



## Is the Implementation of Problem-Based Learning Appropriate? A Literature Review on Accounting Learning

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DOI: 10.15294/dp.v18i1.42143

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### History Article

Received January 17, 2023

Approved June 20, 2023

Published June 30, 2023

### Keywords

Accounting Education;

PBL Syntax; Problem

-Based Learning

### Abstract

The objective of this study is to examine the development of research results on the implementation of Problem-Based Learning (PBL) in accounting learning in Indonesia within a 10-year period (2012 – 2022). The research was conducted using the Systematic Literature Review (SLR) method. A review was carried out on 54 PBL articles in the field of accounting education in Sinta 1-6 accredited journals. Research results showed the following findings, there were 54 published articles on PBL in the accounting field from 2012 to 2022, and most articles were published in 2017-2018. The most popular variants on the PBL research method in the accounting field employed Classroom Action Research (41%), followed by experimental research (33%). Most of the research objects involved vocational high schools, universities, and senior high schools. Of the 54 articles that were examined, only 18 articles presented the learning syntax in accordance with the PBL terms from Howard Barrows. Another 12 articles did not follow the PBL terms, but did present problems in learning. However, the utilized problems were not in accordance with the characteristics of problems in PBL, which involve real, unexpected, and unplanned (unstructured) problems. This is presumably because the researchers (1) do not fully understand the features of PBL, or (2) have problems formulating problems in the accounting field that are in accordance with the demands of PBL.

### How to Cite

Istigfarin, W.A., & Andayani, E.S. (2023). Is the Implementation of Problem-Based Learning Appropriate? A Literature Review on Accounting Learning. *Dinamika Pendidikan*, 18 (1), 40-52.

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p-ISSN 1907-3720

e-ISSN 2502-5074

## INTRODUCTION

In the past 10 years, educators are faced with the demand to implement learning that is able to result in graduates who possess 21st century competences. Various learning strategies are directed to the formation of skills for communication, collaboration, creativity, information literacy, technological literacy, and other areas. Fundamentally, educators at the level of schools and colleges have greatly implemented various innovations in learning (Rahayu et al., 2022; Serdyukov, 2017; Yantoro et al., 2021). Education has utilized various innovative learning models to result in graduates who possess skills of critical and creative thinking.

Research results indicated that learning by Guided Inquiry (Adjri et al., 2020; Amijaya et al., 2018; Thaiposri & Wannapiroon, 2015), Discovery Learning (Dewi et al., 2022; Nurcahyo et al., 2018; Wahyudi et al., 2019), and Project-Based Learning (Cortázar et al., 2021; Frezatti & Martins, 2016; Sari & Prasetyo, 2021; Saripudin et al., 2015) is able to improve skills of critical thinking. Additionally, the Project-Based Learning (PBL) model is able to improve the learning competences of students in collaboration and communication (Indrayati et al., 2021).

According to the theory of constructivism, it is stated that students will obtain knowledge, attitudes, and skills through experience and their interactions with the environment (Serafin, Dostál & Havelka, 2015). Jean Piaget stated that intelligence originates from the processes of organization and adaptation. As such, successful learning will be directed to facilitate students to experience and interact with the teaching materials in order to attain their knowledge and skills. Teachers have the obligation to prepare students to be able to think critically; be active, creative, innovative, and productive; and be able to develop their potentials in various situations (Pujiasih, 2020).

Innovations emerge to support learning activities (Warsah & Nuzuar, 2018) and result

from the impact of technological development (Megahantara, 2015). Therefore, in accordance with the demands of the government in the 2013 Curriculum, teachers must be able to instill students with 4C competences, which are creative thinking, critical thinking and problem solving, communication, and collaboration (Septikasari & Frasandy, 2020). One of the learning models that fulfills these criteria is Problem-Based Learning (PBL).

Many studies have been conducted to examine the effectiveness of the PBL method as well as to develop the PBL learning design. By using the quasi-experimental research method with counterbalanced research design, the use of the PBL method was found to be effective in improving the critical thinking skills of students and their competences in accounting learning (Iskandar & Maeshalina, 2020; Mitasari et al., 2018; Setyaningrum et al., 2019). With usage of the Meta-Analysis method, it was proven that the PBL model could improve the critical thinking and diligence of Generation Z (Seibert, 2021). Other studies that used the Research and Development (R&D) method also indicated that there was an increase in the divergent-convergent thinking skills of students after the implementation of PBL (Putri et al., 2019).

The various studies on the PBL model above indicated that there were differences in the utilized research approaches although the obtained results were the same, in that PBL is able to improve the critical thinking skills and competences of students. In addition to research approaches, differing PBL syntaxes were also discovered. With the Classroom Action Research design, the syntax of PBL learning that is able to improve the critical thinking and creative thinking skills of students is the creation and posting of mind maps on Instagram with a group, as well as the presentation of materials with quiz problems on the basic concepts of accounting and financial reports (Nurkhin et al., 2020).

Meanwhile, for another study with the case study approach, the syntax of PBL learning that is able to instill student skills is the

identification and discussion of problem facts with a group, as well as the execution of decisions with essay problems on fixed assets and intangible assets (Stanley & Marsden, 2012). Despite the differing syntaxes, nearly 95% of studies stated that the PBL model is an effective learning model to improve critical thinking skills. This leads to a question: is the PBL design that was implemented by researchers appropriate to the PBL terms that were established by Howard Barrows and Tamblyn?

Howard Barrows and Tamblyn are the pioneers in the development of the PBL learning model (Robert, 1997). According to Howard Barrows and Tamblyn, PBL is a learning model that presents real problems for students as the initiator of learning, which are resolved through investigation and applied with usage of problem-solving approaches. PBL is used to stimulate student reasoning and learning as evaluation of the application of skills for solving unstructured problems as a learning objective in medicine (Barrows & Tamblyn, 1980). PBL would be appropriate to be used for solving everyday problems that are real, unexpected, and unplanned. The initial syntax of Howard Barrows and Tamblyn for PBL is composed of five steps: (1) process of orienting students to the problems, (2) organization of students, (3) guidance of individual and group investigation, (4) development and presentation of results, and (5) analysis and evaluation of the process for problem-solving results (Barrows, 1996).

In order to prove scientifically that the Problem-Based Learning model has an influence on accounting learning in Indonesia, one way to do so is by analyzing the results of various prior studies using an appropriate research method, which is Systematic Literature Review. SLR is a method to examine scientific literature and to develop insights, critical reflection, and future research pathways in order to be able to answer the research questions (Massaro et al., 2016). The objective of SLR is to investigate, identify, evaluate, and interpret all studies that are related to topics of interesting phenomena with various appropriate rese-

arch questions (Triandini et al., 2019). Based on the above analysis, this research has the objective of describing the results of studies on the PBL model in the field of accounting that are published in national journals with indices of Sinta 1 through Sinta 6.

## METHODS

The utilized method in this study was the method of Systematic Literature Review (SLR). The unique characteristic of SLR is a “method to examine a collection of scientific literature, to develop insights, critical thinking, future research, and research questions” (Massaro et al., 2016). SLR has the objective of synthesizing studies based on specific questions in stages with clear procedures (Littell et al., 2008). SLR has been used in many studies in accounting (Dedyansyah et al., 2021; Dumay et al., 2015; Ferreira et al., 2016; Nomran & Haron, 2020; Santis et al., 2018; Stechemesser & Guenther, 2012; Sukmawati & Pujingsih, 2022).

In defining the collection of journals for further analysis stage, identification of articles was carried out using the keywords of “PBL, PBL in Accounting, PBL Akuntansi, PBL in Accounting Education, PBL Pendidikan Akuntansi, PBM, PBM in Accounting, PBM Akuntansi, Problem, Problem Based, PBL Literature Review, Syntax PBL, Step of PBL, Sintaks PBL, Tahap PBL, and Karakteristik PBL”. The research data were obtained from the database of Science and Technology Index (SINTA) with Sinta 1-6 indices.

Selection of the SINTA database was based on two criteria: (1) Journals with SINTA indices are journals that possess quality assurance and are listed on the Arjuna (Akreditasi Jurnal Nasional) portal, and thus have fulfilled quality requirements for scientific journals and competitiveness of Indonesian researchers (Ministry of Research, Technology, and Higher Education, 2018). (2) SINTA journals have passed tests of content and management evaluation from accredited assessors (Ministry of Research, Technology,

and Higher Education, 2018). As such, these articles have attained quality assurance for measuring the achievement performance of scholars in higher education in Indonesia (Darmalaksana, 2020).

Then, these are the steps for article selection: (1) The utilized data in this research were articles related to PBL in the field of accounting in Indonesia in the years from 2012-2022. (2) Credibility of article data searches was established by rechecking each article with Google Scholar and the Garba Rujukan Digital (Garuda), which has the objective of ensuring that the articles are present and accessible. However, Garuda has the limitation of being not quite optimal because several files still could not be accessed. From the search results, 54 articles from 30 journals were found. The following is the presentation of the distribution of articles can be seen in Table 1. (3) To improve the reliability of coding, this study employed 2 coders. The researcher had established the basis for coding: (1) article year, (2) PBL as a subject, (3) for courses or subjects of accounting, and (4) Sinta 1-6 indexed. Next, coding was performed, giving values of “0” if present and “1” if absent. The results of coding with 2 coders led to a kappa Cohen coefficient value of 0.906. This means that the agreement between the researcher and the coders is good or almost perfect.

**Table 1.** Frequency Distribution of Sinta Journals

No	Sinta	Number of Articles
1	S1	1
2	S2	7
3	S3	6
4	S4	14
5	S5	25
6	S6	1
Total		54

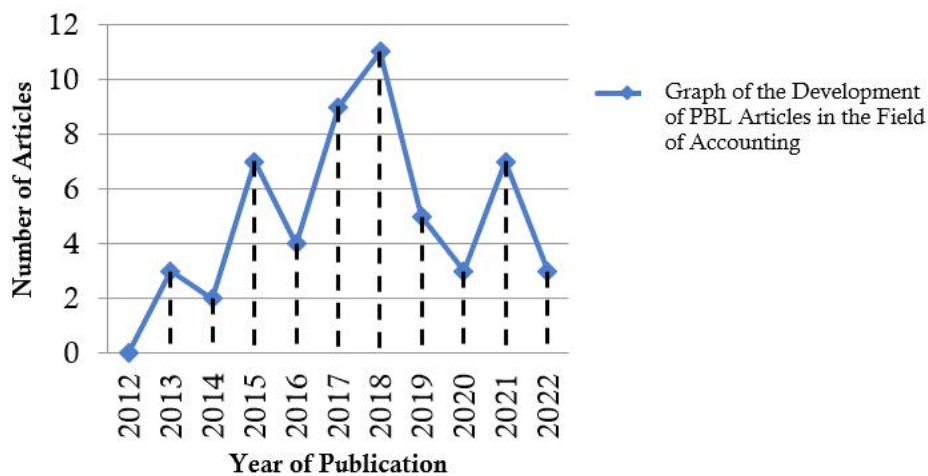
Source: Sinta’s Data (2022)

**RESULT AND DISCUSSION**

**Development of Publications of Problem-Based Learning Articles in the Accounting Field in Indonesia**

From 2012 to 2022, there were only 54 articles published in Sinta 1-6 journals through searches with the keywords as explained previously. The following is the development trend of PBL articles in the field of Accounting in Indonesia.

Based on the Figure 1, it can be seen that the development of publications for PBL research in the field of accounting within a period of 10 years (2012-2022) had a fluctua-



**Figure 1.** Development Trends of Articles on PBL in Accounting in Indonesia  
Source: Processed Data (2022)

ting condition. Looking at the chart, the greatest number of published articles occurred in 2017-2018, which is suspected to be due to the implementation of a policy for scholars to publish articles in national and international scientific journals. This is as stated in the policies of Minister of State Apparatus Utilization and Bureaucratic Reforms Regulation Number 17 of Year 2013 and Minister of Research, Technology, and Higher Education Regulation Number 92 Year 2014. The objective of these policies is to increase the number of scientific publications and disseminate findings for input into decision-making.

However, a decrease occurred in 2019-2020, which was likely due to the impact of COVID-19 that made it difficult to conduct research on PBL in the field of accounting. Then, in 2021, there was an increase because there was a new regulation for the Primary Performance Indicator for State Universities for in-class learning, which required the use of one or a combination of learning methods for case (problem) resolution or project-based group learning (Minister of Education and Culture, 2020).

As has been presented in Table 1, of the 54 articles, only one article had an index of Sinta 1. For the rest, 7 articles had an index of Sinta 2, 6 articles had an index of Sinta 3, and the remaining 40 articles had indices of Sinta 4, Sinta 5, and Sinta 6, which illustrates the quality of the journals. Sinta 5 journals have references that are too old, too few references (with no international journals), a lack of

credible references, a lack of journal editing, many errors in writing, and a lack of appropriateness with the problem-based learning concept. This indicated that the quality of articles is still very low.

### Research Methods for Problem-Based Learning in the Accounting Field in Indonesia

Based on content analysis, it was found that there were variations in the utilized research methods. The following are the variants of research methods for PBL in the field of Accounting in Indonesia.

On the Table 2, it can be seen that Classroom Action Research (CAR) became the most popular variant for the research approach (n = 22, 41%) followed by experimental research (n = 18, 33%). Most of the CAR was conducted in vocational high schools (SMK), where research on PBL in the field of Accounting is frequently conducted to resolve issues in the in-class learning of Accounting. CAR is often used because it is an attempt at evaluating the learning that is conducted in the classroom (Udil, 2021).

CAR also allows for greater exploration of emergent phenomena, conditions, or information in order to obtain alternative variations for improvement (Syah, 2016). Many researchers in the field of accounting education focus on discussing approaches for teaching using CAR, such as the usage of deep dialogue-critical thinking (DD-CT) learning models, modules, offline and online

**Table 2.** Research Methods for Problem-Based Learning in Accounting in Indonesia

No	Research Method	Number of Articles	Percentage
1.	Classroom Action Research (CAR)	22	41%
2.	Quasi-Experiment	18	33%
3.	Research & Development	8	15%
4.	Descriptive Qualitative Research	4	7%
5.	Descriptive Quantitative Research	2	4%
Total		54	

Source: Processed Data (2022)

games, cases, the peer approach, and quantum teaching (Rahmawati & Suryani, 2021). CAR implements improvements of classroom actions for many activities that are conducted with PBL, by which students became able to understand the objectives of PBL.

This would be different from Quasi-Experimental research because QE does not attempt to implement improvement in the classroom, but only to find whether there is or there is no influence. Thus, research on PBL in the field of Accounting in Indonesia is employed more to solve problems that are present in the classroom. CAR for PBL in the field of accounting that is frequently conducted in Indonesia has been appropriate to the characteristics of PBL, for which CAR is conducted with 1 to 3 cycles in the research process (Novitasari et al., 2022).

The experiment method was also used to examine the effectiveness of PBL in the field of Accounting in Indonesia. The experiment method ranked second in usage for research in PBL in Accounting because the research results provide evidence that is more accurate and relatively unambiguous for cause-effect relationships, it is easier to execute, and it is cheaper and less time-consuming than other research methods (Neuman, 2014). Over time, the variants of research approaches that were utilized by researchers in accounting education became further different. This means that there was an increase in the quality and capabilities of researchers in developing their research according to progressive developments (Rahmawati & Suryani, 2021).

### **Research Objects for Problem-Based Learning in the Accounting Field**

Based on the results of content analysis, research on PBL in the field of accounting was frequently conducted in vocational high schools (SMK), universities, and high schools (SMA). Application of PBL on accounting learning for SMK students was found to be the greatest ( $n = 31$ , 57%). It is known that the learning system in SMK focuses on the occupational preparation of students in a more

practical manner. Application of the PBL model for SMK students in the accounting subject is quite suitable and effective because it is in line with the objectives of vocational teaching, which prioritize the direct practice of occupational skills (Novitasari et al., 2022). Application of the PBL model in the field of accounting in universities was found in 18 studies (33%).

PBL in universities only became a hot discussion topic in 2020, which is since the evaluation of Primary Performance Indicators (IKU) in State Universities. The implementation of the policy was outlined in Minister of Education and Culture Regulation Number 03 of Year 2020 on the National Standards for Higher Education and Minister of Education and Culture of Indonesia Decree Number 754/P/020 on the Primary Performance Indicators of State Universities. Each institution is expected to execute transformation of higher education that is in line and in harmony with the 8 IKU for the execution of education as one of the implementations of Independent Learning using the Case Method and Project-Based Learning (Minister of Education and Culture Regulation, 2020). Research on SMA students had the least number of applications ( $n = 5$ , 9%).

### **Research Syntaxes for Problem-Based Learning in the Accounting Field**

As explained in the background analysis, the PBL syntax is composed of 5 steps: (1) orientation of students to the problem, (2) organization of students, (3) guidance of student investigation, (4) development and presentation of results, and (5) analysis and evaluation of the process for problem-solving results (Barrows, 1996). This model syntax by Howard Barrows has been adopted by the Ministry of Education and Culture (Ministry of Education and Culture, 2018). Even so, in practice, teachers or lecturers make modifications of the syntax in accordance with the characteristics of students, learning objectives, and teaching materials. The results of data analysis indicated that research on PBL in the

**Table 3.** Syntaxes of Problem-Based Learning in the Field of Accounting in Indonesia

No	PBL Syntax	Number of Articles
1.	PBL Syntax (1) 1. Orientation of students to the problem 2. Organization of students for learning 3. Guidance of group investigation 4. Development and presentation of work 5. Evaluation of the problem-solving process	18
2.	PBL Syntax (2) 1. Problem definition (obtaining relevant facts and answers) 2. Generalization and consideration of ideas 3. Research on the existing problem 4. Collaboration to share ideas and make decisions 5. Communication of the selected decision or option	1
3.	PBL Syntax (3) 1. Explanation of learning objectives 2. Student apperception 3. Division of discussion groups by the teacher 4. Random assignment of a student to work on the worksheet by the teacher 5. Conclusion drawing and test evaluation	1
4.	PBL Syntax (4) 1. Problem exploration 2. Clarification of unclear concepts of the problem 3. Determination of the problem that should be explained 5. Independent research and collaborative learning 6. Problem analysis to result in ideas 7. Systematic composition of ideas and execution of in-depth analysis 8. Presentation and evaluation	2
5.	PBL Syntax (5) 1. Paying attention to lecturer explanations 2. Recording of materials provided by the lecturer 3. Reading the learning materials 4. Completing worksheets 5. Discussion or query with the lecturer and students 6. Presentation of group results	1
6.	PBL Syntax (6) 1. Problem assignment 2. Division of groups 3. Guidance of group discussion 4. Problem resolution 5. Reflection or evaluation	4
7.	PBL Syntax (7) 1. Problem formulation 2. Problem analysis 3. Hypothesis formulation 4. Execution of investigation 5. Conclusion of problem-solving alternatives 6. Testing of the resulting problem-solving solution	2
8.	PBL Syntax (8) 1. Explanation of learning objectives 2. Group creation 3. Group execution of problems 4. Problem analysis 5. Presentation and evaluation	3
Total		32

Source: Processed data (2022)

field of Accounting in Indonesia had varying syntaxes that in general could be grouped into 8 variants. The following is the data on the various PBL syntaxes that were implemented by researchers in Indonesia.

Of the 54 articles that were examined, 32 articles explicitly explained the utilized PBL syntax and the remainder (22 research articles) had no explanations. Table 3 shows that of the 32 research articles, there were 8 different variants for the steps of PBL. Of the

se, 18 articles used the PBL syntax that is in line with the version of Howard Barrows (PBL syntax (1)), for which the model PBL syntax is also the one recommended by the Ministry of Education and Culture. Table 3 also showed that 14 articles used different PBL syntaxes.

The research results also showed that most of the studies (30 articles) had presented “problems” as study materials for the achievement of learning objectives, although the presented problems still took the form of tex-

tbody problems as well as problems or cases created by the teachers. Only 2 articles did not present problems in the steps of PBL learning, which utilized PBL syntax variants (3) and (5). In these 2 articles, the researchers did not present the “problem” to be discussed in learning.

Although the PBL studies had differing syntaxes as well as “problems” that have not fulfilled the criteria of “problems” in PBL, almost all of the studies indicated that PBL was able to improve the learning results, critical thinking capabilities, and independence of students. These results are similar to what had been stated by previous studies, in that PBL studies were able to improve student learning results in the subject of service company accounting for the material of financial reports (Martutik, 2017).

Next, PBL was also able to improve the reading activity of students in the learning for financial accounting as well as the independent learning skills of students (Hsu et al., 2016; Rahayuningsih, 2017). PBL is a learning model that is ideal in order to instill relevant skills to realistic situations in accounting (Stanley & Marsden, 2012). The combination of the PBL model with materials on financial report composition represents an effective activity (Asvifah & Wahjudi, 2019).

#### **Problems Utilized in Problem-Based Learning in the Accounting Field**

Next, based on content analysis, it was found that there were variations in the utilized problems in the research. The following are the variations of problems in PBL research in the accounting field in Indonesia.

Based on Table 4, it can be seen that most of the issue in using the PBL model in the accounting field in Indonesia centers on the problems not having been indicated. Of the 54 articles that were examined, only 3 studies used structured problems. The three problems were problems on the comparative analysis of income tax (PPh 21) among the countries of Australia, Singapore, Malaysia, Papua New Guinea, and Indonesia; composition of adjustment journals for small and medium enterprises; and petty cash input. Of

**Table 4.** Problems Utilized in Problem-Based Learning in the Field of Accounting

No	Problems	Number of Articles
1	Structured problems	3
2	Completion of financial reports	1
3	Completion of accounting cycles	1
4	Completion of problems	11
5	Completion of work-sheets	5
6	Completion of module problems	3
7	Completion of objective problems	6
8	Composition of financial reports from case studies	1
9	Verbal and pictorial tests	1
10	No explanation	22
Total		54

Source: Processed data (2022)

the 54 articles on PBL in the Accounting field, another 29 studies presented problems in the form of problems crafted by the teacher, and the other 22 studies did not explain the characteristics of the problems used in PBL.

These findings show that the various existing studies in PBL in the Accounting field in Indonesia still have not fulfilled the characteristics of Problem-Based Learning. Yet, the readers wish to find out about the problems that are used in PBL in the Accounting field. Because the PBL model is a “conditional” learning model in the accounting field, many educators, school teachers, and universities are interested to learn about the characteristics of problems used in PBL. As stated by Johnstone & Biggs (1998), PBL for courses of financial accounting should be applied after the basic technical knowledge for accounting is given, and should be intensively provided at the terminal end of the curriculum of the study program.





**Figure 2.** Variable Linkage

In greater detail, research problems for PBL in the Accounting field in Indonesia cover Tax Administration, Income Tax (PPH), Value-Added Tax, Taxpayers, Taxation, Final and Non-Final Income Tax, Financial Accounting, Intermediate Financial Accounting 1 & 2, Advanced Financial Accounting, Short-Term Debt, Trading Company Accounting, Cost Accounting, International Accounting, Management Accounting, Financial Management, Accounting for Sharia Banking, Banking Credit, Basic Banking, Bank Reconciliation, Auditing, Accounting Computerization, Financial Reports, Service Company Financial Reports, Adjustment Journaling, Service Company Adjustment Journaling, Special Journal Transaction Recording, Service Company Journal and Ledger Posting, Supply, Petty Cash, Introduction to Accounting, Basic Accounting, Accounting Practice, Accounting Systems, and Accounting Learning Strategies.

The results of this research affirm the applicability of the constructivism theory, for which the process of obtaining knowledge in the accounting field may be accomplished through the experiences and interaction of students with their learning environment. Even so, specifically for the accounting field, which is technical-procedural in nature, the

PBL model is not recommended and is more appropriate to be used for competences which are directed to the expansion and strengthening of capabilities and skills.

## CONCLUSION

Based on the results of analysis and discussion, the following conclusions can be made. (1) The number of published articles for PBL in the Accounting field during the period from 2012 to 2022 is 54 articles and most publications are in the years from 2017-2018. (2) The most popular research method variant for PBL in the Accounting field is Classroom Action Research (41%) followed by Experimental Research (33%). (3) The most frequent research objects are SMK, universities, and SMA. 4) Of the 54 studies that were examined, only 18 articles present learning syntaxes that are appropriate to the PBL terms of Howard Barrows. Another 12 articles do not follow PBL terms, but have presented problems in learning. However, the utilized problems have not been appropriate to the characteristics of problems in PBL, which are real, unexpected, and unplanned (unstructured) problems. The remaining 2 articles neither follow PBL terms nor present problems in learning, because the

articles used the method of responses or lectures in learning. This is suspected to be because (1) the researchers had not fully understood the characteristics of PBL, or (2) the researchers had difficulties in formulating problems in the field of accounting that are appropriate to the demands of PBL.

This research has a limitation, in that it only used articles for PBL in Accounting in Indonesia with indices of Sinta 1 through 6. Therefore, future research is expected to be able to expand the data analysis and data sources. Researchers also ought to present the characteristics of the problems used in their research settings, as they are very important for readers. It is suggested that managers of journals improve the quality of their journals for future research.

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