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Implementation of Problem Based Learning Through Outbound to Develop Emotional Intelligence in Elementary Schools

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Abstract: The current Generation Z often exhibits advanced technological skills but struggles with social-emotional aspects like individualism, low motivation, and lack of empathy. This study investigated how problem-based learning (PBL) via outbound activities could foster emotional intelligence in elementary students. A pretest-posttest control group experimental design was employed, involving 30 fourth-grade students from SD Negeri Tempurejo 01, Lumajang Regency. Fifteen students in Class A served as the experimental group, receiving PBL through outbound, while Class B, also with fifteen students, was the control group, taught by conventional lecture and discussion. Emotional intelligence was measured using pre- and post-tests across indicators: Self-Awareness, Self-Regulation, Motivation, Empathy, and Social Skills. One-Way ANOVA analyzed the data. Results showed a significant increase ($p < 0.05$) in emotional intelligence and its indicators in both groups. Crucially, the experimental group's average post-test score was significantly higher ($p < 0.05$) than the control groups. Motivation saw the highest increase, while Self-Regulation showed the lowest. This suggests that PBL through outbound significantly enhances elementary students' emotional intelligence development. Further strategy refinement is recommended to optimize growth across all indicators, particularly Self-Regulation.

Keywords: Emotional Intelligence; Elementary Schools; Problem Based Learning through outbound.

Introduction

The rapid advancements in knowledge and technology characterize the 21st century, profoundly shaping the current generation, often termed Generation Z (Rosyid et al., 2024). This era necessitates not only technological sophistication but also robust socio-emotional capabilities to navigate its complexities. Developing such attributes, particularly emotional intelligence, is crucial for individuals to thrive and adapt amidst continuous change, fostering resilience and positive societal engagement

Generation Z, uniquely connected to technology and the internet (Arniti et al., 2023), often exhibits distinct perspectives, sometimes leading to a perceived "Strawberry Generation" vulnerability when facing life's pressures. In this context, emotional intelligence becomes paramount. Defined as the ability to manage one's emotions, foster self-motivation, and build strong interpersonal relationships (Goleman, 2001), it encompasses vital components like empathy (understanding others' feelings) and self-control (regulating one's own emotions). This crucial trait is not inherited but developed through learning (Shapiro &

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Lawrence, 1997) and is a pivotal factor for academic and personal success (Goleman, 2001; Damayanti et al., 2021).

Despite its critical importance, the state of emotional intelligence among elementary school students is concerning, manifesting as low motivation, limited social care, and increased individualism or lack of collaboration. This concerning trend underscores a fundamental challenge in fostering healthy interpersonal relationships and overall well-being from an early age. While government efforts to overhaul the curriculum, such as integrating IPAS (Science and Social Studies) with relevant botanical material (Ministry of Education, 2022), aim to cultivate robust conceptual understanding, these modifications alone have shown limited impact. Persistent challenges in the learning process itself demand innovative solutions, highlighting the urgent need for more effective educational models and methodologies.

One promising model for addressing these challenges is Problem-Based Learning (PBL), founded on constructivist principles (Arends, 2012). PBL encourages active student engagement in solving contextual problems, fostering knowledge construction and critical thinking (Barrett, 2017; Sofyan et al., 2017). Notably, PBL can cultivate essential learning attitudes like empathy, discipline, responsibility, and honesty (Yulianto, 2023). This model gains further potency when integrated with outbound methods, which provide challenging yet enjoyable real-world experiences that enhance coordination, focus, and collaboration through recreational games (Widiasworo, 2020; Susanta, 2010). Existing research affirms PBL's efficacy in boosting emotional intelligence (Bifing, 2021) and outbound learning's role in increasing motivation and character development (Susanti et al., 2023). However, studies specifically combining Problem-Based Learning through outbound activities to enhance emotional intelligence, particularly within the context of plant material for elementary students, remain very limited. Therefore, this research aims to fill this critical gap, providing valuable insights into an innovative pedagogical approach that can significantly contribute to the holistic development of elementary students' emotional intelligence.

Method

This experimental research aims to investigate the effect of Problem-Based Learning (PBL) through outbound activities on the emotional intelligence of fourth-grade students learning about plant material. The study employs a nonequivalent control group **design**, utilizing two distinct groups each receiving a different treatment. A pretest and posttest were administered to both groups to ascertain their initial and final conditions, ultimately determining if there was a significant difference between the experimental and control groups.

Time and Place of Research

The research was conducted at SDN Tempurejo 01, Tempursari Subdistrict, Lumajang Regency. The specific timeframe for data collection and intervention spanned from October 18, 2025 to December 16, 2025 during the Semester I of the 2024/2025 academic year. The population for this study consisted of all fourth-grade students at SDN Tempurejo 01, Tempursari Subdistrict, Lumajang Regency, totaling 30 students across two classes. The sample for this study included Class IVa (15 students) as the experimental group and Class IVb (15 students) as the control group. The determination of which class served as the experimental or control group was based on a preliminary homogeneity test of learning outcomes conducted on both classes. If both classes were found to be homogeneous, one class was then randomly selected as the control group, and the other as the experimental group.

Tools and Materials

a. Learning Modules:

Experimental Class: Problem-Based Learning module integrated with outbound activity guidelines for plant material and Control Class: Conventional learning module (teacher's existing lesson plans) for plant material.

b. Assessment Instruments:

Emotional Intelligence Questionnaire: This instrument was used for both pretest and posttest data collection. It consists of items designed to measure emotional intelligence based on five key indicators (Goleman, 2001): Self-Awareness, Self-Regulation, Motivation, Empathy and Social Skills.

Research Methods

This study utilized an experimental research design, specifically a nonequivalent control group design. This design was chosen because random assignment of individual students to groups was not feasible within the existing classroom structure. Instead, intact classes were assigned to either the experimental or control condition.

- Experimental Group: Class IVa, comprising 15 students, received instruction using the Problem-Based Learning model integrated with outbound activities on plant material.
- Control Group: Class IVb, also comprising 15 students, received instruction using the existing conventional learning methods at the school (e.g., lecture and discussion) on the same plant material.

Research Stages

The research followed these sequential stages:

a. Preparation Phase.

Obtaining research permits from Principal of SDN Tempurejo 01, developing and validating the learning modules (pbl with outbound and conventional), developing and validating the emotional intelligence questionnaire., conducting a preliminary homogeneity test of existing learning outcomes for class iva and class ivb to ensure initial equivalence and assigning classes as either experimental or control group based on the homogeneity test results.

b. Implementation Phase:

Pretest: The emotional intelligence questionnaire was administered to both the experimental and control groups to gather baseline data. Intervention: The experimental group received instruction using the PBL through outbound model on plant material for a predetermined period. The control group received instruction using the conventional learning methods on the same plant material for the same period. Posttest Administration: Upon completion of the learning intervention, the emotional intelligence questionnaire was administered again to both groups to measure changes.

c. Data Analysis Phase.

Collecting and compiling all pretest and posttest data, conducting prerequisite tests (normality and homogeneity), performing inferential statistical analyses, interpreting the results and drawing conclusions and formulating recommendations.

Data Analysis

The collected pretest and posttest data were analyzed using SPSS for Windows version 26. Prior to conducting the main hypothesis test, preliminary assessments were imperative:

a. Normality Test: To determine if the data for emotional intelligence and its indicators in each group were normally distributed.
b. Homogeneity Test: To assess whether the variances of emotional intelligence scores were homogeneous across the experimental and control groups.

Based on the results of these preliminary tests, the following analytical approaches were planned:

1. Parametric Analysis (If data meet normality and homogeneity assumptions):
   - One-Way ANOVA (Analysis of Variance): This test was the primary method used to determine if there were significant differences in the average emotional intelligence scores (and its indicators) between the experimental group (PBL through outbound) and the control group (conventional learning).
   - Post Hoc Test (e.g., Tukey HSD or Bonferroni): If the One-Way ANOVA yielded a significant difference, a further *post hoc* test would be conducted to pinpoint specific differences between the groups. This step is particularly relevant if there were more than two groups, but even with two, it confirms the direction of the difference.
2. Non-Parametric Analysis (If data violate normality and/or homogeneity assumptions):
   - Kruskal-Wallis Test: If the data were found to be non-normal and/or heterogeneous, the Kruskal-Wallis test, a non-parametric alternative to One-Way ANOVA, would be used to determine significant differences in the average ranks between groups.
   - Mann-Whitney U Test: If the Kruskal-Wallis test indicated a significant difference (and there are only two groups), the Mann-Whitney U test would be performed as a *post hoc* analysis to identify the specific group differences.

Result and Discussion

Our research builds on existing studies by bringing two effective educational approaches together: Problem-Based Learning (PBL) and outbound activities. While previous research has shown the benefits of each method individually, we're exploring what happens when they're combined to boost elementary students' emotional intelligence.

For example, a 2021 study by Bifing in Ponorogo found that PBL significantly improved elementary students' emotional intelligence and reading comprehension. This confirms our focus on emotional intelligence as a key outcome and highlights PBL's potential for students' emotional growth.

Separately, Susanti et al.'s 2023 research on outbound activities revealed their positive impact on student motivation after the COVID-19 pandemic. Their work emphasized how these outdoor experiences help students develop crucial skills, leading to better education quality and stronger character. These motivational and character-building aspects are closely linked to emotional intelligence, especially self-regulation and social skills.

While Bifing (2021) focused solely on PBL and Susanti et al. (2023) on outbound, neither explored the powerful combination of both. This is where our study, "Implementation of Problem Based Learning Through

Outbound to Develop Emotional Intelligence in Elementary Schools," offers something new. We aim to bridge this gap by investigating how contextual problem-based learning combined with challenging outdoor experiences can collectively enhance students' emotional intelligence. We expect this integrated approach to provide a deeper understanding of innovative strategies that effectively address the social-emotional challenges faced by students today.

The present study is an observational one, and as such, it is important to consider the observations made during research. These observations relate to the implementation of learning, and they are assessed from three perspectives: initial learning activities, core activities and final learning activities. The implementation of the learning process was observed in two classes: the experimental class, which followed the PBL model through outbound activities, and the control class, which followed the existing learning at school. The experimental class engaged in learning about plant body parts, photosynthesis, and plant reproduction.

First meeting, the preliminary activity of learning is carried out pretest to ascertain the students' initial ability, which is conducted in both the control and experimental classes. The implementation of learning in the control class was conducted by the class IVb teacher in accordance with conventional methods. In contrast, the experimental class adopted a problem-based learning approach through oubound, adhering to the steps of PBL. Learning in the experimental class is learning plant body parts, photosynthesis and reproduction.

Figure 1. Pretest measuring emotional intelligence.

The first learning process begins with problem orientation to provide an understanding of plants by the teacher. Furthermore, dividing students into 4 groups, after forming the experimental class learning is carried out in the field close to the community garden so that students can directly observe various types of plants. They examined plant parts such as roots, stems, leaves, flowers, and seeds. Then conduct simple experiments to observe the absorption of water by roots and colour changes in stems and leaves, measure the diameter of the stem and see the difference in leaves, and the teacher is here as a guide if there are groups that do not understand in the observation process. This learning process turns out to have a good impact because it can make students able to develop material according to their thinking power as evidenced by the results of observations that they compile a complete report on the experiment of plant body parts and they are able to present the results of observations with their groups which are then analysed. The next process is to evaluate the process of all to determine the success of learning and carried out in class.

The second meeting all the steps are the same as the first meeting but what is different is the learning material which is about photosynthesis. Students learnt about photosynthesis, students conducted a simple experiment by soaking a fresh leaf in water and placing it in the sun and one in the shade. They observed the bubbles that appeared on the leaves and noted the difference. They also observe the process of photosynthesis through a video to provide sufficient understanding. After that they will compile a complete report on the experiment of photosynthesis and observe the video. Then together with the group they will present the results of the report and then evaluate it together.

The third meeting students learn about reproduction that occurs in plants. In the process of reproduction they will observe the video prepared by the teacher. After that they will compile a complete report on the video observations they watched. The results that they have compiled will be presented in class in turn by each group. Here are some pictures of the learning process:

Figure 2. Plant body part experiment

Figure 3. Observation on photosynthesis

Figure 4. Video observation of plant reproduction.

The findings of the learning process in both the experimental class and the control class, with the mean value of the emotional intelligence pretest in the experimental class, are as follows: an average total score of 905 and a posttest average total score of 1,307. In the experimental class, the mean value of the emotional intelligence pretest was 60.33, with a total score of 905, and the mean value of the posttest was 87.13, with a total score of 1,307. In the control class, the mean value of the pretest was 58.33, with a total score of 875, and the mean value of the posttest was 81.00, with a total score of 1,215. Data processing researchers use SPSS software version 26 One-Sample Kolmogorov-Smirnov test which is used to analyse data from each variable. The analysis data can be seen in Table 1.

Tabel 1. Data Analysis Emotional intelligence

		Emotional Intelegence Pretest Control Group	Emotional Intelegence Postest Control Group	Emotional Intelegence Pretest Exp Group	Emotional Intelegence Postest Exp Group
N		15	15	15	15
Normal Parameters[a,b]	Mean	58.33	81.00	60.33	87.13
	Std. Deviation	5.88	6.32	5.81	3.98
Most Extreme Differences	Absolute	.212	.203	.210	.120
	Positive	.188	.130	.144	.117
	Negative	-.212	-.203	-.210	-.120
Test Statistic		.212	.203	.210	.120
Asymp. Sig. (2-tailed)		.069[c]	.097[c]	.073[c]	.200[c,d]

a. Test distribution is Normal.
b. Calculated from data.
c. Lilliefors Significance Correction.
d. This is a lower bound of the true significance.

The results of the One-Sample Kolmogorov-Smirnov test with Lilliefors correction, the data for the pre-test and post-test of emotional intelligence in both groups (control and experimental) can be assumed to be normally distributed because the p values for all of them are greater than 0.05. Then to test the difference between groups and determine homogeneity, One Way Anova analysis will be used. The results can be seen in Table 2 and Table 3.

Table 2. Average emotional intelligence

Levene Statistic	df1	df2	Sig.
.940	3	56	.428

The data above shows that the data is homogeneous Sig.0,428 > 0,05.

Table 3. Anova analysis of emotional intelligence

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	9488.200	3	3162.733	101.883	.000
Within Groups	1738.400	56	31.043		
Total	11226.600	59			

The results of the above values with Sig. 0.000 <0.05, indicate a statistically significant difference in the average emotional intelligence, as demonstrated in Table 4.

Table 4. Comparison of Emotional Intelligence Averages

Group	Pre-Tes	Post-Tes
Control	58.03 ± 5.88	81.00 ± 6,32
Experiment	60.03 ± 5.81	87.13 ± 3.98

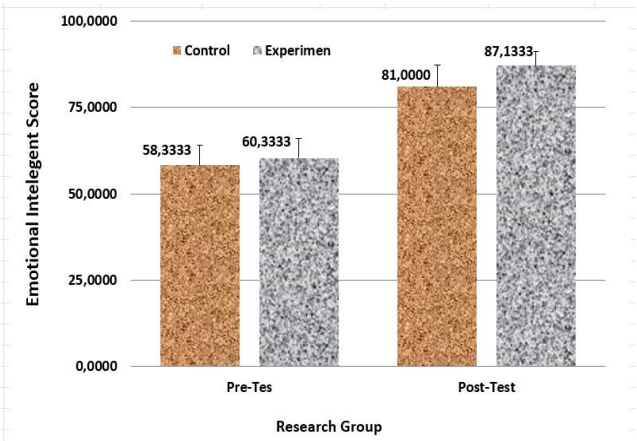

Figure 6. Graph of Average Emotional Intelligence Score

From the comparison data above, it proves that the average score of Pre-test control and Pre-test Experiment is not significantly different with a Sig.0.330 value (p> 0.05), it appears that the average experimental Post-test Score is significantly higher than the average Post-test control Score with a Sig.0.004 value (p < 0.05). This proves that PBL learning through outbound is able to develop the emotional intelligence of elementary school students.

A more detailed analysis was conducted on the indicators of students' emotional intelligence in PBL learning through Outbound, namely: self-awareness, self-regulation, motivation, empathy, and social skills. The results of the Kolmogorov-Smirnov test analysis proved that the indicators of students' emotional intelligence were not normally distributed (p < 0.05) in the pretest of the experimental group. Therefore, the test of differences between groups was carried out using Kruskal Wallis non-parametric statistics followed by Mann Whitney.

Self-Awareness

The results of the Kruskal Wallis analysis proved that the mean Self-Awareness scores among the 4 research groups were significantly different as indicated by Sig. 0.000. Furthermore, to find out the difference between groups, the Mann Whutney test was conducted. The results of the analysis are as follows (Table 5).

Table 5. Comparison of Average Score of Self-Awareness Indicator

Group	Pre-Tes	Post-Tes
Control	13.67 ± 2,29	16,67 ± 1,63
Experiment	14,33 ± 3,20	19.07 ± 0,96

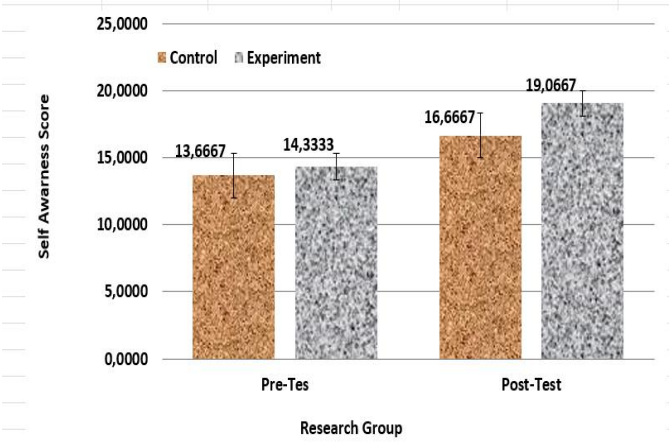

Figure 7. Graph of Average Score of Self-Awareness Indicator.

The results of the Mann-Whitney test demonstrate that the mean score of the students' Pre-Test Self-Awareness in the experimental and control groups is not significantly different, as indicated by the Sig. value. 0.407 (p > 0.05). It is evident that the Post-test scores in both the experimental and control groups are significantly higher than the Pre-Test scores (p < 0.05). While the Post-test score in the experimental group was found to be significantly higher than the Control Post-test score, as indicated by a Sig value. 0.004 (p < 0.05). These findings demonstrate that the implementation of PBL learning through Outbound is a highly effective strategy for enhancing the emotional intelligence of elementary school students.

Self-Regulation

The results of the Kruskal Wallis analysis proved that the mean Self-Regulation scores between the 4 research groups were significantly different as indicated by the Sig value. 0.000. Furthermore, to determine the

difference between groups, Mann Whutney test was conducted (Table 6).

Table 6. Comparison of Mean Self-Regulation Scores

Group	Pre-Tes	Post-Tes
Control	9.53 ± 1.41	12.27 ± 1.79
Experiment	10.47 ± 1.85	13.078 ± 1.61

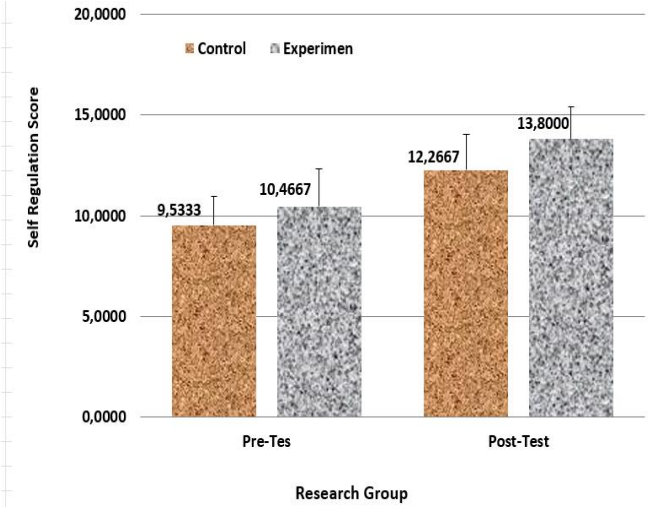

Figure 8. Graph of Average Score of Self-Regulation Indicator.

The value of Sig. 0.132 (p > 0.05) demonstrated that there was no significant difference between the mean scores of the experimental and control groups on the Pre-Test Self-Regulation. Consequently, it can be posited that the post-test scores of both the experimental and control groups exceed their pre-test scores to a considerable degree (p < 0.06). While the Post-test score in the experimental group was found to be significantly higher than the Control Post-test score, as indicated by a Sig value. 0.015 (p < 0.05).These findings demonstrate that the implementation of PBL learning through outbound activities is a significant catalyst for the development of self-regulation skills in elementary school students.

Motivation

The results of the Kruskal Wallis analysis proved that the mean motivation scores between the 4 research groups were significantly different as indicated by the Sig value. 0.000. Furthermore, to find out the difference between groups, the Mann Whutney test was conducted as follows (Table 7).

Table 7. Comparison of Motivation Mean Scores

Group	Pre-Tes	Post-Tes
Control	11.00 ± 2.07	15.33 ± 2.09
Experiment	12.33 ± 2.58	18.20± 1.57

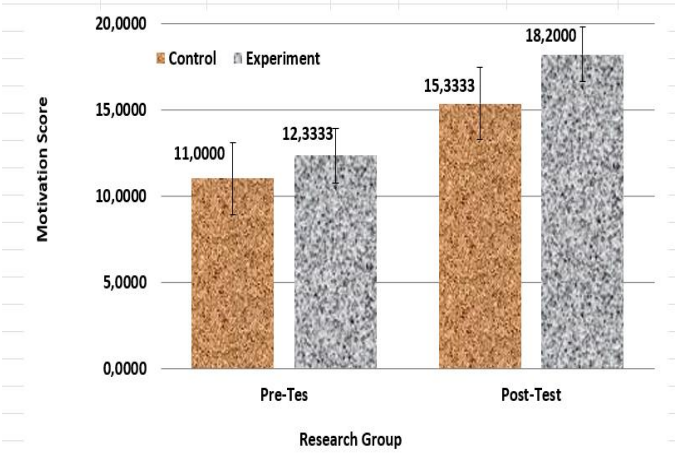

Figure 9. Graph of Motivation Average Score

The Mann-Whitney test findings, with a significant value of 0.089 (p > 0.05), indicate that there is no significant difference between the mean Pre-Test Motivation score of students in the experimental and control groups. Consequently, it can be concluded that the post-test scores of both the experimental and control groups are significantly higher than their pre-test scores (p < 0.06). However, a Sig value of 0.000 (p < 0.05) demonstrated that the experimental group's post-test score was significantly higher than that of the control group. The findings demonstrate that implementing PBL learning through Outbound is a highly effective strategy for enhancing motivation in elementary school students.

Emphaty

The results of the Kruskal Wallis analysis prove that the average Emphaty score between the 4 research groups is significantly different, as indicated by the Sig value. 0.000. Furthermore, to find out the differences between groups, the Mann Whutney test was carried out as follows:

Table 8. Comparison of Emphaty Average Score

Group	Pre-Tes	Post-Tes
Control	11.33 ± 2,07	13.66 ± 2.29
Experiment	10.67± 1.76	17.73± 2.19

The Mann-Whitney test findings indicate that there is no statistically significant difference in the mean Pre-Test score of student empathy between the experimental and control groups (Sig. value of 0.398, p > 0.05). Consequently, it can be concluded that the post-test scores of both the experimental and control groups are significantly higher than their pre-test scores (p < 0.06). However, a Sig value of 0.000 (p < 0.05) demonstrated that the experimental group's post-test score was significantly higher than that of the control group. The

findings of this study demonstrate that the integration of outbound learning with problem-based learning is an effective strategy to facilitate the development of empathy in elementary school pupils.

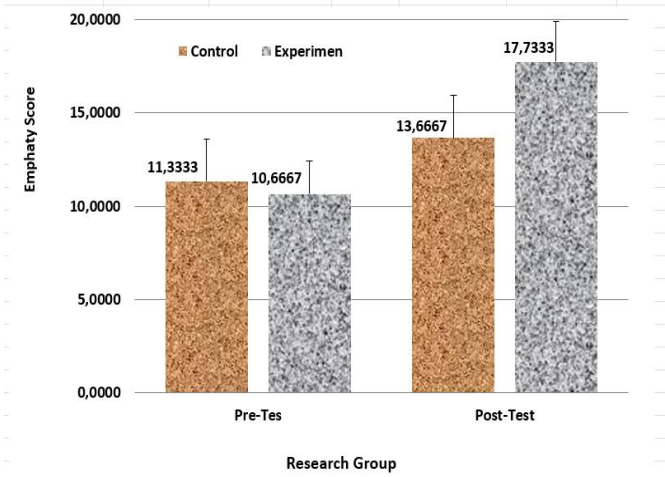

Figure 10. Graph of Emphaty Average Score

Social Scills

The results of the Kruskal Wallis analysis proved that the mean Social Skills scores between the 4 research groups were significantly different as indicated by the Sig value. 0.000. Furthermore, to find out the difference between groups, the Mann Whutney test was conducted as follows:

Table 9. Comparison of Average Social Scills Scores

Group	Pre-Tes	Post-Tes
Control	11.67 ± 3,09	15.87 ± 2.33
Experiment	12.33± 2,59	18.47± 1.73

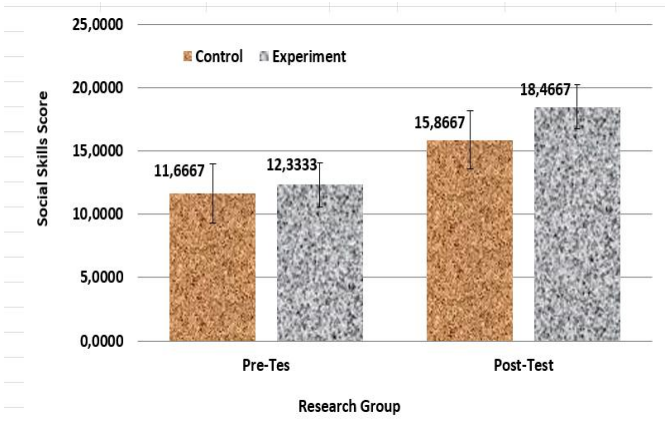

Figure 11. Graph of Average Social Scills Score

The statistical significance value of 0.465 ($p > 0.05$) indicates that there is no significant difference between the mean scores of the experimental and control groups on the pre-test social skills scale, according to the results of the Mann-Whitney test. Consequently, it can be concluded that both the experimental and control groups' post-test scores are significantly higher than their pre-test scores ($p < 0.06$). However, a Sig value of 0.006 ($p < 0.05$) demonstrated that the experimental group's post-test score was considerably greater than the control group's. These findings imply that the implementation of problem-based learning through outbound education significantly accelerates the development of social skills in elementary school students. A more detailed exposition of these results is provided in the subsequent Table 10 and Figure 12.

Table 10. Comparison of Average Social Scills Scores

Indikator	Control_Post	Exp_Post
Self Awarnes	16.6667	19.0667
Self Regulation	12.2667	13.8000
Motivation	15.3333	18.2000
Emphaty	13.6667	17.7333
Social Skills	15.8667	18.4667

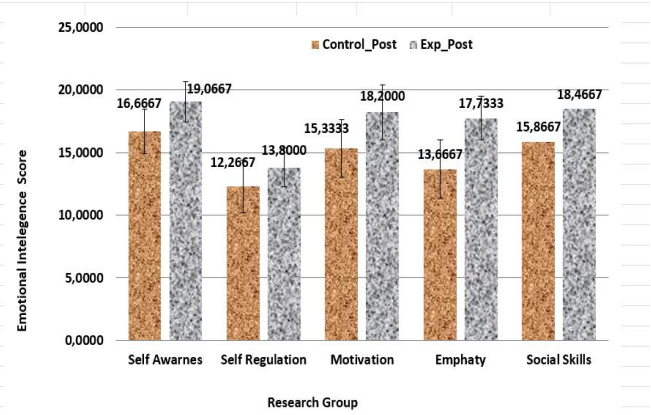

Figure 12. Graph of Average Social Scills Score.

The results of the analysis demonstrate a significant disparity in the emotional intelligence of students who follow learning with the Problem Based Learning model through Outbound, in comparison to those who adhere to conventional learning methods. This happens because Problem Based Learning through Outbound provides an ideal environment to develop students' emotional intelligence. It is evident that students can acquie the capacity for emotional recognition and management, as well as the ability to comprehend and appropriately respond to the emotions of others, through a series of experiential exercises and activities. Such activities encompass collaboration and self-reflection, with an objective to stimulate positive emotions.

The present study corroborates the findings of Rosalita (2022), which demonstrated that the Problem-Based Learning (PBL) pedagogical model is conducive to enhancing students' skills, especially in identifying problems, drawing conclusions and managing time

efficiently. Thus, students can gain deeper knowledge and meaning from the learning process.

The research undertaken has yielded positive outcomes in terms of enhancing student learning outcomes; however, it has not attained complete student completion, as evidenced by post-test scores. This can be attributed to the influence of various factors, including intelligence, motivation, interest, and the family or peer environment (Erni et al., 2022). Completion rates can be further assessed through daily grades, student participation in learning activities, and changes in student behaviour post-learning (Erni et al., 2022). The Problem-Based Learning (PBL) pedagogical approach has been demonstrated to facilitate student development across a range of cognitive, affective and psychomotor domains. This occurs through the students' internal appreciation of the problems they encounter. especially affective aspects which include behavioural traits such as interests, feelings, emotions, attitudes, or values. This problem solving process helps students integrate the knowledge they previously acquired with the problem or information obtained to be able to offer various alternative solutions (Abidin, et al, 2024).

Problem Based Learning model, the teacher also has the activity of motivating students, this is what makes students also more accustomed to motivating themselves. According to Prayitno and Utami (2021) also said that the Problem Based Learning model utilises real problems as a means for students to be able to improve emotional intelligence and problem solving skills. As a result, the atmosphere that spreads in the classroom is far from being bored and uncomfortable. This can support the improvement of students' emotional intelligence.

The findings of the research indicate that students who employed the Problem Based Learning model demonstrated enhanced emotional intelligence in comparison to their counterparts who utilised conventional methods, such as lectures and assignments. This finding suggests that the Problem Based Learning model encourages students to actively seek solutions, in contrast to conventional methods that tend to make students more passive by focusing on explanations from the teacher. A key benefit of the Problem Based Learning model is that it enhances students' awareness that learning does not have to be teacher-centred, emphasising instead their active participation and motivation in the learning process.

This has the potential to impede the problem-solving process. However, research indicates that the implementation of the Problem-Based Learning model through Outbound learning is of significant interest in this study can facilitate the overcoming of these obstacles. The utilisation of Outbound methodologies fosters heightened student engagement and motivation in problem-solving endeavours. It is recommended that future researchers extend this research by incorporating additional variables and increasing the size of the sample. A further avenue for research could involve the exploration of the long-term impact of Problem Based Learning on students' emotional intelligence, along with other factors that may influence the implementation and effectiveness of this pedagogical approach.

Conclusion

This experimental study, using a pretest-posttest nonequivalent control group design with 30 students, investigated the impact of Problem-Based Learning (PBL) through outbound activities on elementary students' emotional intelligence. Emotional intelligence was measured using a questionnaire across five indicators: self-awareness, self-regulation, motivation, empathy, and social skills.

Data analysis via SPSS (Version 26), following successful normality tests, employed a One-Way ANOVA. The findings revealed that both experimental and control groups showed improvements in emotional intelligence from pretest to posttest. Specifically, the experimental group's mean score increased from 60.03 to 87.13, while the control group's rose from 58.03 to 81.00. Crucially, while the initial pretest scores between groups were not significantly different ($p > 0.05$), the posttest scores of the experimental group were significantly higher than those of the control group ($p < 0.05$).

This significant difference definitively concludes that the Problem-Based Learning model implemented through outbound activities is more effective in developing the emotional intelligence of elementary school students compared to conventional learning methods. This suggests that combining problem-solving with engaging outdoor experiences provides a powerful approach to fostering essential socio-emotional skills in young learners.

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Authors Contribution
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