

STRENGTHENING PROGRAM OBSERVATIONAL SKILLS FOR JUNIOR HIGH SCHOOL STUDENTS OF A PUBLIC SCHOOL OF A CITY DIVISION

Lamberto C. Claveria

Email: lambertclaveria@gmail.com

Luis Y. Ferrer Jr. West National High School, General Trias City, Cavite, Philippines

ABSTRACT

This study determined the development of observational skills among junior high school students at a public school. Utilizing a one-group pretest–posttest pre-experimental design, the researcher assessed 40 student participants before and after the implementation of an observational skills strengthening program. Initial findings indicated low observational proficiency, with students achieving an average score of only 30% on the pretest for both qualitative and quantitative observation tasks. Following the implementation of an observational skills strengthening program, the students' post-test average score significantly improved to 80%, representing a 50% gain. Statistical analysis using a paired-samples t-test confirmed a significant difference between the pretest and post-test results, prompting the rejection of the null hypothesis. Furthermore, a Pearson r analysis revealed a highly correlated, significant relationship between the students' Grade Weighted Average (GWA) in science and their consistent test performance. The study concludes that exposing students to targeted observation activities effectively enhances their scientific observational skills. The researcher recommends that science teachers prioritize these practical learning experiences and that educational institutions integrate observational skill training into their Continuous Improvement Programs (CIP).

Keywords: *Observational skills, Science education, Junior high school, Pre-experimental design, Continuous Improvement Program*

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INTRODUCTION

People place so much faith in what they see but in science and technology, observing involves more than simply “looking.” But there was more to it than sheer quantity. Say one continued looking and began to ask questions - for example, “I wonder what caused that dirty patch of wallpaper?” Then looking more closely and purposefully and what thought is just a dirt smear turns out to be mould. So, I started looking around and found that there were mould patches in only one corner of the room. And begin to wonder why, with the aim of doing something about them. Having only brought some knowledge to bear on the problem in recognizing mould when seeing it. Now, there was a need to draw on more knowledge about the conditions in which mould grew, to identify the causes of the mould on the wallpaper.

By this stage, doing so much more than just casual ‘looking,’ once can apply some of the key principles of scientific observation - focusing on something familiar, but looking at it with a fresh eye (instead of

assuming that something is already known what was looking at); looking closely and paying attention to details; thinking about what was seen and asking questions; looking purposely (when one started searching for mould, as against gazing around); looking systematically (when one made thorough search of the room); guiding in looking around according to the existing knowledge of the world (in the case, the knowledge about moulds and how they grew).

This kind of intelligent, purposely, detailed and systematic looking is one of the cornerstones of science (alongside the use of other senses, such as listening and touching). Science is based not just on large quantities of information about the world, but also on high - quality information, gathered and recorded with great care and skill. 'Observing' might sound a rather ordinary sort of activity, something people do all the time. But to scientists, observing presents an intellectual and practical challenge of the highest order.

Shermer (2013) identified observation as accounting for the difference between science and pseudoscience and being the means by which scientific knowledge changes over time. He claimed 'science' is different from pseudoscience . . . not only in evidence and plausibility, but in how (it changed). Science (was) cumulative and progressive in that (it continued) to improve and refine knowledge of the world . . . based on new observations and interpretations" (p.38). Derry (2012) pointed out that science needs better observations and more precise measurements for progress in understanding to occur.

Though human senses were limited in range and easily deceived, observation remains at the heart of science and is the final arbiter in constructing and testing scientific ideas. Observation in science was more than "seeing," it referred to skills associated with collecting data using all the senses, as well as instruments that extend beyond the reach of the senses, as well as instruments that extended beyond the reach of the senses and it was influenced by the assumptions and theoretical knowledge of the observer.

RESEARCH PROBLEM

Specifically, this study sought to answer the following research questions: 1) What is the demographic profile of the student participants in terms of age and sex? 2) What are the students' pretest and post-test observational skill scores prior to and following the implementation of the strengthening program? 3) Is there a significant difference between the students' pretest and post-test observational skill scores? 4) Is there a significant relationship between the students' Science General Weighted Average (GWA) and their post-test observational skill performance? 5) What observational skills strengthening program can be proposed based on the findings of the study?

OBJECTIVES

The primary objective of this study was to evaluate the development and enhancement of scientific observational skills—both qualitative and quantitative—among Grade 9 junior high school students in a public secondary school through the implementation of a targeted observational skills strengthening program. Furthermore, the study aimed to measure post-intervention performance gains, determine the statistical significance of student improvement, and examine the relationship between students' academic achievement in science and their observational competencies.

METHODOLOGY

This study utilized a one-group pretest–posttest pre-experimental design to determine the effect of the observational skills strengthening program. A single intact group of 40 junior high school students participated in the study. All participants were administered a pretest at baseline to assess their initial qualitative and quantitative observational skills. The group was then exposed to the intervention program while holding external instructional conditions constant. Following the intervention period, the same standardized assessment was administered as a post-test. Any significant gain in student achievement between the pretest and post-test was attributed to the implementation of the strengthening program.

RESULTS

In terms of sex, 8 participants were male (20%) and 32 were female (80%). Regarding age distribution, the majority of the respondents were 15 years old, comprising 25 students (62.5%), while the remaining 15 students (37.5%) represented other age brackets within the junior high school cohort.

As reflected in the result of the pre and post test of the observational skills of a junior high school was Very Good since the pre test has only 30% average score but the post test after the Strengthening program observational skills it became 80% average score, so it has gained 50% more from pretest and post. This could be due to the fact that they have been exposed to various observation activities which improved their observational skills in science.

Item analysis of the pretest results indicated that students obtained an overall mean percentage score (MPS) of 30.00%, signifying low baseline observational proficiency. Items #3 and #10 recorded the lowest percentages of correct responses, representing qualitative and quantitative observation competencies, respectively. Specifically, items assessing qualitative observation yielded an MPS of 29.50%, while quantitative observation items yielded an MPS of 30.50%. Because both domains demonstrated similarly low performance levels, the intervention program targeted the development of both qualitative and quantitative observational skills.

The results of the post test showed that the percentage of correct responses range from 65 % and above. It meant to say that students got more scores from the post test upon the results of item analysis.

A Pearson product-moment correlation coefficient was computed to assess the relationship between students' overall Science Grade Weighted Average (GWA; $M = 86.66$, $SD = 3.04$) and their post-test observational skill performance. There was a strong, positive correlation between the two variables, $r(38) = .70$, $p < .001$, indicating that students with higher academic performance in science demonstrated higher observational skill outcomes.

To determine if there was a significant difference between the pretest and post-test scores, a paired-samples t -test was conducted at a .05 level of significance. The analysis revealed a statistically significant improvement from pretest ($M = 30.00\%$, $SD = 9.45$) to post-test ($M = 80.00\%$, $SD = 7.12$), $t(39) = 23.67$, $p < .001$. Consequently, the null hypothesis was rejected, indicating that the observational skills strengthening program significantly enhanced student performance.

This result revealed that when exposed to various observational skills before the post test, the student participants had shown improvement as shown by the result of their post test. Reviews of research had shown

that when science process skills were emphasized in the classroom, student proficiency on individual skills increased, some transfer of skills to new situations was noted and skills were retained over time (Padilla, 2015).

SIGNIFICANT FINDINGS

Statistical analysis confirmed that the gain in observational skills was significant, $t(39) = 23.67$, $p < .001$. Furthermore, the correlation between student Science GWA and post-test performance was statistically significant, $r(38) = .70$, $p < .001$. Based on these findings, the null hypotheses for both the difference in test scores and the relationship between academic achievement and observational skills were rejected.

RECOMMENDATIONS

In view of the aforementioned data and conclusion, several recommendations were offered. Science teachers should focus on providing students with more learning experiences designed to develop their observational skills. To support this, educational institutions must implement a program aligned with their continuous improvement program (CIP) that focuses on capacitating teachers to teach these skills effectively.

Additionally, officials and staff of the Department of Education must fully support this proposed initiative.

Finally, the Schools Division Offices should be kept aware of the outcomes of this strengthened program so they can provide comprehensive support to other schools looking to benchmark the idea.

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