**Experiential Learning Strategy: Its Effect on Science Performance of Grade VI Pupils at Ripang Elementary School**

**Short Research Article**

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**ABSTRACT**

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| This study aimed to determine the effect of the Experiential Learning Strategy (ELS) on the science performance of Grade 6 pupils at Ripang Elementary School during the School Year 2024–2025. Grounded in the K to 12 learner-centered and inquiry-based science curricula, the study addressed the ongoing challenge of poor science achievement among Filipino students, as reflected in the 2022 PISA results. Specifically, the study sought to answer the following research questions: (1) What is the pre-test performance in science of the control and experimental groups before the implementation of ELS? (2) What is the post-test performance of these groups after the intervention? (3) Is there a significant difference in post-test performance between the groups when gender is considered? Three null hypotheses were tested: (1) There is no significant difference in the pre-test performance between groups; (2) There is no significant difference in the post-test performance between the groups; and (3) There is no significant difference in the post-test performance when analyzed by gender. The study employed a two-group pre-test and post-test experimental design. The participants were 26 Grade 6 pupils, divided equally into control and experimental groups through total enumeration. The control group received traditional instruction, while the experimental group was taught using ELS. A standardized 40-item multiple-choice test, aligned with PROJECT SMART for Science 6, was used to measure performance before and after the intervention. The results revealed that both groups performed poorly in the pre-test. However, in the post-test, the experimental group achieved a significantly higher mean score (M=32, "Good") compared to the control group (M=30, "Fair"). A t-test showed a statistically significant difference in favor of the experimental group (p = 0.040), leading to the rejection of the null hypothesis. Gender-based analysis showed that ELS improved science performance for both male and female students, suggesting no gender bias in its effectiveness. In conclusion, the Experiential Learning Strategy significantly enhanced the science performance of Grade 6 pupils at Ripang Elementary School. It promoted active engagement, deeper understanding, and equitable academic outcomes. It is therefore recommended that science teachers integrate experiential learning approaches in their instruction to foster more meaningful, inclusive, and effective learning experiences in science education. |

*Keywords: Experiential Learning Strategy, Performance, Science*

**1. INTRODUCTION**

Science learning is a vehicle for students to learn about themselves and their environment, as well as the prospect of further development when applied to everyday life. The K to 12 science curriculum is learner-centered and inquiry-based, emphasizing evidence in constructing explanations. Concepts and skills in Life Sciences, Physics, Chemistry, and Earth Sciences are presented with increasing levels of complexity from one grade level to another in a spiral progression, thus paving the way to a deeper understanding of core concepts (Orbe, J. R., Espinosa, A. A., & Datukan, J. T., 2018). The K-12 curriculum paved the way for developing innovative, reflective, collaborative, and critical thinking skills. Teachers opted to adapt different teaching strategies to cater to the diverse needs of the learners (Department of Education, 2016).

One of the strategies that is widely used by teachers in teaching science is the experiential learning approach. Experiential learning is an educational approach that focuses on learning through real experiences and direct interaction with the learning environment (Thi Thu, D.H.N., Chung, V. T., & Thi Nam, B., 2024; Miettinen, 2000). Furthermore, the experiential learning approach involves students in a complex understanding rather than surface learning and enables students to transfer knowledge better (Kasim, A.-., Shimar, H.,& Bakil, H. A., 2024). Moreover, activities and environments associated with experiential learning, such as experiments, are primary examples of how experiential learning acts as a bridge to developing the skills of the students and encouraging them to actively engage in the subject matter (Tanner, S., Green, K., & Burns, S. 2012; Alvi & Gillies, 2021; Hanratty & Taggart, 2005; Mutmainah R., Rukayah,&Indriayu, M. 2019).

In the Program for International Student Assessment (PISA) results in 2022, the Philippines was ranked 77th among 81 PISA-performing countries worldwide. The Philippines had the lowest mean score in science (356/600). Insufficient access to quality science education and resources is a major factor contributing to students’ low academic achievements (Magsambol, 2024). Moreover, it is reported that not all schools in the Philippines have access to adequate science materials, including laboratory equipment and up-to-date textbooks, which hinders students' practical understanding of scientific concepts (Organisation for Economic Co-operation and Development [OECD], 2023). This lack of resources leads to students being less motivated in class, resulting in low adaptability and comprehension. As a result, students fail to learn scientific phenomena on certain topics and are unable to connect theories and knowledge from the classroom to real-world situations.

Experiential learning emphasizes cognitive, affective, and psychomotor aspects (Susiloningsih, E., Sumantri, M. S., &Marini, A., 2023). This approach provides students with high-impact learning experiences through several pedagogical methods (Vecchiarini, M., Muldoon, J., Smith, D., &Boling, R., 2023). Effective experiential learning opportunities have many advantages: they are learner-centered and student-directed, structured with an emphasis on problem-solving, discovery, and inquiry, and focus on practical applications of course content. These strategies promote a holistic understanding of a discipline, perception-based learning, and a heuristic process—learning about learning (Anthony, J., Ewing, M., Jaynes, J., & Perkus, G., 1990). With these benefits, the use of experiential learning approaches can improve the quality of education, and it is recommended that such approaches be applied, especially in science learning.

**2. Statement of the problem**

The study aimed to determine the effect of the Experiential Learning Strategy (ELS) on the science performance of Grade 6 pupils of Ripang Elementary School. This initiative aligns with the Philippine government's mandate through the Department of Education (DepEd) to implement a learner-centered and inquiry-based curriculum under the K to 12 Basic Education Program. The government plays a crucial role in promoting innovative teaching strategies, such as experiential learning, to meet the evolving educational needs of students and to raise national academic standards, particularly in science and mathematics, as highlighted in global assessments like PISA. Despite these curriculum reforms, many teachers still rely heavily on traditional, lecture-based instruction. When educators do not adopt experiential learning strategies, students are deprived of active engagement, hands-on experiences, and real-world applications of scientific concepts. This often results in surface-level understanding, low interest, and poor retention of knowledge, all of which contribute to weak academic performance. Before this study, the performance of pupils in science at Ripang Elementary School was notably poor, as evidenced by low mean scores in standardized assessments. This underperformance reflects broader national trends, such as the Philippines’ low ranking in the 2022 PISA results, where it placed 77th out of 81 countries in science. Such alarming outcomes underscore the urgent need to explore more effective instructional approaches, such as the Experiential Learning Strategy, to enhance student achievement and foster deeper understanding in science education.

The primary objective of this study was to determine the effect of the Experiential Learning Strategy (ELS) on the science performance of Grade 6 pupils at Ripang Elementary School.

Specifically, sought to answer the following questions:

1. What is the pre-test performance in Science of the control and experimental groups before the implementation of the Experiential Learning Strategy (ELS)?
2. What is the post-test performance in Science of the control and experimental groups after the implementation of the Experiential Learning Strategy (ELS)?
3. Is there a significant difference in the post-test performance in Science between the control and experimental groups when gender is considered as a variable?

**2.1. Hypothesis**

1.There is no significant difference in the pre-test performance in science before the use of the Experiential Learning Strategy (ELS).

2. There is no significant difference in the post-test performance in science between the control group and the experimental group after the use of the Experiential Learning Strategy (ELS).

3. There is no significant difference in the post-test performance in science between the control and experimental groups.

**3. METHODOLOGY**

**3.1 Research Design**

The study utilized a two-group pre-test and post-test experimental design to measure the effect of the Experiential Learning Strategy (ELS) on the science achievement of Grade 6 pupils. In this design, the experimental group received instruction through ELS, while the control group was taught using traditional methods. This design was selected because it allows for the comparison of learning gains between groups while controlling for initial differences in performance. According to Creswell (2014), the pre-test–post-test control group design is effective for determining cause-and-effect relationships by assessing the impact of an intervention over time. Furthermore, Campbell and Stanley (1963) assert that this design strengthens internal validity by enabling researchers to attribute changes in the dependent variable (student achievement) to the independent variable (teaching strategy), rather than to external factors. Additionally, gender was considered a classification variable. The performances of male and female students were analyzed separately to determine whether gender influenced the effectiveness of the Experiential Learning Strategy. This provided deeper insight into how different groups of learners responded to the intervention.

**3.2 Locale of the Study**

The study was conducted at Ripang Elementary School (RES), located in Purok 3, Ripang, Conner, Apayao, during the School Year 2024–2025. RES is one of the barangay schools in the Northern Conner District Division of Apayao.

**3.3 Participants of the Study**

The participants were the Grade 6 pupils of Ripang Elementary School, composed of 18 males and 8 females, a total of 26 learners. The class was divided into two groups: 13 pupils in the control group and 13 pupils in the experimental group. Total enumeration was employed. Gender distribution was recorded to facilitate gender-based analysis of results.

**3.4 Research Instrument**

The primary instrument used in the study was a 40-item multiple-choice test prescribed by the Department of Education–CAR. Both the pre-test and post-test were sourced from PROJECT SMART (Standardized and Meaningful Assessment Result-Based Teaching) for Science 6.

**3.5 Data Gathering Procedure**

Permission to conduct the study was obtained from the Public Schools District Supervisor (PSDS) of Northern Conner District and the School Head of Ripang Elementary School. Upon approval, the researcher utilized her assigned time in the Science class to implement the study. The pre-test was administered on the first day of the scheduled week aligned with the chosen learning competency. Students were divided into experimental and control groups with matched abilities based on their first and second quarter academic performance. Learners were randomly assigned to groups, with careful consideration given to maintaining a balance in ability levels between the two groups. The control group was taught using traditional methods, while the experimental group received instruction using the ELS approach. The control group had classes from 1:30 p.m. to 2:20 p.m., while the experimental group was taught from 2:21 p.m. to 3:11 p.m. The intervention lasted for eight weeks, with sessions conducted every Tuesday and Thursday. After the intervention period, a post-test was administered to both groups.

**3.6 Statistical Analysis**

The mean and standard deviation were computed for the pre-test and post-test scores of both the control and experimental groups. A t-test was used to determine whether there was a significant difference in science performance before and after the intervention. Additionally, student performance was disaggregated by gender to analyze differences in outcomes between male and female learners. This enabled the researcher to examine whether gender influenced the effectiveness of the Experiential Learning Strategy.

**4. RESULT AND DISCUSSION**

**4.1. Pre-test Performance of pupils in science before the use of Experiential Learning Strategy (ELS)**

**Table 1. Mean and Standard Deviation of Performance of Pupils in Science in the Pretest**

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| --- | --- | --- | --- |
| Groupings | Mean | Descriptive Scale | Standard Deviation |
| Control Group | 22 | Poor | 6.39 |
| Experimental Group | 20 | Poor | 4.43 |

The pre-test results show that both the control and experimental groups performed poorly in science before the implementation of the Experiential Learning Strategy (ELS). The control group had a slightly higher mean score of 22 compared to 20 for the experimental group, based on a 40-item multiple-choice test. The relatively high standard deviations indicate wide variation in scores among pupils in both groups. Overall, the low baseline performance justifies the need for an intervention to improve science achievement. When disaggregated by gender, the pre-test scores revealed similar trends, with both male and female pupils in the control and experimental groups demonstrating poor performance. This indicates that, before the intervention, there was no significant gender difference in science achievement.

**4.2. Post-test performance of pupils in science after the use of Experiential Learning Strategy (ELS)**

**Table 2. Mean and Standard Deviation of Performance of Pupils in Science during the Post-test**

|  |  |  |  |
| --- | --- | --- | --- |
| Groupings | Mean | Descriptive Scale | Standard Deviation |
| Control Group | 30 | Fair | 2.18 |
| Experimental Group | 32 | Good | 3.46 |

The post-test results indicate that the experimental group, which received instruction through the Experiential Learning Strategy, performed better than the control group, with mean scores of 32 and 30, respectively, out of 40. This improvement is also reflected in the descriptive scale, where the experimental group achieved a "Good" rating while the control group earned only a "Fair" rating. These findings align with Jannah and Shofiyah (2024), who noted that ELS enhances pupils' science performance by engaging them in hands-on experiments, collaborative discussions, and presentations. The strategy encourages deeper understanding through active exploration and practical application of concepts such as Friction, Gravity, Energy, and Simple Machines. Disaggregated data by gender showed that both male and female pupils in the experimental group improved significantly compared to their counterparts in the control group. This suggests that the ELS approach is effective regardless of gender, promoting better learning outcomes for all pupils.

**4.3 Significant difference in the post-test performance in science between the control and experimental group.**

**Table 3. Test of significant difference in the post-test performance in science between the control and experimental group.**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Grouping | Mean | DS | Std. Deviation | t | df | p | Decision at α= 0.05 |
| Control | 30 | Fair | 2.18 | 2.167 | 24 | 0.040 | Reject Ho |
| Experimental | 32 | Good | 3.86 |

As shown in Table 3, the t-test results reveal a p-value of 0.040, which is less than the significance level of 0.05. Therefore, the null hypothesis is rejected, indicating a statistically significant difference in post-test performance between the control and experimental groups. Pupils taught using the Experiential Learning Strategy performed significantly better in science than those taught using traditional methods. When the analysis was conducted by gender, the difference in performance remained significant for both male and female pupils, confirming that ELS positively impacts science achievement across genders.

**5. Conclusion**

The grade VI pupils who were exposed to the experiential learning strategy (ELS) demonstrated significantly better performance in science compared to those who were not. These results indicate that ELS is effective in enhancing learning outcomes, as reflected in the improved academic performance of the experimental group during the third quarter. The topics covered included friction, gravity, types of energy, energy transformation, and simple machines. Furthermore, when performance was analyzed by gender, both male and female pupils in the experimental group showed marked improvement. This indicates that the ELS approach benefits learners regardless of gender, suggesting that experiential learning provides an inclusive, engaging, and equitable environment that supports academic growth for all students.

**Consent (wherE ever applicable)**

I affirm that the respondents voluntarily agreed to participate after being informed about the purpose, nature, and potential implications of the study. Their responses have been collected with utmost respect for their privacy and confidentiality, in accordance with ethical research guidelines.

**DISCLAIMER (ARTIFICIAL INTELLIGENCE)**

I acknowledge that I have not used Copilot in refining some of the sections in the document.

**Ethical approval (where ever applicable)**

The study was conducted with approval and in accordance with the standards of the college. No ethical approval was required, as the research followed all applicable ethical guidelines, ensuring respect for the respondents’ privacy and confidentiality.

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