# Problem-Based Learning Methods in Economics Subjects in Indonesian Educational Institutions: A Literature Review

Devaki Kanaga Retnam[a], Azila Abdul Razak[b]

*[a,b] Faculty of Management and Economics, Universiti Pendidikan Sultan Idris,*
*35900 Tanjong Malim, Perak, Malaysia*
*Corresponding Author: devaki1027@gmail.com*

## Abstract

The Problem-Based Learning Method (PBL) is known as the most innovative approach to developing students' skills and abilities to solve real problems in the classroom and at work in the future. The highlights of this literature are aimed at reviewing the effectiveness of problem-based learning methods in economics subject for students, especially in Indonesia. Articles from 2016 to 2023 were obtained from three databases, Google Scholar, Research Gate, and Semantic Scholar. A total of 40 articles were selected based on four stages in the PRISMA Model, namely, identification, screening, eligibility, and inclusion. The findings showed that overall implementation of the PBL method had a more positive impact than conventional learning on economics students in Indonesia when teachers apply PBL models and PBL integration techniques in the global era of Society 5.0. Among the positive effects of this study were (1) students were able to improve economics learning outcomes, (2) students were able to improve critical thinking skills, (3) students could improve their performance in economics subject and (4) students could develop high order thinking skills (HOTS). The role of facilitator teachers was also emphasized in this study. Therefore, this study suggested that teachers and lecturers of economics should choose PBL techniques as one of the best solutions for implementing teaching and learning economics in the classroom in the global era of Society 5.0. This paper also highlighted the challenges faced by students and teachers in achieving the Minimum Profit Criteria set by the Ministry of Education Indonesia for further study.

**Keywords:**
Problem-Based Learning, Economics, Learning Outcomes, Problem-Solving Skills

## INTRODUCTION

The main role of national education in Indonesia is to provide students with the perspective of being brave to face the challenges of the ever-changing global community and this statement is following the Republic of Indonesia Act 20, 2003, The National Education System, Article 1 of Section 2 which has been translated to " National education is education based on the Pancasila and the 1945 Constitution, and based on religious values, Indonesian national culture and response to the ever-changing needs of the era" (Ministry of Education Indonesia, 2003).

Conventional learning needs to be replaced by active learning, especially in subjects in social sciences such as economics. An appropriate learning model for economics subject is an active learning model because to solve the problem of learning the subject of economics, teachers need a variety of learning that actively engages students in teaching and learning activities, improves thinking skills, and encourages students to work together and help each other to solve problems (Wahyuningtyas, 2014; Wayne, 2015; Gofer & Hera wan, 2017; Maryam & Jahir, 2018; Margareta, 2020; Korai, et al., 2020; Affiant, 2021; Nanda, 2022; Dominik et al., 2022; Rohan & Lutfiyan, 2023).

Economic subjects serve to train students to solve the current economic problems in society so that students can lead a prosperous life. However, many students consider economic subjects to be difficult to understand and boring (Andriyansyah, 2020; Fardany & Goddess, 2020; Prayuda et al., 2021; Firdaus & Munawaroh, 2021; Surtika, 2023). Therefore, economics teachers are encouraged to plan effective active learning activities as they enhance the achievement and motivation of students to study economics (Koryati et al., 2020).

According to Hasan et al. (2019), one of the learning models that can make students actively study is problem-based learning (PBL). PBL is a learning model that provides real-world problems to students to facilitate learning through critical thinking skills and problem-solving and at the same time students gain important knowledge and concepts from teaching materials (Darhim et al., 2020). Juhari and Muthahharah (2020) emphasize that the PBL Model is a learning concept that helps teachers create a learning environment that starts with the (related) problem that is important and relevant to students and enables students to gain a more realistic learning experience.

PBL leads to student-centered learning activities and teachers or lecturers play an important role as facilitators or facilitators during teaching and learning activities (Simatupang & Appulembang, 2022). According to Komariyah and Komarudin (2019), the facilitator is a person with the ability and expertise in a field to perform tasks and functions while performing learning training activities. On the other hand, according to Lusiana et al. (2017), the curiosity that economics teachers have is still low because according to students, the frequency of teachers using creative learning methods in teaching is very low despite the many creative learning methods that can help teachers to teach more easily. PBL activities in economics subject help teachers carry out learning activities and students can achieve learning outcomes.

## LITERATURE REVIEW

### Economics Subject

Economics is a subject that requires a good level of analysis and understanding and students need to practice and understand the problems or realities that occur in the Indonesian economy (Damanic & Lubis, 2023). According to Perdanasari et al. (2022), the achievement of learning for economics subject has been set out in the Decision of the Head of Education Standards, Curriculum and Assessment Agency of the Ministry of Education, Culture, Research and Technology Number 088/H/KR/2022 by describing general and specific learning outcomes related to understanding the concepts that students must achieve.

Many studies have suggested that teachers change the pedagogical methods of conventional economics subjects to active learning such as Problem-based learning (PBL). This is due to the factors of the students themselves and the economics teachers in Indonesia that have led to the quality of education at every level of education and unit; especially

primary and secondary education very low (Abollilan & Lulan, 2019). Among the key factors is that teachers still tend to use conventional teacher-oriented learning, that is, teachers are more active in the way of lectures while students are passive because they are not allowed to explore optimally (Khusaini et al., 2018; Sari, 2018; Rahmat, 2018; Sunaryanto et al., 2018; Abolladakan & Lulan, 2019; Dewi, 2021; Iskandar & Fathan, 2021; Prasetya et al., 2021; Setyowati et al., 2022).

The next factor is that teachers need to understand that all students do not study in the same way or at the same time. When teachers use traditional learning models without using the learning media, then students find that learning by educators is still less effective and tends to become boring (Narmaditya et al., 2017; Jaenudin et al., 2017; Herlina, 2018; Sari & Rokhmani, 2019; Munawaroh et al., 2022; Damanik & Lubis, 2023). The last factor is the selection of the right learning method to enable learning activities and improve student's analytical thinking skills as well as contribute to the improvement of learning outcomes of economics subject (Susanti & Suwu, 2016; Thamrin & Hutasuhut, 2017; Budiwati & Yuliyanti, 2017; Narmaditya et al., 2018; Hermidayani et al., 2019; Siti Nurul Qomariyah, 2019; Maghfiroh & Mulyani, 2019; Hasyim et al., 2019; Kardoyo et al., 2020; Iskandar & Al Fathan, 2021; Saepuloh et al., 2021; Wardoyo et al., 2021; Perdanasari et al., 2022; Siregar et al., 2022; Yunikawati and Tuanani, 2022; Khasanah et al., 2023).

## Problem-Based Learning (PBL)

The PBL learning method is an instructional approach that has been fully utilized for over 30 years and continues to be well-received in various disciplines (Sari, 2018). Simamoraa et al. (2017) define the PBL model as a series of learning activities that emphasize problem-solving In the PBL process, students are given a problem scenario, and students need to work together in groups to resolve this issue by referring to their existing knowledge or relevant information. This is in line with the study of economics that requires students to think critically by associating with real life in solving an economic problem (Hermidayani et al., 2019). In this PBL model, students are directly involved in learning activities so that their knowledge can be well absorbed and this learning model enables students to interact and collaborate with group partners to encourage students to learn (Permatasari et al., 2019).

According to Khasanah et al. (2023), the primary purpose of teachers using the PBL approach in teaching and learning sessions is to encourage students to achieve the learning outcomes that the ministry has set in a subject. Learning outcomes are the abilities that students gain after learning and students who succeed in learning are students who have achieved learning goals or instructional goals (Damanic & Lubis, 2023). In the subject of economics, one aspect of assessment tested to determine students' understanding is the cognitive aspect of evaluating student learning outcomes (Siregar et al., 2022).

According to Iskandar and Al Fathan (2021), the main purpose of the PBL method used in teaching and learning economics is to improve critical thinking skills, enhance the ability to solve problems and enhance students' ability to actively build their knowledge and improve their social skills. When the PBL is implemented, the teacher acts as a facilitator and this does not mean that the teacher is less involved in the student learning process. On the contrary, the implementation of the PBL encourages independent students to build their knowledge through the problems provided by teachers during the learning process (Sari & Rokhmani, 2019).

The features or steps of the PBL Model are initiated by addressing the problem, assessing whether the problem has a context with the real world, students actively working with the group to solve the problem, studying, and searching for problem-related materials

individually, and reporting solutions to problems (Jaenudin et al., 2017; Herlina, 2018). However, according to Narmaditya et al. (2017), the PBL method does not necessarily mean that a problem needs to be solved because the PBL can also be used to help students think differently about a problem or train high-order thinking skills.

## METHODOLOGY

In this study, the PRISMA Model (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) was used to initiate a systematic and comprehensive article search and screening process. Procedures through the PRISMA review model are divided into four stages (1) identification stage (identification), (2) screening stage (screening), (3) eligibility stage (eligibility), and (4) summary level (included).

### Identification Stage

After identifying the research questions, two variables were identified that were the importance of the PBL approach and the PBL methods in teaching economics subject. A list of search terms has been developed as a criterion for identifying the importance of the PBL approach to learning outcomes, critical thinking skills to solve problems, and achievement of high-order thinking skills (HOTS) by applying PBL methods among economics students. There are three search engines used to find data sources such as Google Scholar, Research Gate, and Semantic Scholar. Furthermore, keywords such as 'problem-based learning', 'economics subjects', 'Indonesia' problem-based learning, and subjects/ economic subjects have been used as strategies in the literature search. The use of such keywords facilitates the literature search that is closely related and relevant to the study title shown in Table 1.

**Table 1: Search string**

| Database | Keywords Used |
|---|---|
| Google Scholar<br>Research Gate<br>Semantic Scholar | TITLE-ABS-KEY<br>"problem-based learning" OR "PBL"<br>AND<br>"economics subject"<br>AND<br>"Indonesia"<br><br>ALL FIELDS<br>"problem-based learning" OR "PBL"<br>AND<br>"economics subject"<br>AND<br>"Indonesia" |

> TITLE-ABS-KEY
> "problem-based learning" OR "PBL"
> AND
> "economics subject"
> AND
> "Indonesia"

The search from the database extracted 281 articles based on keywords such as the search techniques in Table 1. There were 132 articles from Google Scholar, 100 articles from Research Gate, and 49 articles from Semantic Scholar. The careful selection of articles was carried out based on the PRISMA Model as this model could be used as a guide in the search for literature (Wan Mat & Mohd Matore, 2020). Only 40 publications were selected through the database and formulated as shown in Table 2.

**Table 2: Number of articles per database**

| Database | Total Article |
|---|---|
| Google Scholar | 21 |
| Research Gate | 12 |
| Semantic Scholar | 7 |

**Screening Stage**

For the screening stage, there were several literature selection criteria such as document type, field, year of publication, language, and national coverage. Indirectly, these criteria help the researcher to filter the article more effectively and focus on the research objectives. Table 3 shows the summary of the literature selection criteria for this study.

**Table 3: Literature eligibility and selection criteria**

| Criteria | Eligibility | Exclusion |
|---|---|---|
| Document Type | Journal articles, seminar articles, proceedings, and action research | Thesis, books, and literature reviews |
| Field | Economy | Social sciences, psychology, humanity |
| Publication year | 2014 – 2023 | 2013 and below |
| Language | Indonesian language, English | Other languages (apart from Indonesian and English language) |
| National coverage | Indonesia | Other than Indonesia |

Source: Adapted from Nur Izzati, Shahida & Latifa (2020); Thomas & Surat (2021)

**Eligibility and Inclusion Stage**

At the eligibility stage, the researcher reviews the articles collected for analysis. Of the 281 articles found in three databases, 141 articles had to be excluded. This is due to the overlapping of titles, 93 of which have been ignored from the list. Then, a total of 120 articles

were excluded based on title and abstract because the methodology, type of publication, language, timeline, and subject matter were not relevant to the study. After a comprehensive analysis of the remaining 68 articles, 28 were eliminated due to inconsistencies in the scope of the study. At the summary stage, after the completion of the screening stage, 40 articles were selected for synthesis. Figure 1 is a flow chart of identification, screening, eligibility, and inclusion procedures based on the PRISMA Model.
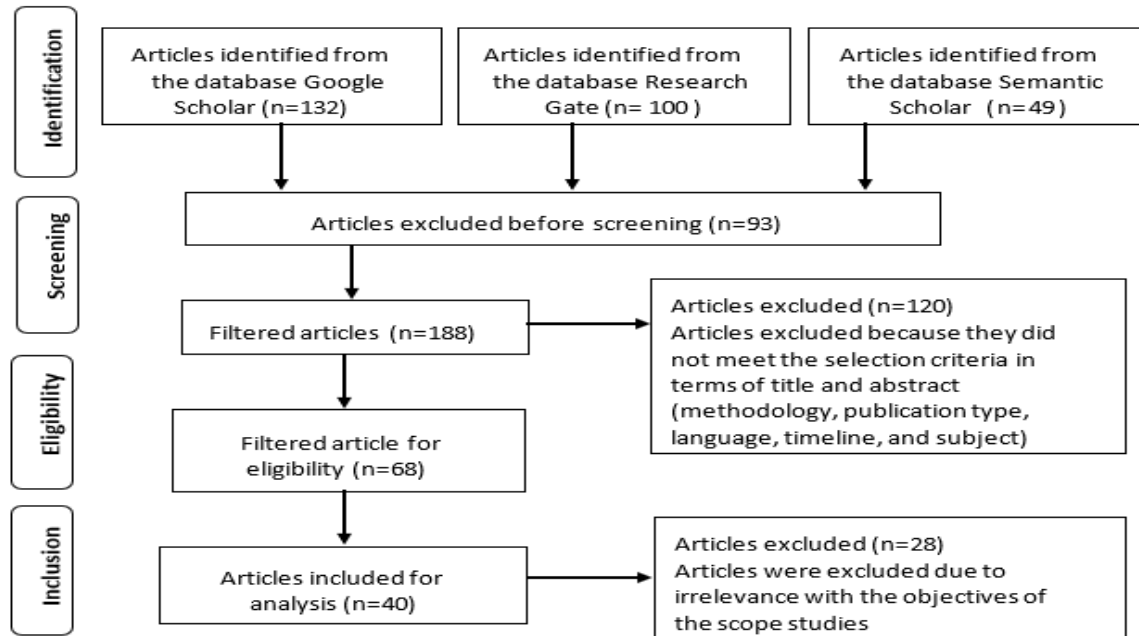


**Figure 1: PRISMA model flow chart**
Source: Adapted from Page et al. (2021); Thomas & Surat (2021)

## FINDINGS

The analysis conducted on 40 selected articles included the background of study participants, national population, research design and study design, data collection methods, technical integration in PBL, learning outcomes measurement mechanism, critical thinking skills for problem-solving, performance achievement, and high-order thinking skills (HOTS).

### Background of Participants

According to Table 4, a total of 2371 participants were involved in a study conducted from 40 articles. A total of 28 articles involved 1747 high school students and 12 articles involved 624 pre-graduate students. The age range of the study participants can be categorized into three, 13-15 years, 16-18 years, and 19-24 years. The participants in the study were students from the field of Social Science and specialized in subjects or courses in Economics at the school and university levels. This proved that the PBL method was no longer focused solely on medicine but had been actively applied in social sciences such as economics. This method has evolved and adapted to the appropriateness of learning content and student needs.

**Table 4: Age Range of Participants**

| Participants | Age Range | Total Articles | Author |
|---|---|---|---|
| Junior high school students | 13 to 15 years | 1 | Narmaditya, Winarning & Wulandari (2017) |
| High school students | 16 to 18 years | 27 | Supandi, 2016, Susanti & Suwu, 2016, Budiwati & Eka Yuliyanti, 2017, Jaenudin, Baedhowi & Murwaningsih, 2017, Herlina, 2018, Khusaini, Lestari & Agustin, 2018, Sari, 2018, Mahmud, 2018, Rahmat, 2018, Abolladaka & Lulan, 2019, Hasyim, Hasan, Gampo & Nurbia, 2019, Hermidayani, Mukhtar & Tambunan, 2019, Maghfiroh &Mulyani, 2019, Putri, 2019, Qomariyah, 2019, Sari & Rokhmani, 2020, Tumanggor, Sobandi & Sojanah, 2020, Chairudin & Dewi, 2021, Dewi, 2021, Ul Haque & Kurniawan, 2021, Iskandar & Al Fathan, 2021, Saepuloh, Sabur, Lestari & Mukhlishoh, 2021, Sianturi, Arwansyah & Yusuf, 2021, Damanik & Jaya, 2022, Siregar, Nugrahad & Arwansyah, 2022, Lubis, 2023, Khasanah, Siswandari & Murwaningsih, 2023 |
| Undergraduate Students (College & University) | 19 to 24 years | 12 | Thamrin & Hutasuhut, 2017, Surjanti, Nugrohoseno & Budiono, 2018, Narmaditya, Wulandari & Sakarji, 2018, Thamrin, Saragih &Sibuea, 2018, Thohiri & Yuni, 2018, Kardoyo, Nurkhin, Muhsin & Pramusinto, 2019, Prasetya, Rusdarti & Dorojatun, 2021, Wardoyo, Narmaditya & Wibowo, 2021, Fitri & Murwaningsih, 2022, Suharianto, Arwansyah, Rinaldi & Putri, 2022, Munawaroh, Setyani, Susilowati & Rukminingsih, 2022, Perdanasari, Sudiyanto & Sangka, 2022 |

**Population of the State**

This aspect of the study population focused on only one country, Indonesia. This is because studies have identified Indonesia as a country with many PBL methods aimed at improving high-order thinking skills (HOTS) in students (Thomas and Surat, 2021). According to Faqiroh (2020), Google Trends in the context of Indonesia's junior high school for the last 10 years from 2010 to 2019 prove that the PBL model has been used for the last 10 years in education on a wide range of subjects and topics as PBL helps to enhance the interest and

comfort of student learning as well as academic achievement and outcomes, critical thinking skills, and solving real problems that students face in general. According to Suparman et al. (2021), findings published from 2015 to 2020 show that the frequency of implementation of the PBL as an effort to improve problem-solving skills among Indonesian students is increasing. Many PBL-related studies are conducted in mathematics, science, and language subjects. Then, the researcher also found that many literature articles related to the application of learning activities using the PBL approach to the subject of economics in Southeast Asia have been implemented among high school students and Indonesian universities as such is shown in Table 5.

**Table 5: Population of Indonesia**

| Country | Total | Author |
|---------|-------|--------|
| Indonesia | 40 | Supandi (2016), Susanti & Suwu (2016); Narmaditya, Winarning & Wulandari (2017); Budiwati & Eka Yuliyanti (2017); Jaenudin, Baedhowi, & Murwaningsih (2017); Thamrin & Hutasuhut (2017); Surjanti, Nugrohoseno & Budiono (2018); Narmaditya, Wulandari & Sakarji (2018); Thamrin, Saragih & Sibuea (2018); Thohiri & Yuni (2018), Herlina (2018); Khusaini, Lestari, & Agustin (2018); Sari (2018), Mahmud (2018); Rahmat (2018); Kardoyo, Nurkhin, Muhsin & Pramusinto (2019); Abolladaka & Lulan (2019); Hasyim, Hasan, Gampo, & Nurbia (2019); Hermidayani, Mukhtar, & Tambunan (2019); Maghfiroh & Mulyani (2019); Putri (2019); Qomariyah (2019); Sari & Rokhmani (2020), Tumanggor, Sobandi, & Sojanah (2020), Chairudin & Dewi (2021); Dewi (2021); Ul Haque & Kurniawan (2021), Iskandar & Al Fathan (2021); Saepuloh, Sabur, Lestari & Mukhlishoh (2021); Sianturi, Arwansyah, & Yusuf (2021); Prasetya, Rusdarti, & Dorojatun (2021); Wardoyo, Narmaditya, & Wibowo (2021); Damanik & Jaya (2022); Siregar, Nugrahad, & Arwansyah (2022); Fitri & Murwaningsih (2022); Suharianto, Arwansyah, Rinaldi, & Putri (2022); Munawaroh, Setyani, Susilowati, & Rukminingsih (2022); Perdanasari, Sudiyanto & Sangka (2022); Lubis (2023); Khasanah, Siswandari, & Murwaningsih (2023) |

**Research Design and Study Design**

Most past researchers study the effectiveness of problem-based learning in economics subject using research designs in the form of action studies, quasi-experimental studies, research and development studies (R&D), and experimental studies. In the meantime, other research designs such as survey research and literature review as well as the lesson plan approach are also used and shown in Table 6.

**Table 6: Research design and study design**

| Research Design | Study Design | Total Articles | Author |
|---|---|---|---|
| Action Studies (12 articles) | Qualitative | 8 | Susanti & Suwu, 2016, Narmaditya, Winarning, Wulandari, 2017, Budiwati & Yuliyanti, 2017, Sari, 2018, Mahmud, 2018, Rahmat, 2018, Wardoyo, Narmaditya & Wibowo, 2021, Khasanah, Siswandari & Murwaningsih, 2023 |
| | Quantitative | 1 | Dewi, 2021 |
| | Qualitative & Quantitative | 3 | Putri, 2019, Kardoyo, Nurkhin, Muhsin & Pramusinto, 2019, Sari & Rokhmani, 2020 |
| Quasi-Experimental Study (10 articles) | Quantitative | 10 | Herlina, 2018, Thamrin, Saragih, Sibuea, 2018, Khusaini, Lestari & Agustin, 2018, Hermidayani, Mukhtar & Tambunan, 2019, Qomariyah, 2019, Tumanggor, Sobandi & Sojanah, 2020, Iskandar & Al Fathan, 2021, Saepuloh, Sabur, Lestari & Mukhlishoh, 2021, Suharianto, Arwansyah, Rinaldi & Sembiring, 2022, Perdanasari, Sudiyanto & Sangka, 2022 |
| R&D Study (9 articles) | Qualitative | 3 | Thamrin & Hutasuhut, 2017, Thohiri & Yuni, 2018, Abolladaka & Lulan, 2019 |
| | Quantitative | 1 | Maghfiroh & Mulyani, 2019 |
| | Qualitative & Quantitative | 5 | Ul Haque & Kurniawan, 2021, Chairudi & Dewi, 2021, Sianturi, Arwansyah & Yusuf, 2021, Prasetya, Rusdarti & Prihandono, 2021, Siregar, Nugrahadi & Arwansyah, 2022 |
| Experimental (6 articles) | Quantitative | 6 | Supandi, 2016, Surjanti, Nugrohoseno & Budiono, 2018, Hasyim, Hasan, Gampo & Nurbia, 2019, Munawaroh, Setyani, Susilowati, Rukminingsih, 2022, Setyowati, Kristiani & Murwaningsih, 2022, Damanik & Lubis, 2023 |
| Survey | Quantitative | 1 | Jaya, 2022 |
| Literature Research | - | 1 | Jaenudin, Baedhowi & Murwaningsih, 2017 |
| Approach *Lesson Plan* | Qualitative | 1 | Narmaditya, Wulandari & Sakarji, 2018 |

**Data Collection Methods**

A study of 40 articles identified four impacts or contributions on students when teachers applied the PBL approach in the teaching and learning of economics subjects. Among them were achieving learning outcomes, critical thinking skills to solve problems, achievement of

performance, and high-order thinking skills (HOTS). The most frequently used instrument or method of data collection was the pre-test and post-test method to identify differences in the level of mastery of learning outcomes, HOTS, performance achievements, and critical thinking skills of students before and after receiving treatment. According to Hee and Maat (2022), a pre-test and post-test approach would be used in the study to compare the study participants before and after the intervention. Referring to Table 7, some other data collection methods such as observation, questionnaires, interviews, and documentation were also used in previous studies to record students' cognitive and behavioral changes before and after using the PBL method in the teaching and learning of economics subjects.

**Table 7: Data collection methods**

| Data Collection Methods | Total Articles | Author |
|---|---|---|
| Pre-test and Post-test | 30 | Susanti & Suwu, 2016, Narmaditya, Winarning, Wulandari, 2017, Budiwati & Yuliyanti, 2017, Herlina, 2018, Khusaini, Lestari & Agustin, 2018, Sari, 2018, Mahmud, 2018, Rahmat, 2018, Narmaditya, Wulandari & Sakarji, 2018, Thamrin, Saragih & Sibuea, 2018, Abolladaka & Lulan, 2019, Hasyim, Hasan, Gampo & Nurbia, 2019, Hermidayani, Mukhtar & Tambunan, 2019, Maghfiroh & Mulyani, 2019, Qomariyah, 2019, Sari & Rokhmani, 2020, Tumanggor, Sobandi & Sojanah, 2020,Chairudin & Dewi, 2021, Dewi, 2021, Ul Haque & Kurniawan, 2021, Iskandar & Al Fathan, 2021, Saepuloh, Sabur, Lestari & Mukhlishoh, 2021, Sianturi, Arwansyah & Yusuf, 2021, Wardoyo, Narmaditya & Wibowo, 2021, Andriani, Setyowati, Kristiani & Murwaningsih, 2022, Jaya, 2022, Siregar, Nugrahadi & Arwansyah, 2022, Perdanasari, Sudiyanto & Sangka, 2022, Damanik & Lubis, 2023, Khasanah, Siswandari & Murwaningsih, 2023 |
| Observation | 21 | Supandi, 2016, Narmaditya, Winarning, Wulandari, 2017, Budiwati & Yuliyanti, 2017, Thamrin & Hutasuhut, 2017, Khusaini, Lestari & Agustin, 2018, Sari, 2018, Rahmat, 2018, Surjanti, Dwiarko, Nugrohoseno & Budiono, 2018, Narmaditya, Wulandari & Sakarji, 2018, Roza & Yuni, 2018, Abolladaka & Lulan, 2019, Maghfiroh & Mulyani, 2019, Putri, 2019, Kardoyo, Nurkhin, Muhsin & Pramusinto, 2019, Sari & Rokhmani, 2020, Saepuloh, Sabur, Lestari & Mukhlishoh, 2021, Sianturi, Arwansyah & Yusuf, 2021, Wardoyo, Narmaditya & Wibowo, 2021, Andriani, Setyowati, Kristiani & Murwaningsih, 2022, Siregar, Nugrahadi & Arwansyah, 2022, Munawaroh, Setyani, Susilowati & Rukminingsih, 2022 |
| Questionnaires | 22 | Supandi, 2016, Narmaditya, Winarning, Wulandari, 2017, Thamrin & Hutasuhut, 2017, Herlina, 2018, Khusaini, Lestari & Agustin, 2018, Rahmat, 2018, Surjanti, Dwiarko, Nugrohoseno & Budiono, 2018, Narmaditya, Wulandari & Sakarji, 2018, Roza & Yuni, 2018, Abolladaka & Lulan, 2019, Hasyim, Hasan, Gampo & Nurbia, 2019, Maghfiroh & |

| | | |
|---|---|---|
| | | Mulyani, 2019, Ul Haque & Kurniawan, 2021, Iskandar & Al Fathan, 2021, Saepuloh, Sabur, Lestari & Mukhlishoh, 2021, Sianturi, Arwansyah & Yusuf, 2021, Prasetya, Rusdarti & Prihandono, 2021, Wardoyo, Narmaditya & Wibowo, 2021, Andriani, Setyowati, Kristiani & Murwaningsih, 2022, Jaya, 2022, Suharianto, Arwansyah, Rinaldi, Sembiring, 2022, Munawaroh, Setyani, Susilowati & Rukminingsih, 2022 |
| Interviews | 14 | Supandi, 2016, Susanti & Suwu, 2016, Budiwati & Yuliyanti, 2017, Sari, 2018, Abolladaka & Lulan, 2019, Maghfiroh & Mulyani, 2019, Putri, 2019, Kardoyo, Nurkhin, Muhsin& Pramusinto, 2019, Ul Haque & Kurniawan, 2021, Wardoyo, Narmaditya & Wibowo, 2021, Andriani, Setyowati, Kristiani & Murwaningsih, 2022, Jaya, 2022, Siregar, Nugrahadi & Arwansyah, 2022, Munawaroh, Setyani, Susilowati & Rukminingsih, 2022 |
| Field notes sheet | 3 | Narmaditya, Winarning, Wulandari, 2017, Sari, 2018, Narmaditya, Wulandari & Sakarji, 2018 |
| Practical sheet | 1 | Roza & Yuni, 2018 |
| Documentation | 9 | Supandi, 2016, Narmaditya, Winarning, Wulandari, 2017, Budiwati & Yuliyanti, 2017, Thamrin & Hutasuhut, 2017, Khusaini, Lestari & Agustin, 2018, Sari, 2018, Rahmat, 2018, Narmaditya, Wulandari & Sakarji, 2018, Putri, 2019 |
| Literature articles | 3 | Susanti & Suwu, 2016, Jaenudin, Baedhowi, Murwaningsih, 2017, Thamrin & Hutasuhut, 2017 |

## Integration of Techniques in the PBL Method

Various studies have identified the importance of the PBL approach among economics students and teachers, namely the improvement of learning outcomes, critical thinking skills to solve problems, achievement of performance, and high-order thinking skills (HOTS). Therefore, teachers vary PBL methods according to the classroom situation and students' abilities. A total of 23 studies have practiced the PBL Model in the teaching and learning of economics subjects step by step as shown in Figure 2. According to Damanik and Lubis (2023), the steps in the PBL learning model are: (1) The teacher gives an explanation of the learning material with the help of teaching aids, (2) Students are given problems by the teacher (problems from the student's experience) and the teacher explains about the learning provided through teaching aids and the teacher also motivates the students so that the students are interested and involve themselves in learning, ( 3) The teacher divides the students into small groups and helps the students define and organize learning tasks related to the problem, (4) The teacher instructs the students to find information from teaching aids to obtain information in solving the problem, (5) The teacher instructs the students to prepare answers to problems and the teacher helps students to evaluate the results of the student's investigation process.
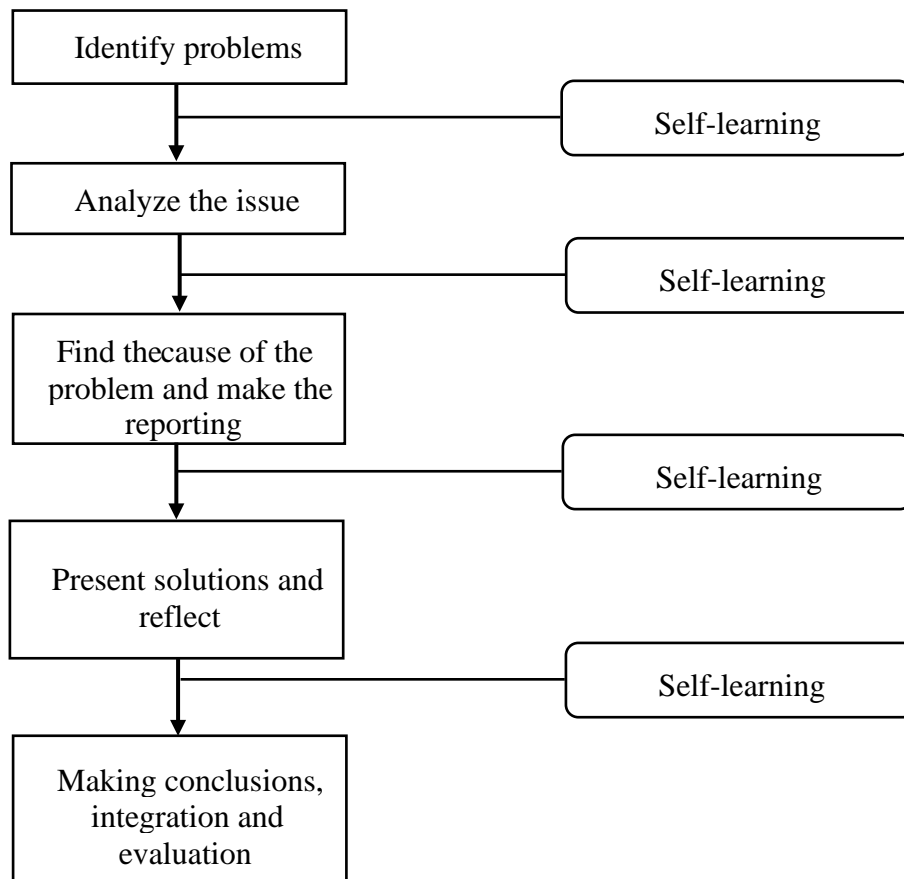
**Figure 2: Steps of the problem-based learning model**
Source: Adapted from Jaenudin, et al. (2017); Thamrin & Hutasuhut (2017); Khusaini, et al. (2018); Mahmud, (2018).

In addition to the five-step PBL model, various activities in the PBL can be applied by teachers in the classroom and the integration of PBL techniques is an initiative that teachers can use as they all have their advantages (Thomas and Surat, 2021) as shown in Table 8. Among the techniques of PBL in addition to the application of the PBL model are the development of student worksheets based on PBL teaching materials, PBL digital pocketbooks, PBL e-modules, PBL modules, PBL concept mobile android learning media, E-PBL software, HOTS-based PBL models, PBL visual images, PBL interactive media, PBL problem-solving methods, flipped classroom PBL models and PBL models in online learning and web quest.

**Table 8: Techniques integration in the PBL method**

| PBL Application Techniques | Total Articles | Author |
|---|---|---|
| PBL model | 23 | Supandi, 2016, Susanti & Suwu, 2016, Narmaditya, Winarning & Wulandari, 2017, Surjanti, Nugrohoseno & Budiono, 2018, Narmaditya, Wulandari & Sakarji, 2018, Thamrin, Saragih & Sibuea, 2018, Rahmat, 2018, Herlina, 2018, Khusaini, Lestari & Agustin, 2018, Sari, 2018, Mahmud, 2018, Putri, 2019, Hermidayani, Mukhtar & Tambunan, 2019, Qomariyah, 2019, Kardoyo, Nurkhin, |

| | | Muhsin & Pramusinto, 2019, Sari & Rokhmani, 2020, Tumanggor, Sobandi & Sojanah, 2020, Dewi, 2021, Wardoyo, Narmadity & Wibowo, 2021, Saepuloh, Sabur, Lestari & Mukhlishoh, 2021, Iskandar & Al Fathan, 2021, Jaya, 2022, Khasanah, Siswandari, Murwaningsih, 2023 |
|---|---|---|
| Development of student worksheets PBL model | 3 | Thamrin & Hutasuhut, 2017, Sianturi, Arwansyah & Yusuf, 2021, Perdanasari, Sudiyanto & Sangka, 2022 |
| PBL digital pocket books | 2 | Jaenudin, et al., 2017, Prasetya, Rusdarti & Prihandono, 2021 |
| PBL E-modules | 2 | Jaenudin, Baedhow & Murwaningsih, 2017, Prasetya, Rusdarti & Prihandono, 2021 |
| PBL Module | 2 | Thohiri & Yuni, 2018, Maghfiroh & Mulyani, 2019 |
| PBL mobile Android learning media | 1 | Siregar, Nugrahadi & Arwansyah, 2022 |
| E-PBL software | 1 | Munawaroh, Setyani, Susilowati & Rukminingsih, 2022 |
| HOTS-based PBL models | 1 | Hasyim, Hasan, Gampo & Nurbia, 2019 |
| PBL visual images | 1 | Setyowati, Kristiani & Murwaningsih, 2022 |
| PBL interactive media | 1 | Damanik & Lubis, 2023 |
| PBL problem-solving methods | 1 | Budiwati & Yuliyanti, 2017 |
| Flipped classroom PBL models and PBL models in online learning | 1 | Suharianto, Arwansyah, Rinaldi & Sembiring, 2022 |
| Webquest | 1 | Abolladaka & Lulan, 2019 |

## PBL Contribution Measurement Mechanism

A study of 40 articles identified four impacts or contributions on students when teachers apply the PBL approach in the teaching and learning of economics subjects. Among them were the achievement of learning outcomes, the development of critical thinking skills to solve problems, and the improvement of performance and high-order thinking skills (HOTS). Among the measurement tools used in previous studies to study the effects of PBL on students were pre-test and post-tests, questionnaires, observations, interviews, and student worksheets. Some studies used more than one measurement tool to test the objectives of each study. However, a total of 31 studies used pre-test and post-test as the main measurement tool. According to Chua (2021), pre and post-design research is a test that is carried out twice (before and after the experiment) on the dependent variable after there is a change in the independent variable on the dependent variable. While the questionnaire measurement tool has the second highest record, as many as 10 studies have used questionnaires to test the objectives of each study. Next, observation and interview measurement tools only involved two studies each. The last one was a student worksheet measurement tool only used in one study.

**Learning Outcomes Measurement Mechanism**

The process of creating student learning outcomes is defined as a systematic process achieved through important steps that require teachers to identify and express specific learning goals that students need to achieve through participation in learning experiences and opportunities (Wawrzynski, 2023). Table 9 lists several types of learning outcome measurement mechanisms used in past studies for the achievement of student learning outcomes. Most previous studies used pre-tests and post-tests to determine the achievement of student learning outcomes before and after being exposed to the PBL method. There are various forms of pre-tests and post-tests adapted and formulated by past researchers such as essay writing, the Scheffe Test, and multiple-choice objective questions. In addition, a questionnaire containing eight indicators with a total of 24 questions built based on the content of the lesson was also used as a tool to measure the level of achievement of student learning outcomes.

**Table 9: Mechanisms of learning outcomes**

| Mechanisms of Learning Outcomes | Total Articles | Author |
|---|---|---|
| Pre-tests and post-tests | 18 | Budiwati & Yuliyanti, 2017, Mahmud, 2018, Herlina, 2018, Thamrin, Saragih & Sibuea, 2018, Thohiri & Yuni, 2018, Khusaini, Lestari & Agustin, 2018, Hermidayani, Mukhtar & Tambunan, 2019, Qomariyah, 2019, Prasetya, Abolladaka & Lulan, 2019, Sari & Rokhmani, 2020, Dewi, 2021, Rusdarti &Prihandono, 2021, Ul Haque & Kurniawan , 2021, Sianturi, Arwansyah & Yusuf, 2021, Setyowati, Kristiani & Murwaningsih, 2022, Siregar, Nugrahadi & Arwansyah, 2022, Damanik & Lubis, 2023, Khasanah, Siswandari & Murwaningsih, 2023. |
| Questionnaire | 3 | Surjanti, Nugrohoseno & Budiono, 2018, Prasetya, Rusdarti &Prihandono, 2021, Suharianto, Arwansyah, Rinaldi & Sembiring, 2022 |

**Critical Thinking Skills Measurement Mechanism**

Student critical thinking is one of Indonesia's educational objectives based on the 2013 curriculum, which develops critical thinking skills and is one of the goals of education to improve learning-related minds by developing critical thinking skills (Ministry of Education and Culture Indonesia, 2012). According to Rahmy Zulmaulida, et al. (2018), the critical thinking process involves several specific processes of analyzing a problem, collecting data, evaluating data, and synthesizing decision-making. Table 10 lists some of the types of critical thinking skills measurement mechanisms used in recent studies to improve students' critical thinking skills. Most of the previous studies used pre-test and post-test to determine the development of student's critical thinking skills before and after exposure to the PBL method form of pre-test and post-test adapted and formulated tests by the study was essay writing to determine students' critical thinking skills. In addition, questionnaires such as the Metacognitive Awareness Inventory instrument (MAI) were also used as a tool for measuring

students' critical thinking skills. Meanwhile, other measurement tools were also used such as interviews, observations, and student worksheets.

**Table 10: Mechanisms of critical thinking skills**

| Mechanisms of Critical Thinking Skills | Total Articles | Author |
|---|---|---|
| Pre-test and Post-test | 6 | Narmaditya, Wulandari & Sakarji, 2018, Putri, 2019, Dewi, 2021, Chairudin & Iskandar & Al Fathan, 2021, Saepuloh, Sabur, Lestari & Mukhlishoh, 2021, Perdanasari, Sudiyanto & Sangka, 2022 |
| Questionnaires | 4 | Supandi, 2016, Susanti & Suwu, 2016, Maghfiroh & Mulyani, 2019, Wardoyo, Narmaditya & Wibowo, 2021 |
| Interviews | 2 | Susanti & Suwu, 2016, Kardoyo, Nurkhin, Muhsin & Pramusinto, 2019 |
| Observations | 2 | Susanti & Suwu, 2016, Kardoyo, Nurkhin, Muhsin & Pramusinto, 2019 |
| Student Worksheets | 1 | Thamrin and Hutasuhut, 2017 |

**Mechanisms of Academic Performance Measurement**

Academic performance achievement is one measure of student success in completing studies at a higher level such as university or college. According to Manurung (2017), academic performance is a term to describe the achievement or level of success of a goal which is the result of the learning efforts that have been done by a person optimally. Table 11 lists several types of student academic achievement measurement mechanisms used in previous studies. Most previous studies used pre-and post-tests to determine the academic performance of students before and after being exposed to the PBL method. Pre-test and post-test forms adapted and formulated by past researchers such as essay writing and multiple-choice objective questions. In addition, questionnaires built based on the content of the lesson were also used as a tool to measure the level of achievement of students' academic performance.

**Table 11: Mechanisms of academic performance measurement**

| Mechanisms of Academic Performance Measurement | Total Articles | Author |
|---|---|---|
| Pretest and posttest | 4 | Narmaditya, Winarning & Wulandari, 2017, Sari, 2018, Rahmat, 2018, Munawaroh, Setyani, Susilowati & Rukminingsih, 2022 |
| Questionnaires | 2 | Supandi, 2016, Munawaroh, Setyani, Susilowati & Rukminingsih, 2022 |

**High Order Thinking Skills (HOTS) Measurement Mechanism**

Bloom's Taxonomy hierarchy consists of six stages of knowledge, understanding, application, analysis, synthesis, and evaluation. HOTS is a higher level of cognitive thinking and emphasizes critical, creative, and capable thinking in solving problems (Jaya, 2021).

According to Hasyim et al. (2019), HOTS is measured using tasks to analyze, evaluate, and create conceptual knowledge and procedures or metacognition. The researchers also emphasized that these HOTS activities will familiarize students with being prepared to solve new problems, adapt to new situations, and make decisions about issues. Table 12 lists some of the types of student HOTS measurement mechanisms used in the previous study. Most recent studies use pre-test and post-test to determine student academic achievement before and after exposure to the PBL method. Forms of pre-test and post-test adapted and formulated by freelance researchers such as essay writing and multiple-choice objective questions. In addition, questionnaires built on the subject matter were also used as a tool for measuring students' HOTS development.

**Table 12: High Order Thinking Skills (HOTS) Measurement Mechanism**

| HOTS Measurement Mechanism | Total Articles | Author |
|---|---|---|
| Pre-test and Post-test | 2 | Hasyim, Hasan, Gampo & Nurbia, 2019, Tumanggor, Sobandi & Sojanah, 2020 |
| Questionnaires | 1 | Jaya, 2022 |

## DISCUSSION

The findings from these 40 studies prove that various PBL techniques have a positive impact on economics students. The four positive effects emphasized by the researchers in these studies were the achievement of learning outcomes, the development of critical thinking skills to solve problems, improved performance, and high-order thinking skills (HOTS). These articles also proved that PBL is well-practiced in the field of social science, among students of the subject of economics in high school to university.

Zakkiyatul (2020) concludes that the PBL model is well-applied in a variety of subjects and for a variety of learning purposes compared to the learning of the old model of giving a lecture in front of the class, especially in the context of high schools in Indonesia around 2010 until 2019. According to Ramaya & Maat (2022), Southeast Asian countries such as Indonesia, Vietnam, and Malaysia have a large number of studies related to PBL compared to other countries. This proves that Indonesia is a country that uses the PBL method as its education system emphasizes the skills of thinking and problem-solving skills that are 21st-century skills that can be honed through student-centered R&D strategies (Thomas & Surat, 2021). According to Sari, Sumarmi, Utomo, & Astina (2021), the PBL model directs students to solve problems by finding information based on reality in their respective fields and then solving the problem.

The results from these 40 studies show that the majority of the study designs used are quantitative approaches compared to other methods. According to Creswell & Creswell (2018), a quantitative approach is used to look at differences and compare the effects of an intervention more clearly through the scores of the measurement tools used. Quantitative studies can show the impact of intervention quickly because the majority of data collection methods use objective and post-test tests and essays. The post-test score can indicate whether the intervention is a PBL model that has an impact. However, qualitative studies are well-supported for studies aimed at looking at emotions and problem-solving processes (Ramaya & Maat, 2022). Of the total studies, 12 studies used qualitative design methods to measure

student learning outcomes, student achievement performance, and critical student thinking skills.

According to Qomariyah (2019), learning the subject of economics is expected to enable students to achieve maximum learning outcomes by achieving the Minimum Profit Criteria set by the Ministry of Education of Indonesia. The Minimum Profit Criterion shows the level of competency achievement in the form of a maximum of 100 and this figure is the ideal criterion for educators, students, and parents of students (Wahyuni et al., 2015). The Minimum Profit Criterion is the minimum value limit that students must achieve in each subject, whether part (subject) or whole in one semester (Yusuf, et al. 2020). In addition, the country's Minimum Profit Criteria target by the ministry is to achieve at least 75 percent of the assessment of learning outcomes as part of the country's curriculum development measures.

Economics equips students with analytical skills and problem-solving skills, both of which are high-level thinking skills that are a curriculum requirement in Indonesia (Budiwati & Yuliyanti, 2017). Jaenudin et al. (2017) emphasize that the process of learning the subject of economics should free students from actively engaging in learning such as finding problems and solving them. Many researchers have suggested that the PBL model be applied to students in economics subject, especially during problem-solving (Susanti and Suwu, 2016; Budiwati and Yuliyanti, 2017; Jaenudin et al., 2017; Narmaditya et al., 2018; Mercy, 2018; Herlina, 2019; Hermidayani et al., 2019; Hasyim et al., 2019; Cardoyo et al., 2020; Tumanggor, et al. 2020; Chairudin & Goddess, 2021; Wardoyo, 2021).

In addition to that, past studies have also listed some issues that need to be paid attention to in the handling of the PBL method such as student learning problems and the teacher's role in overcoming these student problems. The problem of students in the economics subject emphasized by the researcher is that the ability of students to solve problems by thinking critically is very weak (Budiwati and Yuliyanti, 2017; Iskandar & Al Fathan, 2021). At the same time, the learning that takes place is still "textbook" in that there is no effort to connect the content and the context, causing students not to understand the benefits of learning the topic being studied (Dewi, 2021). Students also consider the learning sessions conducted by teachers to be less effective and boring (Herlina, 2018) because some teachers use traditional learning models without using learning media (Sari & Rokhmani, 2019; Damanik & Lubis, 2023).

The low quality of teachers' teaching causes students' motivation to learn to be very weak (Chairudin and Goddess, 2021). To improve the quality of national education, several training programs have been held regularly to improve teacher efficiency by adopting innovative learning models. However, in reality, only a handful of teachers have applied innovative learning models in the learning process because teachers still tend to use conventional teacher-oriented learning, which is more active in the way of lectures that students become more passive (Mahmud, 2018; Abolladaka & Lulan, 2019; Damanik & Lubis, 2023). According to (Khusaini et al., 2018), economics teachers are expected to use a variety of learning methods such as PBL in teaching and learning activities based on the 2013 Curriculum to actively engage students in each learning process.

## CONCLUSION

This study has summarized 40 studies and found that studies related to PBL in the field of economics are often carried out after 2016. This is in line with the transformation of education in the era of industrial revolution 4.0 which is seen as the development of the three main competencies of the 21st century, namely the ability to think, act and live in the world

(Putriani & Hudaidah, 2021). Economics education in the era of industrial revolution 4.0 requires students to cultivate decision-making skills and think critically and creatively before continuing their education to the next level or when venturing into the world of work (Hasyim et al., 2019; Kardoyo et al., 2019; Jaya, 2021).

Overall, the highlights of this literature identify problem-based learning as a teaching and learning method that is particularly beneficial for improving learning outcomes, critical thinking skills to solve problems, and achievement of performance and high-order thinking skills (HOTS). The application of PBL techniques will help students to develop critical thinking skills and can improve their ability to solve problems in the real world of Society 5.0. In the field of education, teachers play an important role as facilitators. PBL will increase the interaction sessions between teachers and students directly so that students can apply positive values and achieve learning objectives. The innovative teaching and learning process takes place continuously depending on the educators because in the classroom only the teaching staff can instruct and guide students to successfully achieve high scores in a subject.

The highlights of this literature suggest that economics teachers and lecturers should choose the PBL technique as one of the best solutions for implementing economics teaching and learning in the classroom to improve learning outcomes, critical thinking skills, achievement of performance, and higher-order thinking skills (HOTS). At the same time, with the emergence of new norms following the COVID-19 pandemic, PBL plays a major role to relate theory and practice involving students in the process of problem-solving through real environment simulation (Azila et al., 2022) in the global era of Society 5.0. The highlights of this literature can be used as a guide for further studies in the future to improve the quality of economics education as well as overcome the challenges faced by students and teachers to achieve the Minimum Completion Criteria set by the Indonesian Ministry of Education for further study.

## REFERENCES

Abolladaka, J., & Lulan, Y. A. (2019). The development of a Webquest assisted problem-based learning model in an effort to improve the learning outcomes of the Xl grade Economics in SMA Negeri 1 Kota Kupang. *International Journal of Innovation, Creativity and Change, 5*(3), 217-225.

Afrianti, R. (2021). Pengaruh Strategi Pembelajaran Aktif Tipe Card Sort Terhadap Motivasi Belajar Siswa Pada Mata Pelajaran Ekonomi Di Sekolah Menengah Atas Negeri 1 Ujungbatu Kabupaten Rokan Hulu (Doctoral Dissertation, Universitas Islam Negeri Sultan Syarif Kasim Riau).

Arwansyah, A., Suharianto, J., Phonna, M., & Ikhsan, M. (2022). Development of material economics modules that experience misconceptions in students of the Economics study program Medan State University. *British Journal of Education, 10*(8), 44-54.

Budiwati, N., & Yuliyanti, E. (2017). The use of problem solving method in increasing students' thinking ability analysis. *In Proceedings of the 2nd International Conference on Economic Education and Entrepreneurship (ICEEE 2017)*, 492-496.

Chairudin, M., & Dewi, R. M. (2021). Pengembangan bahan ajar buku saku Digital berbasis problem based learning pada mata pelajaran Ekonomi. *Edukatif: Jurnal Ilmu Pendidikan, 3*(3*)*, 951-962.

Damanik, R. R., & Lubis, P. K. D. (2023). The effect of the problem-based learning model with interactive media on the Economics learning outcomes of class X students of SMA Negeri 7 Medan. *Jurnal Ilmiah Pendidikan Holistik (JIPH), 2*(1), 17-28.

Dewi, L. H. K. (2021). Penerapan model pembelajaran berbasis masalah (problem based learning) untuk meningkatkan hasil belajar Ekonomi siswa kelas XI IPS 1 Sma Negeri 1 Sawan pada semester ganjil tahun pelajaran 2019/2020. *Jurnal Pendidikan Kewarganegaraan Undiksha, 9*(3), 1094-1101.

Hasyim, S. H., Hasan, M., A Ngampo, M. Y., & Nurbia, S. (2019). Application of higher order thinking skills (HOTS)-based problem-based learning models to increase the critical thinking ability of students in education in Economic lessons in Class XII Sman 11 Makassar. *International Journal of Scientific Development and Research-IJSDR, 4*(10), 109-113.

Haque, Z. U., & Kurniawan, R. Y. (2021). Pengembangan bahan ajar ekonomi berbasis problem based learning dalam bentuk buku saku Digital. *Edunomic: Jurnal Ilmiah Pendidikan Ekonomi Fakultas Pendidikan dan Sains, 9*(1), 56-68.

Herlina, F. (2019). Pengaruh penerapan model problem based learning dan minat belajar terhadap hasil belajar Ekonomi siswa kelas XI IPS Sma Negeri 8 Padang. *Jurnal Ecogen, 1*(4), 758-765.

Hermidayani, H., Mukhtar, M., & Tambunan, H. (2019, July). The effect of learning model and critical thinking toward learning outcome in Economics of the tenth graders in senior high school. *In Proceedings of the 2nd Annual Conference of Engineering and Implementation on Vocational Education (ACEIVE 2018)*, North Sumatra, Indonesia.

Hutasuhut, S. (2017). The development of problem based on learning model course at the introduction Macroeconomic subject to improve critical thinking and competency of student at Department of Economic Education Unimed, Medan, Indonesia. *IOSR Journal of Research & Method in Education (IOSR-JRME), 7*(5), 56-62.

Iskandar & Al Fathan, E. S. (2021). The effect of problem-based learning methods on students' critical thinking ability. *Indonesian Journal of Learning and Instruction, 4*(1), 69-82.

Jaenudin, A., & Murwaningsih, T. (2017, October). The effectiveness of the E-Module of Economics learning on problem-based learning used to improve students' learning outcomes. *In International Conference on Teacher Training and Education 2017 (ICTTE 2017)*, 290-296. Atlantis Press.

Kardoyo, Nurkhin, A., Muhsin, & Pramusinto, H. (2020). Problem-based learning strategy: its impact on students' critical and creative thinking skills. *European Journal of Educational Research, 9*(3), 1141-1150.

Kementerian Pendidikan. (2003). *Undang-undang Republik Indonesia No. 20, Tahun 2003 tentang Sistem Pendidikan Nasional, Artikel 1 Seksyen 2*. Jakarta: Kementerian Pendidikan.

Kementerian Pendidikan dan Kebudayaan. (2012). *Bahan Uji Publik Kurikulum 2013*, Jakarta: Kementerian Pendidikan dan Kebudayaan.

Khasanah, U., Siswandari, S., & Murwaningsih, T. (2023). Implementation of problem-based learning to improve student learning outcomes for Economics subject. *International Journal of Multicultural and Multireligious Understanding, 10*(1), 266-273.

Khusaini, Lestari, S., & Agustin, N. A. (2018). The application of problem-based learning methods to improve Economic learning outcomes and motivation. *Dinamika Pendidikan, 13*(2), 218-227.

Maghfiroh, L., & Mulyani, E. (2019). Development of problem-based learning module in Economics to increase students' critical thinking. *Jurnal Pendidikan dan Pengajaran, 52*(2), 40-48.

Mahmud, M. (2018, December). The implementation of problem based learning model to improve students achievement on Economics subject, class in Grade 2 of IPS XI at SMA Negeri 2 Gorontalo Utara. *In Journal of International Conference Proceedings (JICP) 1(2).*

Nanda, N. (2022). Pengaruh pembelajaran aktif, inovatif, kreatif, efektif dan menyenangkan (Paikem) terhadap motivasi belajar siswa pada mata pelajaran Ekonomi di sekolah menengah atas Negeri 1 Kecamatan Kubu Babussalam Kabupaten Rokan Hilir (Doctoral Dissertation, Universitas Islam Negeri Sultan Syarif Kasim Riau).

Narmaditya, B. S., Winarning, W., & Wulandari, D. (2017). Impact of problem-based learning on student achievement in Economics course. *Classroom Action Research Journal (CARJO), 1*(1), 1-10.

Narmaditya, B. S., Wulandari, D., & Sakarji, S. R. B. (2018). Does problem-based learning improve critical thinking skill?. *Jurnal Cakrawala Pendidikan, 37(3).*

Nasori, A., Putra, I., Sari, N., & Dwijayanti, N. S. (2022). Challenges digital literacy in era of Society 5.0: Effectiviness problem based learning with mobile learning to acceleration digital literacy. *Journal on Teacher Education, 4*(2), 97-106.

Page, M. J., Moher, D., Bossuyt, P.M., Boutron, I., Hoffman, T.C., Mulrow, C. D, et al. (2021). PRISMA 2020 explanation and elaboration: updated guidance and exemplars for reporting systematic reviews. BMJ (Open Access):

http://www.prismastatement.org/PRISMAStatement/FlowDiagram

Prasetya, R., Rusdarti , R., & Prihandono, D. (2023). Development of e-modules with a problem based learning approach in economic learning. *International Conference on Science, Education, and Technology, 7*(1*)*, 484–488.

Perdanasari, A., Sudiyanto & Sangka, K. B. (2022). critical thinking skills in economic's learning using teaching material based problem based learning and predict observe explain (TM-PBLPOE). *Journal of Positive School Psychology, 6*(8), 8525-8532.

Putri, D. P. (2019). Problem-based learning application to increase critical thinking ability and learning result of economic student learning. *Classroom Action Research Journal,3*(2), 9-14

Qomariyah, S. N. (2019). Effect of problem based learning learning model to improve student learning outcomes. *International Journal of Educational Research Review, 4*(2), 217-222.

Saepuloh, D., Sabur, A., Lestari, S., & Mukhlishoh, S. U. (2021). Improving students' critical thinking and self-efficacy by learning higher order thinking skills through problem based learning models. *JPI (Jurnal Pendidikan Indonesia), 10*(3), 495-504.

Saragih, A. H., & Sibuea, A. M. (2018, December). The implementation of problem based learning strategies to improve learning outcomes in introduction Economic subject to the student of Universits Negeri Medan. *In 3rd Annual International Seminar on Transformative Education and Educational Leadership (AISTEEL 2018)*, 333-336. Atlantis Press.

Sari, M. R. (2018). The implementation problem based learning to enhance activity and students learning outcome. *Classroom Action Research Journal, 2*(3), 106-117.

Sari, I. P., & Rokhmani, L. (2019). The implementation of problem based learning to increase activity and learning outcomes of Economics subject of senior high school students. *Classroom Action Research Journal, 3*(3), 78-84.

Setyowati, F. A., & Murwaningsih, T. (2022). The effectiveness of visual picture economics textbook based on problem based learning in improving reading literacy skills. *Journal of Education, 6*(3*)*, 380-389.

Sianturi, M. K., Arwansyah, A., & Yusuf, M. (2021). Development of student worksheets (LKPD) based on problem based learning to improve learning outcomes in Business Economics subjects. *EDUTEC: Journal of Education And Technology, 5*(1), 65-77.

Siregar, H., Nugrahadi, E., & Arwansyah, A. (2022, December). Development of Android-Based Mobile learning Economic learning media with problem based learning (pbl) flows to improve learning outcomes of high school students at Negeri 2 Binjai academic year 2021/2022. *In Proceedings of the 7th Annual International Seminar on*

*Transformative Education and Educational Leadership, AISTEEL 2022,* Medan, North Sumatera Province, Indonesia.

Sitopu, J. W. (2023). Bab 4 Problem Based Learning (PBL). *Model Pembelajaran di Era Society 5.0*, (59-71). PT Global Eksekutif Teknologi, Padand Sumatera Barat.

SP, E. F. J. (2021). Mengidentifikasi kecakapan high order thinking skills (HOTS) siswa SMA Negeri 3 Yogyakarta melalui penerapan model pembelajaran problem based learning (PBL). *Edunusa: Journal of Economics and Business Education, 1*(1), 25-31.

Supandi, S. (2016). Model pembelajaran problem based learning motivasi belajar dan peningkatan prestasi belajar mata pelajaran Ekonomi SMA. *Jurnal Penelitian dan Pendidikan IPS, 10(3)*, 379-388.

Surjanti, J., & Nugrohoseno, D. (2018). Antecedents individual entrepreneurial orientation (IEO): problem based learning (PBL). *Journal of Business and Retail Management Research, 13*(2), 129-134.

Susanti, A. E., & Suwu, S. E. (2016). Penerapan pembelajaran berbasis masalah untuk meningkatkan ketrampilan berpikir kritis siswa kelas IX dalam pelajaran Ekonomi. *Polyglot: Jurnal Ilmiah, 12*(1), 66-81.

Tumanggor, M., Soband, A., & Sojanah, J. (2020). Student's higher-order thinking skills through problem-based learning in Bandung. *Prosiding ICoISSE, 1*(1), 322-327.

Wahyuningtyas, E. (2014). Penerapan pembelajaran aktif (active learning) strategi active knowledge sharing untuk meningkatkan keaktifan siswa pada mata pelajaran Ekonomi kelas VII SMP Negeri 4 Malang (Doctoral dissertation, Universitas Negeri Malang).

Wardoyo, C., Narmaditya, B. S., & Wibowo, A. (2021). Does problem-based learning enhances metacognitive awareness of Economics students?. *Pegem Journal of Education and Instruction, 11*(4), 329-336.

Wawrzynski, M. R. (2023), Assessing student learning outcomes. *International Encyclopedia of Education (Fourth Edition)*, 305-311, Elsevier, Oxford.

## APPENDIX

| No. | Author | Year | Participants | Research design | Study Design | PBL technique | Findings |
|---|---|---|---|---|---|---|---|
| 1 | Supandi | 2016 | high school students | Experimental | quantitative | Problem-Based Learning Model | The PBL model improves student's critical thinking skills |
| 2 | Asih Enggar Susanti & Selvi Ester Suwu | 2016 | high school students | Action Studies Kemmis and Tagart Model | qualitative | Problem-Based Learning Model | The PBL model improves student's critical thinking skills |
| 3 | Bagus Shandy Narmaditya, Winarning, Dwi Wulandari | 2017 | high school students | Action Studies | qualitative | Problem-Based Learning Model | PBL can improve the performance of Economics students |
| 4 | Neti Budiwati and Eka Yuliyanti | 2017 | high school students | Action Studies | qualitative | Problem Solving Method | PBL can improve the learning outcomes of Economics |
| 5 | Ahmad Jaenudin, Baedhowi, Tri Murwaningsih | 2017 | high school students | Literature Research | - | E-Module | PBL can improve the learning outcomes of Economics |
| 6 | Thamrin, Saidun Hutasuhut | 2017 | university student | Research and Development (R&D) Approach | qualitative | Development Model, Student Worksheets, and PBL Teaching Materials | The PBL model improves student's critical thinking skills |
| 7 | Febri Herlina | 2018 | high school students | Quasi Experiment | quantitative | Problem-Based Learning Model | PBL can improve the learning outcomes of Economics |
| 8 | Khusaini, Sri Lestari, Nita Aulia Agustin | 2018 | high school students | Quasi Experiment | qualitative | Problem-Based Learning Model | PBL can improve the learning outcomes of Economics |
| 9 | Melinda Ratna Sari | 2018 | high school students | Action Studies | qualitative | Problem-Based Learning Model | PBL can improve the performance of Economics students |
| 10 | Melizubaida Mahmud | 2018 | high school students | Action Studies | qualitative | Problem-Based | PBL can improve the |

| | | | | | | Learning Model | learning outcomes of Economics students |
|----|----|----|----|----|----|----|----|
| 11 | Ewo Rahmat | 2018 | high school students | Action Studies | qualitative | Problem-Based Learning Model | PBL can improve the performance of Economics students |
| 12 | Jun Surjanti Dwiarko Nugrohoseno Budiono | 2018 | university student | Experimental | quantitative | Problem-Based Learning Model | PBL can improve student learning outcomes |
| 13 | Bagus Shandy Narmaditya, Dwi Wulandari and Siti Rosnita Binti Sakarji | 2018 | university student | Lesson Study Approach | qualitative | Problem-Based Learning Model | The PBL model improves student's critical thinking skills |
| 14 | Thamrin, Abdul Hasan Saragih, Abdul Muin Sibuea | 2018 | university student | Quasi Experiment | quantitative | Problem-Based Learning Model | PBL can improve student learning outcomes |
| 15 | Roza Thohiri and Revita Yuni | 2018 | university student | Research and Development (R&D) Approach (Four-D model development) | qualitative | Problem-Based Learning Model | PBL can improve student learning outcomes |
| 16 | Jacob Abolladaka, Yuninda Anaci Lulan | 2019 | high school students | Research and Development (R&D) Approach | qualitative | Webquest | PBL can improve the learning outcomes of Economics |
| 17 | Sitti Hajerah Hasyim, Muhammad Hasan, M. Yusuf A. Gampo, Sitti Nurbia | 2019 | high school students | Experimental | quantitative | HOTS based on the Problem-Based Learning Model | The HOTS based ob PBL model improves student's critical thinking skills |
| 18 | Hermidayani, Mukhtar, Hamonangan Tambunan | 2019 | high school students | Quasi Experiment | quantitative | Problem-Based Learning Model | PBL can improve the learning outcomes of Economics |
| 19 | Lailatul Maghfiroh, Endang Mulyani | 2019 | high school students | Research and Development (R&D) Approach | quantitative | Module | The PBL model improves student's critical thinking skills |

| 20 | Desi Pramita Putri | 2019 | high school students | Action Studies | quantitative and qualitative | Problem-Based Learning Model | The PBL model improves student's critical thinking skills |
|---|---|---|---|---|---|---|---|
| 21 | Siti Nurul Qomariyah | 2019 | high school students | Quasi Experiment | quantitative | Problem-Based Learning Model | PBL can improve student learning outcomes |
| 22 | Kardoyo, Ahmad Nurkhin, Muhsin, Hengky Pramusinto | 2019 | university student | Action Studies | quantitative and qualitative | Problem-Based Learning Model | The PBL model improves student's critical thinking skills |
| 23 | Ita Purnama Sari, Lisa Rokhmani | 2020 | high school students | Action Studies | quantitative and qualitative | Problem-Based Learning Model | PBL can improve the learning outcomes of Economics |
| 24 | Mike Tumanggor, Ade Sobandi, Janah Sojanah | 2020 | high school students | Quasi Experiment | quantitative | Problem-Based Learning Model | PBL improves high-order thinking skills (HOTS) |
| 25 | Mochammad Chairudin, Retno Mustika Dewi | 2021 | high school students | Research and Development (R&D) Approach ADDIE model | qualitative and quantitative | Digital Pocket Book | PBL can improve student's cognitive abilities and problem-solving skills |
| 26 | Luh Hendra Kusuma Dewi | 2021 | high school students | Action Studies | quantitative | Problem-Based Learning Model | PBL can improve the learning outcomes of Economics |
| 27 | Zakiyyah Ul Haque & Riza Yonisa Kurniawan | 2021 | high school students | Research and Development (R&D) Approach ADDIE model | quantitative dan qualitative | Digital Pocket Book | PBL can improve the learning outcomes of Economics |
| 28 | Iskandar & Eman Sulaeman Al Fathan | 2021 | high school students | Quasi Experiment | quantitative | Problem-Based Learning Model | The PBL model improves student's critical thinking skills |
| 29 | Dadang Saepuloh, Ambuy Sabur, Sri Lestari, Siti U'tiyatul Mukhlishoh | 2021 | high school students | Quasi Experiment | quantitative | Problem-Based Learning Model | The PBL model improves student's critical thinking |

| | | | | | | skills |
|---|---|---|---|---|---|---|
| 30 | Monika Karolina Sianturi, Arwansyah, Muhammad Yusuf | 2021 | high school students | Research and Development (R&D) Approach | quantitative and qualitative | Development of Student Worksheets Based on PBL | PBL can improve student learning outcomes |
| 31 | Reda Prasetya, Rusdarti Rusdarti, Dorojatun Prihandono | 2021 | university student | Research and Development (R&D) Approach | quantitative and qualitative | E-module with Kvisoft Flipbook Maker Software | PBL can improve student learning outcomes |
| 32 | Cipto Wardoyo, Bagus Shandy Narmaditya, Agus Wibowo | 2021 | university student | Action Studies | qualitative | Problem-Based Learning Model | The PBL model improves student's critical thinking skills |
| 33 | Fitri Andriani Setyowati, Kristiani, Tri Murwaningsih | 2022 | college student | Experimental | quantitative | Visual Image of Problem-Based Learning | PBL can improve the learning outcomes of Economics |
| 34 | Efvinggo Fasya Jaya | 2022 | high school students | Survey Study | quantitative | Problem-Based Learning Model | PBL can improve the learning outcomes of Economics |
| 35 | Husin Rizky Siregar, Eko Wahyu Nugrahadi, Arwansyah | 2022 | high school students | Research and Development (R&D) Approach ADDIE model | quantitative and qualitative | Media-based PBL using Android Phone | PBL can improve student learning outcomes |
| 36 | Joko Suharianto, Arwansyah, Muammar Rinaldi, Jessica Putri Br. Sembiring | 2022 | university student | Quasi Experiment | quantitative | The PBL model is based on flipped classrooms and Online Learning | PBL can improve student learning outcomes |
| 37 | Munawaroh, Nanik Sri Setyani, Lina Susilowati, Rukminingsih | 2022 | university student | Experimental | quantitative | E-PBL software | PBL can improve student learning outcomes |
| 38 | Ayu Perdanasari, Sudiyanto, Khresna Bayu Sangka | 2022 | university student | Quasi Experiment | quantitative | Problem-Based Learning Teaching Materials | The PBL model improves student's critical thinking skills |
| 39 | Rio Ricardo Damanik dan Putri Kemala Dewi Lubis | 2023 | high school students | Experimental | quantitative | Interactive Media | PBL can improve the learning outcomes of Economics |

| 40 | Uswatun Khasanah; Siswandari; Tri Murwaningsih | 2023 | high school students | Action Studies | qualitative | Problem-Based Learning Model | PBL can improve the learning outcomes of Economics |
|----|----|----|----|----|----|----|----|