problem-solving in MSMEs (Yulianti 2024; Sugeng and Suryani 2019). Projects often require teamwork and communication, thus enhancing these skills which are critical in managing financial operations and working with stakeholders (Yulianti 2024; Harb et al. 2025). Studies show that students who participate in PBL perform better compared to those who learn through traditional methods, particularly in the understanding and application of financial management concepts. This is reflected in higher exam scores as well as better overall

academic performance (Abinzano et al. 2022; Liu and Chen 2020). PBL encourages self-regulated learning, allowing students to take charge of their learning process (Sugeng and Suryani 2019).

Through PBL, students learn to prepare and manage budgets, conduct financial analysis, and develop financial strategies, which are directly applicable to MSMEs (Shahiwala 2017; Iyamuremye et al. 2025). PBL projects often involve effectively managing limited resources, a common challenge for MSMEs. This experience helps students develop the ability to optimize resource use in real business situations (Suharsono et al. 2025). PBL enables iterative learning, where students can receive feedback, reflect on their performance and make improvements. This process is similar to the continuous improvement efforts needed in MSME financial management (Garrido-Lopez et al. 2018; Blazevic and Lievens 2004).

The use of PBL on an ongoing basis can shape the professional abilities needed in the world of work in the digital era. These professional abilities include Ethical Skills, Business Skills, and Soft Skills including Critical thinking, communication, leadership, and emotional intelligence (Tsiligiris and Bowyer 2021; Sebele-Mpofu 2024; Zainuddin et al. 2023).

By capturing students' perceptions about the implementation of PBL in MSME financial management courses, it is expected to directly influence their motivation and level of engagement. Meaningful learning, emotional environment, and interaction between students are all associated with better academic performance. For example, an increase in these perceptions can result in higher scores on standardized tests (Wayne et al. 2013). Knowing how important it is to improve the accounting curriculum in technology-based higher education institutions can increase students' desire to learn. Involving students in the assessment process helps them take responsibility for what they learn. As a result, students' intrinsic motivation and accountability increases (Woytek 2005).

So, from the results of the screening of student perceptions in PBL learning in the MSME financial management course, it is hoped that it can be used as a study in improving the overall quality of accounting learning through the application of this PBL learning model. In this accounting learning, the application of PBL is carried out by integrating technology for MSMEs, so that it can provide learning for MSMEs and students through the use of technology in making MSME financial reports.

2 METHODOLOGY

The research approach used is qualitative. The data collection technique uses an open questionnaire which gives students the freedom to provide opinions regarding the application of project-based learning in the MSME financial management course. Research sources are students who have taken the course in the accounting education study program. Thus, the sampling technique is purposive sampling. The data analysis technique uses the Miles & Huberman model, consisting of data reduction, data presentation, and conclusion drawing/verification. Data validity uses method triangulation techniques, namely filling out an open questionnaire, observation, and documentation.

The learning components in project-based learning that have been taken in the MSME financial management course are as follows:

- a. Involves collaborative efforts, where students work in teams to complete projects, thus developing communication and cooperation skills (Missingham et al. 2009; Wood and Pranjol 2024). The project in this case is to analyze the financial statements of MSMEs whether they are in accordance with SAK EMKM standards. SAR EMKM is the Financial Accounting Standards for Micro, Small and Medium Entities, an accounting standard that stands alone and is specifically designed to prepare financial reports for MSMEs in Indonesia. If it is found that something is not appropriate, students will provide correct advice according to the rules in SAK EMKM.
- b. Working on real problems, students gain practical experience that prepares them for professional challenges. This approach is in line with the needs of employers who want graduates with hands-on experience (Yen, Orley, and Drinka 2014). In this project, students are asked to analyze the financial statements of MSMEs in the production sector.
- c. PBL fosters critical thinking skills by requiring students to analyze complex problems, make decisions, and develop solutions. This is particularly important in accounting, where professionals often face unstructured problems (Stanley and Marsden 2012). This is related to providing solutions faced by MSMEs in implementing SAK EMKM. So students will conduct a complex analysis of the causes of MSME problems starting from recording financial transactions to preparing financial reports. To then find a solution.
- d. Technology integration in PBL enhances the learning experience. Tools such as learning management systems, e-learning platforms, and virtual simulations can make

the learning process more interesting and effective (Srinivasa and J 2016). The integration of technology in this project is the use of Ms. Excel to simplify recording transactions.

3 RESULTS

Based on the questionnaire that we distributed online, students' impressions after taking the MSME financial management course using the Project Based Learning (PBL) strategy include that they think they understand MSME finance better because they are directly involved in obtaining information and processing the data. As quoted from the results of one student's questionnaire, as follows:

"I understand more about Umkm financial material because I directly get information and process the data. And the application of PBL will be very useful for those of us who want to become MSME actors."

So there are students who say that:

“If I have a business, it is easier to prepare the financial statements.”

There are also those who argue as in the following quote:

“After digging up data directly from MSME actors in the use of project-based learning (PBL) strategies, in my opinion, I can think more critically in analyzing and preparing business financial reports to make them more organized and make it easier to see the income, profits and losses of a business run”

So from this statement PBL is proven to train students' critical thinking. As well as providing more real understanding of the cases faced by MSMEs. As the following quote.

"PBL is very useful for me as a student who is just learning and also has many benefits because with the application of PBL we become more knowledgeable about the characteristics of MSMEs. And also understand better how to manage their finances. After seeing what MSME actors do

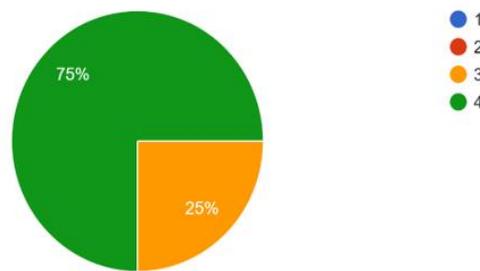
There are even students who provide detailed benefits in terms of developing their competencies, such as the following quote.

“This course is very beneficial for our study program, the competencies that develop include (1) Training students to use reasoning in solving business problems; (2) Training participants in making hypotheses in problem solving based on simple business concepts; (3) training critical and contextual thinking skills”

The following are student perceptions of technical skills that have improved after carrying out the assigned project:

Figure 1

PBL can increase the accuracy of the analysis of cost components or expenses incurred by MSMEs when creating Profit and Loss reports



There are 75% of students strongly agree that the application of PBL learning can make it easier for them to analyze accounts that include the cost component in the income statement. The remaining 25% are in the agree category.

This shows that they are not confused in sorting out the cost components, among others

1. Cost of Goods Sold

This expense reflects the direct costs related to the acquisition of merchandise or the production process of goods/services sold.

Examples: purchase of raw materials, direct labor, and other production costs.

2. Selling Expenses

These are costs incurred due to promotional activities, marketing, and distribution of products or services.

Examples: advertising, promotion, transportation/expedition costs, and marketing staff salaries.

3. Administrative and General Expenses

These are costs related to managerial activities, control, and general company operations.

Examples: salaries of office employees, electricity and telephone bills, office supplies, and depreciation of office buildings.

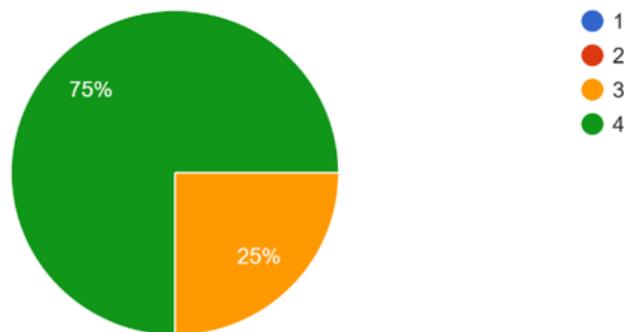
4. Financial Expenses

Expenses that arise from financing activities or the use of company resources.

Examples: interest on loans and bank administration fees.

Figure 2

The PBL model can improve the analysis of the income component in the MSME income statement

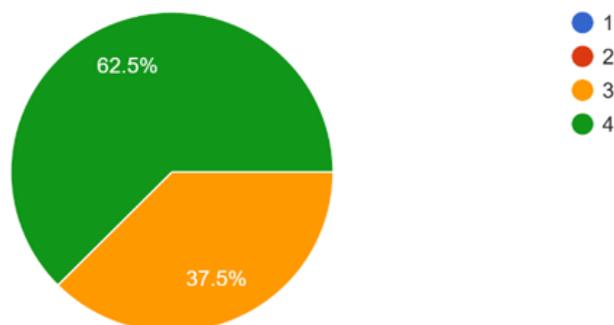


There are 75% of students who strongly agree that the application of PBL learning can make it easier for them to analyze the accounts included in the income component in the income statement. The remaining 25% are in the agree category.

This shows that they are not confused in sorting out the components of income.

Figure 3

The PBL model can improve the analysis of the calculation of Cost of Goods Sold (COGS) in the process of making MSME profit and loss statements



There are 62.5% of students who strongly agree that the application of PBL learning can make it easier for them to analyze the accounts included in the calculation of COGS (cost of goods sold) in the income statement. The remaining 37.5% are in the agree category.

Then analyze the COGS, among others:

The calculation of COGS for a trading company consists of the following elements: Beginning inventory of trade goods; net purchases; ending inventory of trade goods.

Description:

Beginning inventory is the amount of goods available for sale at the beginning of the accounting period or a certain period in a company. This inventory value is the value of goods remaining from the previous period and is ready to be sold or used during the current period.

Net purchases Is the total cost incurred by the company to purchase merchandise, after deducting returns, purchase discounts (also known as discounts), and shipping costs, if any. In other words, it is the amount that the company actually paid for the purchased goods, regardless of returns and discounts. Ending goods inventory Is the total value of goods still available for sale at the end of the accounting period.

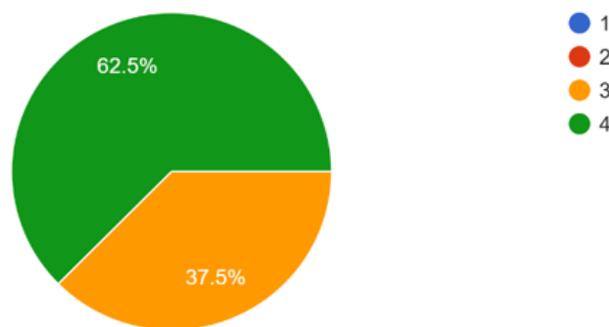
Calculate the direct costs associated with producing goods or providing services, such as raw materials, direct labor, and factory overhead costs.

The three elements can be formulated as follows:

$$\text{COGS} = \text{Beginning inventory of merchandise} + \text{Net purchases} - \text{Ending inventory}$$

Figure 4

Students' perceptions of the PjBl model can improve the analysis of the current and non-current asset components of SMEs



There are 62.5% of students who strongly agree that the application of PBL learning can make it easier for them to analyze current and non-current asset accounts in the balance sheet report. The remaining 37.5% are in the agree category.

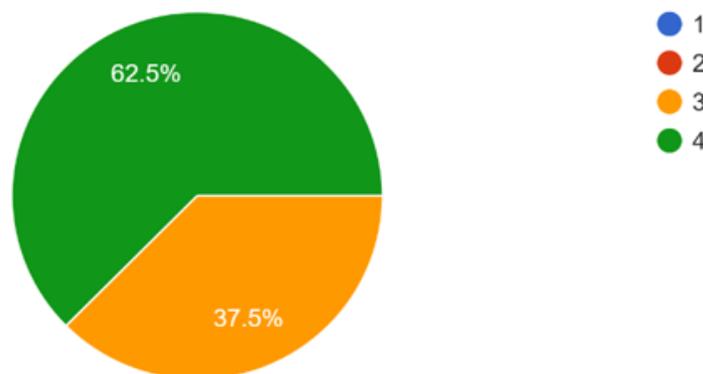
Then analyze the assets, among others:

Assets are resources that are owned or controlled by the entity as a result of past transactions or events and are expected to provide economic benefits in the future. In SAK EMKM, assets are grouped into:

- Current Assets: cash, cash equivalents, accounts receivable, inventory, and other assets that are expected to be realized within 12 months.
- Non-Current Assets: include fixed assets (such as land, buildings, equipment), intangible assets, and long-term investments.

Figure 5

The PBL model can improve the analysis of current and non-current liability components of MSMEs



There are 62.5% of students who strongly agree that the application of PBL learning can make it easier for them to analyze current and non-current debt accounts in the balance sheet report. The remaining 37.5% are in the agree category.

Then analyze the debt, among others:

Liabilities are obligations that the entity currently has, which arise from past events and their settlement will result in the expenditure of economic resources.

In SAK EMKM, short-term liabilities are defined as debts or obligations of the entity that must be settled within a maximum period of 12 months from the reporting date, or within the entity's normal operating cycle, whichever is longer.

The main categories of short-term liabilities in MSMEs include:

1. Accounts Payable

This is a liability arising from the purchase of goods or services on credit in the ordinary course of business.

Examples: debts to raw material suppliers or trade payables to distributors.

2. Short-term Bank Loans

Namely loans obtained from banks with a maximum repayment period of 12 months.

This includes overdrafts and loans for working capital.

3. Accrued Expenses

Expenses that have become liabilities but have not been paid until the end of the reporting period.

Examples: unpaid employee salaries, outstanding electricity or telephone charges.

4. Unearned Revenue

Funds that have been received from customers, but the goods or services for which they are obligated have not yet been provided.

Example: advances on orders for products or services.

5. Other Current Liabilities

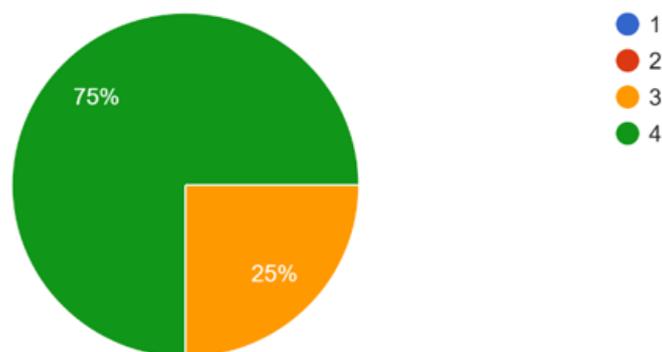
Includes other liabilities that must be repaid within a short period of time.

Examples: taxes payable, dividends payable, or other current liabilities arising from business activities.

Entities classify all other liabilities as long-term liabilities.

Figure 6

The PBL model can increase student competence in making correct financial reports for MSMEs, especially those engaged in production MSMEs



There are 75% of students who strongly agree that the application of PBL learning can improve student competence in making correct financial reports for MSMEs, especially those engaged in MSME production. The remaining 25% are in the agree category.



The stages of making financial statements include collecting transaction data, making general journals, moving to the ledger, compiling a balance sheet, making adjusting journals, compiling a balance sheet, making financial statements (profit and loss, balance sheet, cash flow, and changes in capital),

4 DISCUSSION

PBL promotes self-directed learning, encouraging students to independently search for solutions and make sound financial decisions, which are key success factors for MSMEs (Abinzano et al. 2024). PBL enables iterative learning, where students can receive feedback, reflect on their performance, and make improvements. This process is similar to the continuous improvement efforts needed in MSME financial management (Garrido-Lopez et al. 2018; Blazevic and Lievens 2004). Successful completion of PBL projects increases students' confidence in their financial management skills, making them better prepared for financial responsibilities in MSMEs (Yulianti 2024; Shahiwala 2017).

PBL involves addressing real problems faced by MSMEs, such as financial planning, risk management and investment decision-making (Delgado and Ayala 2019; Abinzano et al. 2024, 2022). This ensures that learning can be directly applied in the business environment. Engage MSMEs and industry partners directly in the development of projects that respond to their specific challenges (Delgado and Ayala 2019; Ott and Liesaputra 2020). This collaboration increases the relevance and impact of the learning experience.

PBL emphasizes hands-on activities where learners are actively involved in projects, such as preparing consultancy reports or business plans (Abinzano et al. 2024; Shahiwala 2017; Liang et al. 2016). This method promotes deeper understanding and retention of financial concepts.

Effective PBL models cover various aspects of business management, including resource management, financial structure, marketing and business development (Delgado and Ayala 2019; Suharsono et al. 2025). This holistic approach helps MSME managers understand the interconnectedness of business functions. PBL emphasizes hands-on activities where learners are actively involved in projects, such as preparing consulting reports or business plans (Abinzano et al. 2024; Shahiwala 2017; Liang et al. 2016). This method promotes deeper understanding and retention of financial concepts. It encourages collaboration between students to solve problems and complete projects, reflecting the collaborative nature of business management in MSMEs (Abinzano et al. 2024; Browning,

Anderson, and Galway 2024). It also helps develop soft skills such as communication and teamwork.

Projects should also focus on improving technological infrastructure, which is critical for MSMEs to thrive in the digital economy. This includes training in the use of digital tools and platforms that can simplify operations and reduce costs (Harnida et al. 2024). PBL should focus on solving real financial problems that MSMEs face. This includes developing business models, financial plans and strategies that are directly applicable to the MSME context (Kabilan 2024). Involving students from different disciplines in PBL projects can provide MSMEs with diverse perspectives and innovative solutions to financial challenges. This approach helps MSMEs develop comprehensive strategies that cover various aspects of the business (Favaloro et al. 2018; Sabnis, Kulkarni, and Gurav 2020).

PBL encourages students to engage deeply with the material through large-scale project work that provides context for technical learning (Sleezer, Leung, and Bates 2018). PBL supports the development of essential skills such as critical thinking, problem solving, teamwork, and self-directed learning (Colim et al. 2022). These skills are essential for mastering deep learning techniques and applying them effectively in real situations. By engaging students in projects relevant to their lives and future careers, PBL increases motivation while deepening understanding of theoretical concepts (Mutanga 2024).

Students may face difficulties in adapting to PBL, especially when switching from traditional teaching methods. Consistent attendance and repeated assessments are critical to mastering concepts (Mutanga 2024). Effective lecturer intervention and timely feedback are important components to improve group performance and deepen learning (Kim et al. 2011). The iterative assessment process helps students refine their understanding and application of deep learning concepts.

PBL encourages collaboration among students, which is essential in dealing with complex deep learning problems. Group projects and case studies mimic real challenges, thus enhancing teamwork and collective problem solving (Martínez-Monés et al. 2005). The utilization of digital technologies and AI can support PBL by providing reliable assessment methods and enhancing collaboration (Divjak, Svetec, and Aničić 2025). Integrating generative AI in PBL can bring innovation to the learning process while ensuring equitable practices.



5 CONCLUSIONS

The application of PBL in the MSME financial management course based on student perceptions provides the following benefits:

- a. train students' critical thinking
- b. better understand MSME finance because they are directly involved in obtaining information and processing the data
- c. develop competence in using reasoning in solving business problems;
- d. Train students in making hypotheses in problem solving based on simple business concepts;
- e. train critical and contextual thinking skills"
- f. As well as making it easier for students to understand the components of the income statement and balance sheet.

Therefore, the suggestion for further researchers is to conduct an assessment in the implementation of PBL in the framework of industrial internships. Given that based on student perceptions, direct field work makes a positive contribution to the development of skills, both hard and soft skills.

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