World Journal of Advanced Research and Reviews
eISSN: 2581-9615 CODEN (USA): WJARAI
Cross Ref DOI: 10.30574/wjarr
Journal homepage: https://wjarr.com/

(Research Article)

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The effectiveness of creative problem-solving learning on critical thinking skills and stoichiometry learning outcomes of grade X Students at SMKN 1 Bakung Blitar Indonesia

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World Journal of Advanced Research and Reviews, 2024, 24(01), 327–338

Publication history: Received on 15 August 2024; revised on 28 September 2024; accepted on 30 September 2024

Article DOI: https://doi.org/10.30574/wjarr.2024.24.1.2980

Abstract

Stoichiometry material includes concepts and algorithms, involving relative atomic mass, relative molecular mass, reaction equations, chemical laws, mole concepts, and chemical calculations. Conventional learning methods using lectures are considered less effective, causing low student understanding and grades. The Creative Problem Solving model is proposed as a solution, promoting collaboration, freedom of learning, and linkage to practice. The quasi-post-test experiment showed significant differences in critical thinking abilities and learning outcomes between classes using the Creative Problem Solving and Problem Solving models, with higher scores in the Creative Problem Solving class.

Keywords: Stoichiometry; Creative Problem Solving; Critical Thinking Ability; Learning Outcomes

1. Introduction

Chemistry as a subject in vocational high schools (SMK), part of Group C (Specialization) in the 2013 curriculum, aims to develop students' attitudes, knowledge, and skills according to their vocational interests. Chemistry education in SMKs focuses on learning experiences that involve life skills and character development, emphasizing moral and social integrity as added values (BNSP, 2006). The chemistry curriculum in SMKs includes efforts to build students' critical thinking abilities. The goal of chemistry education is not only to convey basic knowledge about chemical substances but also to develop analytical, synthetic, and evaluative skills. Mastery of chemistry in SMKs facilitates the analysis of chemical processes to support vocational competencies, highlighting the essential need to strengthen vocational skills.

Stoichiometry is a branch of chemistry concerned with the quantitative calculations of reactants and products in a chemical reaction. This subject can significantly contribute to the development of students' critical thinking skills. Westhuizen & Lerina (2015) conducted a study at North West University Potchefstroom Campus to address the low pass rates in first-year chemistry courses. Students often memorized definitions and formulas without understanding the essential underlying concepts. Traditional lecture-based approaches had minimal impact, and misconceptions related to stoichiometry and problem-solving strategies have been widely studied. Students find this subject challenging, leading to the integration of visualization, critical thinking, and metacognition in the teaching of stoichiometry. The study used a quantitative approach with a pre-test-post-test design to assess students' conceptual understanding. The intervention involved specific teaching techniques such as visualization and critical thinking development. The results indicated that visualization, metacognition, and critical thinking positively impacted stoichiometry learning, helping students to better understand the concepts.

The implementation of the Creative Problem Solving (CPS) model can enhance students' critical thinking abilities and learning outcomes, allowing them to explore their skills more deeply so that the concepts learned are not just

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memorized but understood (Malisa et al., 2018). Consistent with the study conducted by Meldawati et al. (Iriani et al., 2019), the research results showed a significant difference in students' average learning outcomes before and after the application of the CPS teaching method. This indicates that the application of the CPS method can improve students' critical thinking skills and learning outcomes. Therefore, this teaching method is suitable for stoichiometry, as it encourages critical thinking in problem-solving, making the material easier to understand and improving students' learning outcomes.

Observations at SMKN 1 Bakung revealed that the quality of chemistry instruction was suboptimal, particularly in terms of student motivation and learning outcomes. Students tend to prefer productive subjects over theoretical chemistry, reflecting a lack of motivation due to the limited application of fundamental chemical principles in daily life. The difficulty in understanding chemical concepts is also influenced by the complexity of calculations, uncommon language, and the lack of relevance to everyday life, leading to motivational and learning outcome challenges (Dasna, 2012; Cracolice and Ward, 1998; Agustini, 2013).

Stoichiometry, the first topic covered in Grade X, serves as the foundation for subsequent chemistry lessons. This topic is vital for quantitative calculations in various chemical contexts, encompassing the calculation of particle quantities such as atoms, molecules, ions, and electrons (Brady, 1994). Stoichiometry concepts like atomic mass, mole concept, Avogadro's number, and others are key to overcoming difficulties in understanding complex chemical concepts. A suitable teaching method and adequate conceptual understanding are necessary to achieve a good grasp of stoichiometry (Chang, 2005; Schmid and Jigneus, 2003).

Most vocational high school students find stoichiometry difficult. Stoichiometry is a crucial part of chemistry education, focusing on the quantities of reactants and products in a chemical reaction. Although this material plays a crucial role in understanding chemical processes, the complexity of the related concepts and calculations often poses challenges for students.

Many students struggle to understand basic stoichiometry concepts, such as mole ratios, the mole concept, and quantitative calculations in chemical reactions. A lack of understanding of these concepts can make it difficult for students to apply their knowledge to real-world problem-solving involving stoichiometry. Field observations at SMKN 1 Bakung show that many students face difficulties in understanding stoichiometry material. Observations and interviews reveal that the average student learning outcomes in this material fall below the Minimum Competency Criteria (KKM). In this case, the proficiency rate is only 65.7%, still below the target of 75%. This difficulty aligns with the crisis in understanding chemical concepts, including the mole concept and stoichiometry, highlighted by Huddle & White (2000: 104) in Europe.

2. Literature Review

To improve students' understanding and mastery of stoichiometry, a suitable and effective teaching approach is required. Understanding the difficulties students face in mastering stoichiometry will aid in developing more efficient teaching strategies and support the development of critical skills in understanding and applying this concept in everyday contexts.

In this context, this research aims to explore teaching methods that can enhance vocational high school students' understanding and abilities in stoichiometry. By gaining further insights into the challenges and obstacles faced by students, it is hoped that this study can contribute positively to the development of effective teaching approaches, particularly in addressing students' difficulties in understanding and applying stoichiometry. To address students' challenges in understanding stoichiometry, a more optimal and engaging teaching method is needed. The Problem Solving (PS) model is considered appropriate, especially for the complex material of stoichiometry. Problem Solving encourages students to actively engage in problem-solving by starting with questions that lead to concepts, principles, and laws. The PS model is well-suited for stoichiometry, which involves layered concepts and complex calculation rules (Odell, 1973).

The importance of critical thinking in shaping independent and successful students in the future is also a focus. Critical thinking involves analyzing, evaluating, and responding objectively to information. This skill not only deepens students' understanding of information but also trains them to make wise decisions. Students who can think critically are better prepared to face challenges and achieve success in an ever-changing world. According to Paul and Elder (2008), critical thinking involves analytical, evaluative, and creative processes to seek alternative solutions and develop skills such as analysis, evaluation, interpretation, and synthesis.

Critical thinking plays a vital role in everyday life by helping individuals identify, analyze, and solve problems rationally and effectively. This ability not only enables the evaluation of options and selection of the best solution but also supports wise decision-making. Critical thinking also involves the ability to process information deeply, strengthening understanding of available information (Anderson, 1993). More than just a skill, critical thinking is an essential life attitude, helping students to construct arguments, communicate effectively, stimulate creativity, and prevent errors in thinking. Training students in critical thinking not only provides a solid foundation for facing future challenges but also supports the development of creative thinking, creating long-term benefits for individuals' intellectual and professional growth (Whimbey, Lochhead, & Narode, 2013).

Problem Solving is a teaching model that emphasizes the development of students' ability to systematically and effectively identify, analyze, and solve problems, aiming to equip students with critical and creative thinking skills. John Dewey stated that problem-solving learning can be carried out through various methods, such as case studies, problem-based projects, simulations, or exercises that challenge students to think critically and creatively. Critical thinking plays a crucial role in identifying and detailing problems, while Creative Problem Solving (CPS) involves a creative approach to problem formulation and determining different perspectives. These two concepts can complement each other, with critical thinking helping to evaluate solutions carefully, while CPS encourages the search for creative ideas and innovative solutions (Dogru, 2008).

The CPS teaching model, implemented both verbally and figuratively, involves problem identification, identification of alternative solutions, selection of the best solution, realization of the solution, and evaluation. Research shows that the use of CPS can enhance students' understanding, and the combination of critical thinking and CPS creates a holistic approach to addressing challenges, providing better and more innovative solutions. The difference between the problem-solving model and creative problem-solving lies in the problems solved by students, with CPS giving all students the opportunity to express their ideas during discussions, overcoming the weaknesses of the problem-solving model where dominant students tend to lead the process.

3. Research Method

This study is a quasi-experimental research using a non-randomized control group posttest design. Two subject groups, experimental and control, were selected from the population of Grade X students at SMKN 1 Bakung. Before sample selection, a preliminary assessment of students' abilities was conducted to ensure equivalency in their skill levels. The sample was chosen randomly using a cluster random sampling technique. Students in the control group received stoichiometry instruction through the Problem Solving method, while those in the experimental group were taught stoichiometry using the Creative Problem Solving method.

The evaluation of students' critical thinking skills in stoichiometry involved several aspects, including their understanding of stoichiometry concepts, application of stoichiometry formulas, analysis of stoichiometry problems, problem-solving, error analysis, argumentation skills, use of stoichiometry concepts in real-world contexts, and discussion abilities. The assessment measured the extent to which students could explain, apply, analyze, and relate stoichiometry concepts in various contexts, and it included critical thinking activities such as error analysis and discussions.

The assessment of chemistry learning outcomes in this study was conducted through written tests, consisting of a pretest administered before the treatment and a posttest after the treatment. The tests were in multiple-choice format. The validity and feasibility of the research instruments were established prior to implementation, involving subject matter experts and instructional device specialists in the relevant field. The validation process covered the syllabus, lesson plans (RPP), student worksheets (LKS), and trial test questions. Each assessment instrument underwent a trial run, its validity was calculated, and item analysis was conducted to measure difficulty index and discrimination index. The reliability of the test items was also evaluated to determine the test's consistency. The validity of the test items focused on the extent to which the tests could measure the intended objectives, and item analysis used classical measurement theory with difficulty index and discrimination index to assess the difficulty level and discriminative power of the test items.

The calculation of the Difficulty Index (ITK) and Discrimination Index (IBD) is done using the following formulas:

Difficulty Index (ITK) for multiple-choice questions:

$$ITK = \frac{FKT + FKR}{N}$$

Discrimination Index (IBD) for multiple-choice questions:

$$IDB = \frac{FKT - FKR}{n}$$

Where:

- FKT is the number of students in the top group who answered the item correctly.
- FKR is the number of students in the bottom group who answered the item correctly.
- N is the total number of students who took the test.
- n is the number of students in either the top or bottom group.
- Reliability refers to the consistency of test results. A good measurement instrument is one that provides data accurately reflecting reality. The formula used to measure reliability in this context is the Kuder-Richardson Formula 20 (K-R 20). This method is applied to assess the reliability of tests with dichotomous scales (those with only two possible answers, such as true/false or yes/no). The K-R 20 formula provides an estimate of internal consistency, which measures the extent to which the items within a test are consistent with each other.

The formula for Kuder-Richardson Formula 20 (K-R 20) is as follows:

$$\text{K-R } 20 = \frac{n}{n-1}\left[1 - \frac{\sum pq}{\sigma^2}\right]$$

Where:

- n is the number of items in the test.
- p is the proportion of correct responses for each item.
- q is the proportion of incorrect responses for each item (q = 1 - p).
- σ^2 is the variance of the total test scores.

Here is Table 1 showing the reliability criteria for test items according to Arikunto (2009:75):

Table 1 Reliability Criteria for Test Items

Value of r	Criteria
$0.80 < r \leq 1.00$	Very High
$0.60 < r \leq 0.80$	High
$0.40 < r \leq 0.60$	Fairly High
$0.20 < r \leq 0.40$	Low

This table outlines the reliability criteria for test items, with higher values of the reliability coefficient (r) indicating a higher level of consistency in the test items

4. Results

The student's initial ability scores were obtained from daily test scores on the previous topic, which covered compound nomenclature. This data was used to determine whether the two classes—the control class (the PS class) and the experimental class (the CPS class)—had similar initial learning abilities. The initial ability data for both classes are presented in Table 2 below:

Table 2 Initial Ability of PS and CPS Students

Class	N	Lowest Score	Highest Score	Average	Std. Deviation
PS	27	50	88	70.03	10.20
CPS	27	50	88	71.29	9.96

Table 2 shows that the average initial ability scores in the PS and CPS classes are 70.03 and 71.29, respectively. Before conducting the t-test, prerequisite tests such as normality and homogeneity tests must be performed.

4.1. Student Initial Ability Normality Test Results

To determine whether the data is normally distributed, a normality test was conducted using the Shapiro-Wilk test, as it is suitable for sample sizes less than 50. The criteria for normality is met if the significance value (sig) is greater than 0.05. The test was conducted using SPSS 20 for Windows. The results of the normality test for the PS and CPS classes are presented in Table 3.

Table 3 Results of the Normality Test on Students' Initial Ability

Class	Average Score	Standard Deviation	Significance Value	Category
PS	70.03	10.20	0.13	Normal
CPS	71.29	9.96	0.35	Normal

Based on Table 3, the PS class has a significance value of 0.13, while the CPS class has a significance value of 0.35. Since both classes have a significance value greater than 0.05, it can be concluded that the initial ability data for both classes are normally distributed.

4.2. Results of the Homogeneity Test of Students' Initial Abilities

The students' initial ability data were tested for homogeneity to determine whether the data have equal variances. This test was conducted using Levene's Test at a 95% significance level with SPSS 20 for Windows. The data is considered homogeneous if the significance value (sig) is greater than 0.05. The results of the homogeneity test for the PS and CPS classes are presented in Table 4.

Table 4 Results of the Homogeneity Test on Students' Initial Ability

Class	Average Value	Significance Value	Conclusion
PS	70,03	0,73	Homogen
CPS	71,29		

Table 4 shows that the homogeneity test resulted in a significance value of 0.73 (sig > 0.05). This indicates that the initial abilities of the PS and CPS classes are homogeneous, meaning they have equal variances.

4.3. Student Initial Ability Similarity Test Results

The t-test, or two-sample t-test, was conducted after performing the normality and homogeneity tests on the initial ability data of the PS and CPS classes. This test is useful to confirm that both classes have the same initial ability. The t-test calculation was performed using SPSS 20 for Windows, with the criterion being a significance value (sig) greater than 0.05. The results of the t-test are presented in Table 5.

Table 5 Results of the Two-Sample T-Test on Students' Initial Ability

Variable	Average		Similarity test	Conclusion
	PS	CPS	Significance Value	
Initial Capabilities	70,03	71,29	0,64	There is no difference in initial ability

The table above shows that the t-test calculation using SPSS 20 for Windows resulted in a significance value of 0.64, which is greater than 0.05. This indicates that there is no significant difference in the initial ability between the PS and CPS classes, meaning that these two sample classes have the same initial ability.

4.4. Data Analysis of Validity and Reliability Test Results of Measurement Instruments

4.4.1. Validity and Reliability Data on Learning Outcomes Test Items

Based on the Product Moment correlation coefficient test criteria, after conducting a trial on the post-test questions, it was found that 50 questions were deemed valid. However, only 45 questions were used, as the remaining 5 questions were excluded due to their relatively low discrimination index, even though they were categorized as valid.

The reliability of the data was analyzed using the Kuder-Richardson Formula 20 (KR-20). The results of the reliability test using KR-20 on the test items showed a reliability coefficient of 0.82. Therefore, it can be concluded that the test items are reliable and fall into the high reliability category.

4.4.2. Validity and Reliability Data on Critical Thinking Skills Items

The critical thinking skills test consisted of 7 items. The results of the validity test indicated that all items had a significance value (sig r) of less than 0.05 and a calculated r value greater than 0.404, which means that all items in the critical thinking test are valid.

Reliability was tested using Cronbach's Alpha. The complete data analysis can be found in Appendix 15. The results of the reliability test for the critical thinking skills questions yielded a Cronbach's Alpha coefficient of 0.94, indicating that the critical thinking skills test is reliable and falls within the high-reliability category.

4.5. Test Results for Different Levels of Difficulty and Power of Questions

The analysis of the difficulty level of the test questions was conducted to assess the complexity of the test items, categorizing them as easy, medium, or difficult. The discrimination index analysis was used to differentiate between high-performing and low-performing test-takers. Based on the difficulty level analysis, it was found that 29 questions were categorized as medium, and 21 questions were categorized as easy. A summary of the difficulty level test results is presented in Table 6.

Table 6 Summary of Difficulty Level Test Results

P Value	Difficulty Level	Number of Questions	Percentage
0.00 – 0.30	Difficult	0	0%
0.30 – 0.70	Medium	29	58%
0.70 – 1.00	Easy	21	42%
Total	-	50	100%

Table 7 Summary of Different Power Test Results

P Value	Criteria	Number of Questions	Percentage
0.00 – 0.20	Poor	10	20%
0.20 – 0.40	Fair	15	30%
0.40 – 0.70	Good	12	24%
0.70 – 1.00	Excellent	13	26%
Total	-	50	100%

4.6. Data Description of Students' Final Critical Thinking Ability

The final critical thinking ability of students is the critical thinking ability that students have after carrying out the entire learning process. The content of the final critical thinking ability questions is the same as the content of the students' initial critical thinking ability questions. Data on students' final critical thinking abilities in PS and CPS classes are presented in Table 8.

Table 8 Average Score of Students' Final Critical Thinking Ability

Class	N	Lowest Critical Thinking Score	Highest Critical Thinking Score	Average Score	Standard Deviation (Sd)
PS	27	62.86	80.00	74.18	4.29
CPS	27	74.29	88.57	79.37	3.92

From Table 8, it is evident that the average final critical thinking skills score for students in the PS class is 74.18, while the CPS class has an average score of 79.37. These data will be further analyzed through hypothesis testing using the t-test to determine if there is a significant difference in the final critical thinking skills between the PS and CPS classes. However, before conducting the t-test, normality and homogeneity tests must be performed.

4.6.1. Normality Test Results of Students' Final Critical Thinking Ability

The normality test was carried out to determine the normality of the students' final critical thinking ability results using SPSS 20 for Windows via the Shapiro Wilk test, where the normal criterion is sig > 0.05. The results of the normality test for the PS class and CPS class are presented in Table 9.

Table 9 Normality Test of Final Critical Thinking Skills

Class	Average Score	Standard Deviation	Significance Value	Conclusion
PS	74.18	4.29	0.28	Normal
CPS	79.37	3.92	0.20	Normal

Based on Table 9, the normality test results show that the PS class has a normality score of 0.28, and the CPS class has a score of 0.20. Both scores are greater than 0.05, indicating that the final critical thinking skills of students in both the PS and CPS classes are normally distributed.

4.6.2. Results of the Homogeneity Test of Students' Final Critical Thinking Ability

The homogeneity test for students' final critical thinking skills was conducted using SPSS 20 for Windows through Levene's Test, with a homogeneity criterion of sig > 0.05 or a 95% significance level. The results of the homogeneity test for final critical thinking skills in the PS and CPS classes are presented in Table 10.

Table 10 Homogeneity Test Results of Students' Final Critical Thinking Ability

Class	Average	Significance Value	Conclusion
PS	74,18	0,44	Homogen
CPS	79,37		

Table 10 shows that the homogeneity test results for the PS and CPS classes are 0.44. Both values are greater than 0.05, indicating that the final critical thinking skills in the PS and CPS classes are homogeneous or perfectly distributed.

4.6.3. Hypothesis Test Results of Students' Final Critical Thinking Ability

This hypothesis test aims to determine whether there is a difference in critical thinking skills between the two classes after treatment was administered. The hypothesis test was conducted using the t-test. The proposed hypotheses are as follows:

- Ho: There is no difference in critical thinking skills between students taught using the Problem Solving model and those taught using the Creative Problem Solving model.
- H1: There is a difference in critical thinking skills between students taught using the Problem Solving model and those taught using the Creative Problem Solving model.

The t-test was conducted using SPSS 20 for Windows with a significance level of less than 0.05. The results of the t-test are presented in Table 11.

Table 11 Results of the t-Test on Final Critical Thinking Skills

Variable	**Average**		**Significance of t test**	**Conclusion**
	PS	**CPS**		
Final Critical Thinking Skills	74,18	79,37	0,00	There are differences in critical thinking abilities

Table 11 shows that the t-test results for students' critical thinking skills yielded a significance value of less than 0.05, specifically 0.00. Based on the proposed hypotheses, H1 is accepted, and Ho is rejected. This indicates that there is a significant difference in the critical thinking skills between students taught using the Problem Solving model in the PS class and those taught using the Creative Problem Solving model in the CPS class. The critical thinking skills in the CPS class are higher, with an average score of 79.37, compared to 74.18 in the PS class.

4.7. Analysis of the Effectiveness of Using the Creative Problem Solving Learning Model

The effectiveness analysis was conducted to determine whether critical thinking skills and learning outcomes in the CPS class are higher compared to those in the PS class. Table 12 presents a summary of the final learning outcomes and critical thinking skills between the PS and CPS classes.

Table 12 Summary of Learning Outcomes and Critical Thinking Skills

Variable	Class	Average	Deviation	Sig. t Test	Information
Learning outcomes cognitive	PS	71,74	7,51	0,00	Significant
	CPS	79,25			
Critical Thinking Ability	PS	74,18	7,58	0,00	Significant
	CPS	79,37			

Based on Table 12, it is evident that after treatment, the critical thinking skills in the PS class have a lower average compared to the CPS class, with a difference of 7.58. Similarly, the learning outcomes in the PS class are lower than those in the CPS class, with a difference of 7.51. The magnitude of these differences is statistically significant, with a p-value of 0.00. Since the p-value is less than 0.05, the null hypothesis (Ho) is rejected, indicating that the use of the CPS learning model has a significant impact on critical thinking skills and learning outcomes. Therefore, it can be concluded that the CPS learning model is more effective in enhancing critical thinking skills and learning outcomes compared to the Problem Solving model alone.

5. Discussion

Hamdu & Agustina (2011) define academic achievement as the learning outcomes students obtain after receiving, rejecting, or evaluating information during the teaching and learning process. Different treatments in the PS and CPS classes lead to different learning outcomes. Learning outcomes are considered to have improved when there is an increase in student achievement. In the first meeting, the PS class scored 70.83%, while the CPS class scored 72.92%, with both scores categorized as good, though the CPS class had a slight advantage of 2.09%. The small difference is attributed to students in both classes facing few challenges in understanding the concepts of relative atomic mass (Ar) and relative molecular mass (Mr).

In the second meeting, the PS class scored 75.00%, while the CPS class scored 77.10%, with a difference of 2.10%. The CPS class students were more focused on identifying problems and were motivated to find solutions from the worksheets provided, even actively discussing outside class. In contrast, discussions in the PS class occurred mainly during lesson hours, and students were less engaged, only discussing teacher-directed topics related to stoichiometry.

By the third meeting, CPS students were better prepared for lessons than PS students, as they had reviewed the prerequisites, such as chemical compound naming. CPS students actively engaged in discussions, choosing the most effective solutions, which led to better performance in understanding reaction equations. On the other hand, PS students struggled more with balancing chemical equations and were hesitant to ask questions in class, leading to less effective learning.

By the fourth and fifth meetings, the CPS class consistently outperformed the PS class, scoring higher in learning effectiveness and demonstrating more independence during laboratory practices. CPS students were more familiar with laboratory work due to prior preparation, whereas PS students required more guidance. Overall, the CPS class's learning outcomes were superior, with an average score of 87.24%, compared to 82.03% for the PS class. The collaborative nature of CPS enhanced students' problem-solving skills, critical thinking, and engagement, making it a more effective teaching method than the Problem Solving model alone.

6. Conclusion

Based on the analysis and discussion presented in the previous chapters, the following conclusions can be drawn:

- There is a significant difference in critical thinking skills between students taught using the Creative Problem Solving (CPS) model and those taught using the Problem Solving (PS) model. The average final critical thinking score for students taught using the CPS model is 79.37, compared to 74.18 for students taught using the PS model.

- There is also a significant difference in learning outcomes between students taught using the CPS model and those taught using the PS model. The average learning outcome score for students taught using the CPS model is 79.25, while for those taught using the PS model, it is 71.74.

Suggestions

Based on the analysis and discussion, several recommendations are proposed to enhance the quality of education through the integration of the Creative Problem Solving (CPS) model. It is advised to deepen the understanding and integration of CPS in teaching, encouraging teachers to adopt creative strategies that stimulate innovative thinking among students. Additionally, providing training and development for teachers on CPS implementation, such as through workshops or online training, is crucial to help them effectively apply this method.

Further recommendations include exploring ways to integrate creative elements into the curriculum, such as through problem-based projects and real-world case discussions that encourage innovative solutions from students. Ongoing research and evaluation are also necessary to better understand the factors contributing to the different outcomes between CPS and Problem Solving models. Individual feedback for students based on their critical thinking and learning outcomes can guide them in identifying areas for improvement and developing more effective learning strategies.

Finally, fostering collaboration between teachers and researchers can enhance the development of more effective teaching models, while formative assessment tools should be developed to help teachers monitor students' critical thinking skills regularly. Involving students in the development of teaching methods and gathering their feedback can ensure continuous improvement and adaptation of the teaching approaches to better meet students' needs.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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