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Feasibility of a problem-based social constructivism learning model to improve higher-order thinking skills among primary school students

Sarnoko[1] ✉
Asrowi[2]
Gunarhadi[3]
Budi Usodo[4]


(✉ Corresponding Author)

[1,2,3,4] *Universitas Sebelas Maret, Surakarta, Central Java, Indonesia.*
[1] *Email: sarnokopariman1980@gmail.com*
[2] *Email: asrowi@staff.uns.ac.id*
[3] *Email: gunarhadi@staff.uns.ac.id*
[4] *Email: budi_usodo@staff.uns.ac.id*

Abstract

This research aims to demonstrate the results of an experiment on how the Problem-Based Social Constructivism Learning Model (PBSCL) can be developed to effectively promote Higher-Order Thinking Skills (HOTS) among primary school children. The methodology employed in this study was developmental research which involved thorough preliminary studies, meticulous product development and comprehensive product testing stages. Respondents for this study included model experts, language experts, content specialists and practitioners. Data collection instruments used were detailed questionnaires served during the feasibility test. In addition, product testing involved rigorously confirming the findings of product development through extensive expert validation, including learning model expert validation, content or material expert validation, language expert validation and practitioner validation. The results of the assessment on learning design expert validators for the PBSCL learning model indicated that they had high qualifications with the average score being 3.29. Consequently, learning design experts ensured that the criteria were meticulously met by the PBSCL learning model for HOTS improvement. Additionally, subject matter specialists confirmed the appropriateness and effectiveness of using the PBSCL learning model for HOTS improvement. The findings suggest that the PBSCL learning model has significant potential to substantially enhance HOTS among primary school students. However, further investigation is needed to fully validate its effectiveness and practical application in diverse educational settings.

Keywords: 21st- century skills, Elementary students, HOTS, Learning model, Problem-based social constructivism learning model.

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Contents

1. Introduction **589**
2. Literature Review **590**
3. Methodology **591**
4. Results and Discussion **591**
5. Conclusion **595**
6. Suggestions and Implication **595**
References **595**

Contribution of this paper to the literature

This research is valuable for teachers and educational researchers. Demonstrating how the Problem-Based Social Constructivism Learning Model (PBSCL) can enhance Higher- Order Thinking Skills (HOTS) among primary school students. The study highlights PBSCL's potential to significantly improve HOTS providing a promising approach to educational innovation.

1. Introduction

Education is a lifelong journey from childhood to adulthood that emphasizes the ability of learners to learn, develop skills, change attitudes and shape their destinies. Education covers many aspects which include knowledge acquisition, skill improvement and maturation and talent utilization. A comprehensive understanding of the general impact of education on society can be obtained by evaluating these components (Chandran, Kamarudin, Mustakim, Silvarajan, & Zaremohzzabieh, 2023). Furthermore, education aims at nurturing the natural talents of students, including their physical abilities, creativity, vital interest and imagination. These efforts ensure that these abilities are realized and nurtured in them. Education is based on universal human ideals (Kosasih, Supriyadi, Firmansyah, & Rahminawati, 2022). Education is designed to equip individuals with the necessary skills and knowledge to attain the objectives of human existence through a combination of balance, unity, organicity, harmony and dynamism (Valentová, Brečka, & Tureková, 2021). Furthermore, empowering students to actively develop their intrinsic abilities requires a deliberate and organized effort to establish a conducive learning environment such as religious and spiritual strength, self-control, moral values, intellect, ethical principles and the skills essential for personal, social, national and patriotic progress (Dewi, Susilana, Setiawan, Alias, & Zulnaidi, 2023).

The purpose of education reflects an individual's or a group's philosophy or perspective on life. The objectives of education are influenced by the system of values and norms within a cultural context encompassing elements such as myth, belief systems, religion, philosophy and ideology (Muhayimana, Kwizera, & Nyirahabimana, 2022). Educational goals serve as a boundary or criterion to determine whether a particular objective has been accomplished or not (Maryani, Prasetyo, Wilujeng, & Purwanti, 2022). Furthermore, these goals guide educational activities to ensure they remain on the right track (Maryani, Prasetyo, Wilujeng, Purwanti, & Fitrianawati, 2021). Educational goals should be established in incremental stages to facilitate measurement (Hidayah & Asikin, 2021). Goals are established to attain the ultimate objective of education within educational endeavors (Handayani, Sopandi, Syaodih, Arrazy, & Indrawan, 2020). National education goals embody the qualities that every Indonesian citizen should possess and they are formulated by various educational institutions at different levels and pathways (Tanjung, Nababan, & Sa'dijah, 2020). The purpose of national education is to instill several human values in Indonesian citizens (Ibrahim, Ayub, Yunus, & Mahmud, 2019). National education strives to cultivate positive personalities and strong character in students, including moral values, ethics, responsibility and effective leadership. Education is intended to prepare students for the challenges of the future, including job opportunities, social relationships and the rapidly changing field of technology (Liu, Liu, Wang, Li, & Xu, 2024).

The government anticipates that students will acquire diverse proficiencies through the application of Higher-Order Thinking Skills (HOTS) (Valentová et al., 2021). These five proficiencies that have been delineated ought to be integrated into the assessment framework of national examinations as they encompass the skills required for the 21st century (Tang, Mao, Wang, & Zhang, 2022). The adoption of HOTS-based learning is also driven by the fact that the Program for International Student Assessment (PISA) and Trends in International Mathematics and Science Study (TIMSS) scores of the country are comparatively lower than those of other nations (Sulaiman & Ismail, 2020).

The management of classroom dynamics by teachers has not effectively maximized students' potential for learning within the classroom. The learning models and methods employed are still conventional leading to suboptimal student development. These observations were derived from the analysis of data obtained through observations, interviews, questionnaires and tests conducted in elementary schools within the *Girimarto* District. Among the various phenomena identified, the predominant issue faced is the students' limited ability to solve Higher-Order Thinking Skills (HOTS)-based questions. This study was carried out on the 20th and 21st of October 2021 employing research tools such as interviews, questionnaires and tests. The test instruments used were validated by one person holding a doctoral degree and six people holding a master degree in educational sciences. The test instrument consisted of 10 multiple-choice questions. There were 40 male students and 49 female students for a total of 89 students who participated in this research. Initial research findings indicate that a significant number of students are not achieving proficiency: 55.06% in critical thinking, 64.33% in creative thinking, and 74.91% in analytical thinking. The average score for these three components is 35.88. Numerous teachers have yet to fully grasp HOTS-based learning, thereby impeding the attainment of national educational objectives based on the interview results.

In Indonesia, the Ministry of Education and Culture has been developing national standardization for mathematics subjects particularly implementing Higher -Order Thinking Skills (HOTS) that are concerned with the ability to think at superior levels (Herde et al., 2019). The use of HOTS in learning was believed to enable the inclusion of qualities (critical thinking, creativity, communication skills, collaboration and self-confidence) to most students by the state government (Ktoridou, Doukanari, & Karayiannis, 2019). In addition to inquiry programs, HOTS also consists of an instructional model incorporating technical competencies, real-world problems, critical thinking and students' needs flexibility (Riyanto & Putri, 2019). Furthermore, a model of HOTS evaluation is included which demands that students work on questions and tasks that are unusual so that their base knowledge, necessary for higher-order thinking can be revealed (Ghafar, 2020). There are three types of items on the HOTS test: choice-based (such as multiple choice, matching and grading), general response (such as essays), short answers, projects and presentations (Merl, 2023).

It is clear from a number of the previous results that many academics stress how crucial it is to use a social constructivist problem-based learning approach to close the skills gap in the twenty-first century. This model

places great emphasis on connecting learning with real-life social scenarios and then allows students to actively participate in the learning process and also actively build knowledge through social interaction and collaboration.

The main aim of this research is to develop a PBSCL learning model. Therefore, the research question that will be answered in this research is: what is the level of feasibility of a problem-based social constructivism learning model to improve higher-order thinking skills? This model will be carefully created to take into account the unique characteristics of students, curriculum demands and the current social environment.

2. Literature Review

2.1. The Importance of Higher-Order Thinking Skills (HOTS) for Students

Higher-Order Thinking Skills (HOTS) focus on assessing advanced cognitive abilities, emphasizing context-based challenges and using various question types. In addition, HOTS does not only consist of one component but also involves critical, creative and analytical thinking to process information and solve problems (Astrid & Hasanah, 2022). Critical thinking is a cognitive process aimed at making logical choices about beliefs or actions using a range of knowledge and skills to tackle new challenges, make informed decisions, evaluate assumptions and engage in inquiry-based data and information to reach conclusions (Türkel, 2023; Valentová et al., 2021). Meanwhile, creative thinking includes skills such as enhancing individual learning by actualizing imagination, promoting independent thought, expressing ideas effectively and enabling new knowledge acquisition. Teaching and learning environments must be designed to boost students' creativity in this area to encourage creative thinking in educational settings (Ismail, Hamzah, Fatah, & Muhammad, 2019). On the other hand, analytical thinking is a cognitive process suited for comprehending unfolding situations. It involves the capacity to investigate and unearth facts to grasp their merits and demerits (Subramaniam, Sulaiman, & Kamarudin, 2020). Analytical thinking cultivates the aptitude for astute reasoning, problem-solving, data analysis and the retention and application of acquired information (Wannapiroon & Pimdee, 2022).

According to research conducted in the field, several phenomena have been identified, specifically the inadequate development of high-level thinking abilities that encompass critical, creative and analytical thinking. Additionally, the utilization of learning media remains suboptimal resulting in predominantly verbal instruction. The teaching materials employed solely consist of teacher and student books, lacking supplementary resources or references provided by the teacher. Furthermore, teachers' role in motivating students to use school facilities and infrastructure is not yet fully optimized.

During the course of their development, children acquire not only knowledge and skills related to cultural experiences but also adopt cultural habits, behavioral patterns and modes of reasoning. According to Yoel, Akiri, & Dori (2023) in situations where students struggle to successfully accomplish a task, seeking guidance from a more knowledgeable mentor can be a beneficial step to take. Children's cognitive development skills are greatly influenced by their engagement with a variety of individuals in their lives including parents, peers, teachers and counsellors (Atalay & Boyaci, 2019). Social constructivist theory suggests that learning is created resulting from the active generation of new knowledge by stimuli already present in the learner. Sources of this existing knowledge are through the community in which an individual lives, the school environment, and other related sources (Zain, Osman, Kasim, Ismail, & Rahman, 2023). For civilization to never have to face destruction, we must not forget about educational attainment. This comprises new teaching methods, models, media, and other suitable resources (Mahfoodh & Al-Hashmi, 2019).

2.2. The Implementation of Problem-Based Learning (PBL) in Learning Activities

Problem-Based Learning (PBL) is a learning model having a high potential to enhance students' critical thinking skills (Syarifah & Nikmaturrohmah, 2021). PBL also includes a student-centered pedagogical approach where the learning emphasis can be implemented independently. Although a lot of discussions have already established the theoretical background and the learning outcomes of PBL, one of the main focuses is its use in an educational setting to address contextual problems in students' daily lives (Fitriani, Abdulah, & Mustadi, 2021; Irawati, Huda, & Adji, 2022).

Research has shown that implementing the PBL model in primary schools has a positive influence on both academic achievement and critical thinking skills (Ismail, Harun, Zakaria, & Salleh, 2018). The term PBL is centered on problems that are designed to mirror real-life scenarios and be informed by curricular goals and standards. These difficulties often result in the formulation of hypotheses which serve as the cornerstone of the learning process (Coşkun & Filiz, 2023). These factors play an important role in structuring the educational journey since they focus on generating questions rather than simply answering them. This technique not only boosts students' interest and comprehension but also makes it easier to integrate theoretical information into the PBL situation (Abdullah et al., 2020). PBL also develops higher-order thinking skills like analyzing, reasoning and communicating by helping students become more self-aware and identify their most effective learning experiences in different contexts (Hidayat, 2019; Tanjung et al., 2020). Moreover, teachers love it because it requires interactivity and teamwork. The learning model is grounded in the belief that excellent learning occurs when students construct their own ideas with the benefit of social interaction and structured presentations. PBL is a student-centered strategy developed to raise problem awareness through small group analysis and discussion, collaborating with mentors or teachers to examine problems before encountering them in theory (Aziz, Puteh, & Adnan, 2021; Moneim, 2020).

We can draw the conclusion that problem-based learning was answered and has potential as well as being very significant in improving the learning outcomes of elementary school students with an impact on their critical thinking based on the review of a lot of related research results. Some research asserted that the PBL model has a positive influence on improving science learning outcomes with the increase in results ranging from 26.30% to 67.20 (Nisa & Murwaningsih, 2020). Meanwhile, according to research, there are several challenges in the implementation of PBL in schools. Among these challenges are low teachers ability to manage time, a lack of understanding of the essence of PBL and inadequate teacher training that burdens the practice of project-based learning in elementary school (Tam, 2018). It is very important to provide training on learning strategies, ensure

adequate learning facilities and help students understand the real-life application of PBL which ultimately improves student engagement and learning outcomes in school learning to overcome these challenges (Prastika, Wati, & Suyidno, 2019).

Moreover, the PBL has been reported to facilitate problem-solving skills in different types of subjects including science and mathematics as it improves the critical thinking skills of the students (Bayram & Deveci, 2022). PBL has been examined for its challenges and opportunities in several educational contexts. For example, the implementation of PBL in the area of biomechanics and in radiology seems to encourage the students to the knowledge and problem-solving and teamwork capabilities (Suhirman, Muliadi, & Prayogi, 2020). A review of literature has concluded that effectiveness of PBL often depends on several factors specifically teachers' characteristics, their attitudes, the curriculum and if PBL is used in concurrence with other teaching methods (Ekinci, 2021). In a nutshell, although PBL has demonstrated effectiveness in promoting student engagement, critical thinking and problem-solving skills in a variety of educational settings further research is needed to explore best practices for implementing PBL in elementary activities. Understanding the challenges and benefits of implementing PBL can help teachers use this teaching method effectively to enhance student learning outcomes.

3. Methodology

3.1. Research Design

The method used in this study adopts the research and development (R&D) approach (Julius, Mun, Abdullah, Mokhtar, & Suhairom, 2018). In the R&D model, there are three main stages, namely needs analysis, product development and product assessment where the focus is on assessing the level of suitability of the product to be used as a learning model. The initial stage of needs analysis includes identifying needs and formulating the concept of a problem-based social constructivist learning model. The development stage focuses on product creation, namely developing a learning model. The product assessment stage is then carried out to assess the feasibility of the learning model.

3.2. Research Population

This research involved several samples starting from modeling experts, subject matter experts, language experts that came from Universitas Sebelas Maret and educational practitioners or teachers from state elementary schools in *Girimarto* District (Muhayimana et al., 2022). The experts provide their assessments and suggestions for the model product being developed, their assessment will be the basis for deciding whether the model is suitable or not to be implemented into learning activities.

3.3. Data Collection Tool

Meanwhile, the data collection process at the preliminary stage was carried out through the distribution of questionnaires to respondents representing each research subject (Hermana, 2023). In the preliminary stage, data is gathered through semi-structured interviews from elementary school teachers and students using the interview guide as the instrument (Syarifah & Nikmaturrohmah, 2021) with reference to the instrument adopting research conducted by Coşkun and Filiz (2023) and Kosasih et al. (2022). Meanwhile, during the development stage, the instrument employed is a model validation questionnaire which is designed to evaluate the effectiveness and suitability of the learning model in meeting the students' learning needs (Dzul, Hussin, Sumari, & Sulaiman, 2022). The feasibility questionnaire used in this research is adopted from several previous studies such as those conducted by Tanjung et al. (2020), Panggabean, Munthe, Silitonga, Juniar, and Selly (2022) and Kardoyo, Muhsin, and Pramusinto (2020).

3.4. Data Analysis

The data analysis technique applied is descriptive analysis using average analysis. This analysis aims to determine the feasibility level of the problem-based social constructivist learning model. The analysis table converts the average scores of expert assessments as determinants of the criteria for product, model feasibility, which are present in Table 1.

Table 1. The conversion of values for the eligibility criteria of the model.

Mean score	Category	Decision
$3.4 < X \leq 4.0$	Very well	Eligible
$2.6 < X \leq 3.4$	Good	
$1.8 < X \leq 26$	Not worthy	
$X \leq 1.8$		Not eligible

Source: Agusta (2018) and Lao, Tari, Nahas, Wijaya, and Darmawan (2021).

4. Results and Discussion

4.1. Results

The interviews' findings revealed that there are insufficient suitable models for maths lessons in the State Elementary Schools in Girimarto District, Wonogiri Regency causing insufficient academic performance in the students. Additionally, the teaching materials that align with the independent curriculum are insufficient and the content within these materials is incomplete. Teachers are not actively involving students in the learning process as they continue to rely on traditional teaching methods such as explaining concepts, providing limited opportunities for questions and answers and assigning practice questions. There is a lack of understanding among teachers regarding differentiated learning and their role in designing effective learning experiences in the classroom. Teachers tend to strictly follow the learning plan outlined in the teacher's guidebook without fully comprehending the concept of differentiated instruction.

It has been established that there is a necessity for a learning model that is in line with the characteristics of mathematics material and can effectively improve students' Higher-Order Thinking Skills (HOTS) based on the

results of the analysis of interviews conducted with teachers and students. These skills which encompass communication, collaboration, critical thinking and problem solving as well as creativity and innovation are fundamental elements in the 21st century. Both students and teachers necessitate learning models that can facilitate the sharing of ideas to comprehend mathematical concepts thereby enhancing students' HOTS. In light of the aforementioned rationale, it is apparent that learning models that boost HOTS are exceedingly crucial for students. The government anticipates students to achieve various competencies by integrating Higher-Order Thinking Skills (HOTS). These five competencies as previously delineated ought to be incorporated into the assessment system for national exams and acknowledged as essential skills in the 21st century. HOTS-based learning is also being implemented due to Indonesia's underperformance in the Program for International Student Assessment (PISA) and Trends in International Mathematics and Science Study (TIMSS) in comparison to other nations. In PISA 2022, Indonesia is ranked 68th with a reading literacy score of 371, a scientific literacy score of 398 and a mathematics literacy score of 379.

The Indonesian Ministry of Education and Culture has initiated the implementation of national standards for mathematics subjects, focusing on Higher- Order Thinking Skills (HOTS) which emphasize high-level thinking abilities. The government aims to enhance students' competencies by incorporating HOTS-based learning. The HOTS test includes three types of items: selection (like multiple choice, matching and ranking), general (such as essays and assignments) and explanation (justifying selected answers). HOTS emphasizes advanced thinking skills, contextual problem-solving and varied question formats. It promotes critical, creative and analytical thinking for effective problem-solving. Analytical thinking is crucial for understanding scenarios, researching facts and assessing pros and cons aiding in data analysis and problem resolution.

The development of the Problem- Based Social Constructivism Learning (PBSCL) model aimed at enhancing HOTS starts with a critical preparation stage. During this phase, a PBSCL model guidebook is shared with expert validators in learning models, materials, linguistics and practice. Table 2 presents the result of expert validation from the learning expert. The feedback from these experts is integral to refining the PBSCL model for better fostering higher-order thinking skills.

Table 2. Results of expert validation of learning models.

No	Statement	Validator	
		1	2
Format aspects			
1	Complete structure of the contents of the instruction book	3	4
2	Appropriate selection of font size and type	4	4
3	Concise and clear presentation	4	3
4	Suitability of design and module materials used	4	4
5	Matching colors and images in the module	4	4
Content aspect			
6	Conformity with learning outcomes	3	3
7	Suitability to specific materials	3	4
8	Conformity to user needs	4	4
9	Learning manuals can increase teachers' knowledge.	4	4
10	The learning manual is easy to use in class IV.	4	4
	Material aspects		
11	Suitability of material with learning achievement indicators	3	3
12	Clarity of material to learning needs	4	4
13	The material is easy for users to understand.	4	4
14	Conformity with scientific development targets	4	4
Language aspects			
15	Clarity of the language used	4	4
16	Suitability of language to target users	4	4
17	The use of language encourages teachers' curiosity.	4	4
Total score		54	58
Amount		112	
Average		3.29	

After the analysis was completed, the experts in learning design models' validator assessments had an average score of 3.29 which was good demonstrating their qualifications. In the ultimate conclusion, the learning model expert affirmed that the Problem-Based Social Constructivism Learning (PBSCL) Learning Model Guidebook for improving Higher- Order Thinking Skills (HOTS) fulfilled the necessary criteria and warranted further testing. The results of the assessment of the Problem-Based Social Constructivism Learning (PBSCL) Learning Model Guidebook for improving Higher- Order Thinking Skills (HOTS) by material expert validators are present in Table 3.

After completing the analysis, the average score given by the material expert validators was 3.26 indicating excellent qualifications. The content expert concluded that the Problem-Based Social Creativity Learning (PBSCL) Teaching Model Guidelines (HOTS) for promoting higher-order thinking met the necessary criteria and was deemed worthy of further examination. It was emphasized that researchers should carefully consider the feedback and recommendations provided by the validators. Subsequently, the researchers incorporated the input and suggestions to make various revisions.

Table 3. Material expert validation results.

No	Statement	Validator	
		1	2
Format aspects			
1	Complete structure of the contents of the instruction book	3	4
2	Appropriate selection of font size and type	4	4
3	Concise and clear presentation	4	3
4	Suitability of design and module materials used	4	4
5	Matching colors and images in the module	4	4
Content aspect			
6	Conformity with learning outcomes	3	3
7	Suitability to specific materials	3	4
8	Conformity to user needs	4	4
9	Learning manuals can increase educators' knowledge.	4	4
10	The learning manual is easy to use in class IV.	4	4
Material aspects			
11	Suitability of material with learning achievement indicators	3	3
12	Clarity of material to learning needs	4	3
13	The material is easy for users to understand.	4	4
14	Conformity with scientific development targets	4	4
Language aspects			
15	Clarity of the language used	4	4
16	Suitability of language to target users	3	4
17	The use of language encourages teachers' curiosity.	4	4
Total score		55	56
Amount		111	
Average		3.26	

Evaluation outcomes of the Problem-Based Social Constructivism Learning (PBSCL) learning model guidebook for enhancing Higher- Order Thinking Skills (HOTS) by language expert validators present in Table 4.

Table 4. Linguist expert validation results.

No	Statement	Validator	
		1	2
Format aspects			
1	Complete structure of the contents of the instruction book	4	4
2	Appropriate selection of font size and type	4	4
3	Concise and clear presentation	4	3
4	Suitability of design and module materials used	3	4
5	Matching colors and images in the module	4	4
Content aspect			
6	Conformity with learning outcomes	3	3
7	Suitability to specific materials	3	4
8	Conformity to user needs	4	4
9	Learning manuals can increase teachers' knowledge.	4	4
10	The learning manual is easy to use in class IV.	4	4
Material aspects			
11	Appropriate content with indicators of learning outcomes	3	3
12	Clear content for learning needs	4	4
13	the content is accessible to users	4	4
14	Consistent with the goals of scientific progress	4	4
Language aspects			
15	Clarity of the language used	4	4
16	Suitability of language to target users	4	4
17	The use of language encourages teachers' curiosity.	4	4
Total score		56	57
Amount		113	
Average		3.32	

The language expert validators obtained an average score of 3.32 after the analysis was completed indicating exceptional qualifications. The material expert concluded that the Problem-Based Social Constructivism Learning (PBSCL) learning model guidebook for enhancing Higher- Order Thinking Skills (HOTS) satisfied the criteria and warranted further testing. Nevertheless, researchers must consider feedback and recommendations from validators. Therefore, before proceeding to the next stage, the suggestions from the validators must be implemented first.

The results of the assessment of the Problem -Based Social Constructivism Learning (PBSCL) guidebook and learning model for improving Higher- Order Thinking Skills (HOTS) by practitioners are illustrated in Table 5.

After a thorough evaluation, the results of the assessment carried out by the teacher resulted in an average score of 3.24 which is included in the very good category. After an extensive review, the results of the assessments of the experts involved and practitioners can be concluded that the Problem-Based Social Creativity Learning (PBSCL) model which aims to encourage high-level thinking meets all the appropriate criteria as an innovative learning model in the 21st century.

Table 5. Practitioner or teacher validation results.

No	Statement	Practitioner
Format aspects		
1	Complete structure of the contents of the instruction book	3
2	Appropriate selection of font size and type	4
3	Concise and clear presentation	4
4	Suitability of design and module materials used	4
5	Matching colors and images in the module	4
Content aspect		
6	Conformity with learning outcomes	3
7	Suitability to specific materials	3
8	Conformity to user needs	4
9	Learning manuals can increase teachers' knowledge.	4
10	The learning manual is easy to use in class IV.	4
Material aspects		
11	Appropriate content with indicators of learning outcomes	3
12	Clear content for learning needs	4
13	The content is accessible to users.	4
14	Consistent with the goals of scientific progress	4
Language aspects		
15	Clarity of the language used	4
16	Suitability of language to target users	3
17	The use of language encourages teachers' curiosity.	4
Total score		55
Average		3.24

4.2. Discussion

The results of the evaluation of the Problem-Based Social Constructivism (PBSCL) learning model show varied results from each validator who generally obtains results that fall into the feasible category. The results of the model evaluation are actually in line with many previous research findings which emphasize that the application of a learning model must go through various stages of validation and must obtain appropriate categories from validators before being applied to the learning process. The probability of such models should be investigated first to avoid errors in the implementation (Amin, Sumarmi, & Prasad, 2023; Hashim, Saud, Abdullah, Jafar, & Rahman, 2021). The components of the model in the PBSCL model include curriculum relevance, relationships among social problems, student engagement, collaboration and the development of higher-order thinking skills (HOTS) which are better adopted from related research to develop practical models based on the components of the model itself (Lestari, Japar, & Sapriati, 2022).

Many related studies support the notion that using social problems based on constructivist learning models stimulates students' higher levels of thinking to a greater extent (Cantona, Suastra, & Ardana, 2023). In fact, this provides the foundation for the study so that any model deemed appropriate can be applied to educational endeavors. Therefore, it is considered that using the PBSCL approach to help primary school students develop their higher order thinking skills has potential (Panggabean et al., 2022).

Higher- Order Thinking Skills (HOTS) is an essential development especially at the primary stage of education as it is a basic step in cognitive development that provides readiness for more advanced mental processes by the young learners to give them an edge in facing future challenges with resilience (Tong, Rosli, & Saleh, 2022). Problem-Based Creative Social Learning (PBSCL) is an innovative approach and is a rigorous learning framework that offers corresponding activities to gain knowledge by involving students in its curriculum, asking students to solve problems in real circumstances and fostering teamwork and reflective thinking (Ibrahim et al., 2019; Rahmawatiningrum, Kusmayadi, & Fitriana, 2019). The implementation of the PBSCL model is almost theoretically capable of significantly improving educational outcomes at the elementary level, preparing students to face a future that requires high levels of psychological problem-solving skills.

Different outcomes of this study suggest that the Social Constructivist Problem-Based Learning (PBSCL) approach has tremendous opportunities to enhance the competencies of elementary school students and their effective cognitive functioning levels (Sulaiman & Ismail, 2020). The independent, cooperative and uncomplicated nature of PBSCL's method of functioning also made it an effective strategy for fostering a pleasant and enjoyable learning environment (Eka & Iswantir, 2021). By the end of this report, the output of research is expected to provide an understanding of a learning model that is oriented to process and outcome to improve 21st century skills, including soft skills and hard skills.

Furthermore, the benefits of the PBSCL mode in providing a variety of learning resources and extra subject support have helped elementary school teachers to enhance students' learning experiences comprehensively (Amin et al., 2023; Hikmawati, Suastra, Suma, Sudiatmika, & Rohani, 2021). The PBSCL learning model offers a solution to become a solid approach to improve the quality of learning processes and outcomes, and can inclusively foster a collaborative attitude among students. The advantage of this study is that it focuses on the PBSCL model which is specifically designed to improve Higher-Order Thinking Skills in elementary education. Through an evaluation and development process carefully developed this model incorporates feedback from modeling experts, subject matter experts and education professionals to ensure its use and effectiveness in an educational setting.

Nevertheless, certain limitations must be taken into account. One of these is the generalization of research findings and the limited implementation of research that only reaches the development stage. Hence, subsequent researchers must explore testing the effectiveness of this model on elementary school students' HOTS abilities and if feasible identify other contributing factors to enhancing students' HOTS apart from the validated and approved PBSCL model.

5. Conclusion

The guidebook underwent expert validation by a panel of 7 individuals. The average assessment score given by learning design model experts was 3.29 indicating a high level of qualification. The learning model expert concluded that the Problem-Based Social Constructivism Learning (PBSCL) learning model guidebook for improving Higher- Order Thinking Skills (HOTS) met the necessary criteria and was deemed suitable for testing. Similarly, the material expert assessment yielded an average score of 3.26 also indicating a strong qualification. The material expert also affirmed that the guidebook met the requirements and was worth testing. It is crucial for researchers to consider the feedback and suggestions provided by validators. The researchers incorporated these inputs to make various revisions. The practitioner assessment resulted in an average score of 3.24 signifying a high level of qualification. The practitioner concluded that the PBSCL learning model guidebook for improving HOTS met the necessary criteria and was deserving of further exploration.

6. Suggestions and Implications

The results of research have been limited so far in developing a PBSC model that is appropriate for use in mathematics learning. Therefore, researchers should keep an eye out for practitioner feedback to improve the model's user manual and begin putting it into practice to track improvements in students' HOTS skills.

Thus, the goal of this research is to assist teachers in starting to combine different techniques in an attempt to create a creative learning environment by raising awareness and providing insights.

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