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Fighting Against Exhaustion: Experiences of Science Teachers In Facilitating Science Investigatory Projects

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Abstract — Poor facilitation of science investigatory projects (SIPs) remains a global concern. This phenomenological study explored the experiences of science teachers in facilitating SIPs. Ten public high school teachers of Davao City participated in focus group discussions, which revealed two major emerging themes: shifting responsibilities and balancing authority and autonomy. While several sub-themes were aligned with the theoretical framework, no additional sub-themes were identified under the emerging themes. The findings suggest that balancing authority and autonomy may serve as a potential mediating factor between teachers' experiences in acting as SIP facilitators and the knowledge they gain through the process. It is recommended that education committees recognize teachers as key actors in SIP implementation by reducing their teaching loads and assigning them to a single primary responsibility to enhance facilitation quality.

Keywords: Fighting against exhaustion, experiences of science teachers, facilitating science investigatory projects

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I. INTRODUCTION

In today's rapidly evolving global landscape, the facilitation of science investigatory projects (SIPs) by science teachers has become increasingly constrained, making poor facilitation as persistent educational concern (Maslach & Leiter, 2016). The continued presence of poor facilitation in investigatory work weakens the alignment between classroom science instruction and the goals of inquiry-based and research-oriented science education worldwide (Osborne, 2014).

From a global perspective, studies conducted in Turkey indicate that teachers demonstrate poor facilitation in guiding students through investigatory project requirements (Demire & Sahin, 2013). In South Africa, research reveals that science investigatory activities are often insufficiently facilitated, thereby limiting students' exposure to rigorous scientific inquiry practices (Kibirige, Teffo, & Singh, 2022). Similarly, in the United States, research highlights those investigatory projects frequently lack effective instructional guidance, which diminishes students' capacity to meaningful scientific investigations (Blanchard et al., 2010).

Correspondingly, studies in the Philippines have noted that science teachers face ongoing challenges in facilitating Science Investigatory Projects, reflecting gaps in effective instructional practices (Llano Jr., Borja, & Mutya, 2023). As a Davao City-based researcher, I have become aware that the continued presence of poor facilitation in science investigatory projects undermines the educational value of research-based science instruction for both learners and educators (Kibirige, Teffo, & Singh, 2022). Given these circumstances, there is a need to examine more closely the experiences of science teachers in facilitating SIPs.

Theoretical Lens

This study is anchored on Kolb's Experiential Learning Theory. The theory posits that individuals learn most effectively when they move through a cyclical process of experiencing, reflecting, thinking, and acting. This learning process emerges from active engagement in real experiences and thoughtful reflection on those experiences (Kolb, 1984; Kolb & Fry, 1975).

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Conceptual Paradigm

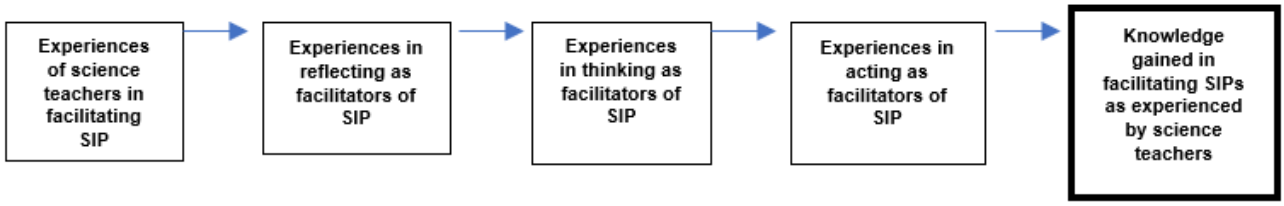

FIGURE 1.
CONCEPTUAL PARADIGM

Research Design

This study employed a qualitative design using a phenomenological approach. Qualitative research is an iterative that enhances understanding within the scientific community (Patrick & Joshi., 2019). Wilson (2018) noted phenomenological approach involves studying how individuals and interprets their world as real or meaningful. This design is distinguished by how the researcher interprets and describes the lived experiences of the science teachers.

Locale of the Study

The study was conducted in public secondary schools in Davao City that implement Science Investigatory Projects (SIPs). The target participants were science teachers, as they play an essential role in ensuring a safe and healthy learning environment for their students (Annetta et al., 2014). By selecting these specific locales, the study aimed to explore the experiences of science teachers and contribute to a deeper understanding of professional resiliency.

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Sample and Sampling Technique

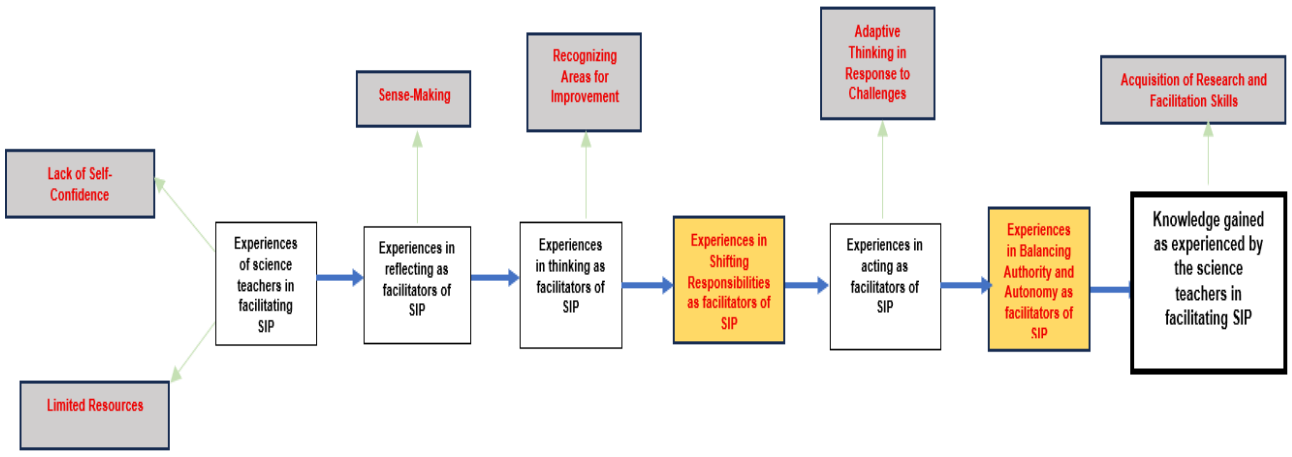
This study utilized purposive sampling to identify and select the participants. Purposive sampling, also known as judgmental, selective, or subjective sampling, relies on the researcher's judgment in choosing participants who can provide relevant and rich information (Rai & Thapa, 2015).

The participants were science teachers from public secondary schools in Davao City with at least one year of experience in facilitating SIPs. They came from both the junior high school and senior high school departments. A total of ten participants were selected, regardless of their specific school assignments. The participants interacted with the researcher through reflection and the sharing of their experiences.

II. RESULTS

In this section, the findings of the study are presented, including the interpretation of the modified paradigm and the key themes, together with their emerging sub-themes, in relation to the research questions.

Modified Paradigm



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III. DISCUSSIONS

My study illustrates that the experiences of science teachers in facilitating SIPs constitute a cyclical process. The findings revealed two additional themes that emerged alongside the existing elements of the theory, namely: experiences in shifting responsibilities and experiences in balancing authority and autonomy as facilitators of SIPs.

Experiences in Shifting Responsibilities

The findings revealed that science teachers experience shifting responsibilities. This result supports the study of Toňacao and Olivia (2023), which found that teachers who assume multiple professional roles beyond classroom instruction often encounter significant time management challenges as they attempt to balance these responsibilities. Similarly, this finding affirms Miller's (2021) study, which noted that teachers frequently shift tasks, for instance, from being a regular science teacher to serving as an SIP adviser.

Experiences in Balancing Authority and Autonomy

The study highlighted the experiences of science teachers in balancing authority and autonomy, demonstrating the need to maintain equilibrium between granting independence for experiential learning and ensuring oversight and accountability. This finding corroborates Jiang et al. (2019), who reported that teachers often enact both autonomy-supportive and controlling behaviors, indicating that effective facilitation involves negotiating student freedom and teacher guidance. In contrast to studies suggesting that autonomy alone is sufficient to foster engagement and learning (Brandisauskiene et al., 2022), this study argues that a balance between authority and autonomy enables science teachers to facilitate student exploration more effectively.

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Viewpoint and Standpoint

The findings of this study provide insight into the experiences of science teachers facilitating SIPs in the Philippine context. The research design did not limit the emergence of additional themes, as theory-aligned questions were carefully crafted to allow participants to express their experiences freely.

Future Directions

Future studies may conduct mediating analyses by examining experiences in balancing authority and autonomy as a mediator variable in the relationship between experiences in acting as facilitators of SIPs and the knowledge gained by science teachers. As reflected in the modified paradigm, further mediating effect analyses may be undertaken. Additionally, qualitative studies may further explore sub-themes under the emerging themes, which may later serve as indicators for quantitative research.

Implication for Practice

The enhanced basic education curriculum committee, in its pursuit of strengthening science inquiry, should recognize teachers as the key actors in SIP implementation. It is recommended that administrative heads reduce the teaching loads of science teachers and assign them to a single primary responsibility to improve the quality of SIP facilitation.

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