



**INFORMATION COMMUNICATION AND TECHNOLOGY (ICT)
COORDINATORS' EXPERIENCES ON THE USE OF ARTIFICIAL
INTELLIGENCE (AI) IN TEACHING SCIENCE: BASES
FOR INTERVENTION PROGRAM**

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ABSTRACT

This study explored the experiences of Information and Communication Technology (ICT) Coordinators in using Artificial Intelligence (AI) in teaching science in one of the municipalities in the first district of Iloilo during the School Year 2025–2026 as a basis for an intervention program. The findings revealed that AI serves as an effective support tool for lesson preparation, enhances learner engagement, and supports diverse learning needs. However, challenges such as limited internet connectivity and technological resources, and concerns about academic integrity and overreliance on AI hinder its effective integration. To address these issues, participants employed a coping strategies, specifically preparing instructional materials ahead of time. Based on these findings, an enhancement program, entitled "*Innovative Science Teaching through AI*", was developed to strengthen teachers' competencies, promote ethical AI use, and improve instructional practices and ultimately, to foster a synergy between technological innovation and pedagogical expertise will be essential to ensuring that AI serves as a powerful catalyst for student engagement.

Keywords: *Artificial Intelligence, ICT Coordinators, Science Education, Intervention Program*

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INTRODUCTION

The persistent growth of Information and Communication Technology (ICT) has revolutionized the educational sector, altering the traditional frameworks of instruction and knowledge acquisition for the 21st century. In recent years, the emergence of **Artificial Intelligence (AI)** has further accelerated this transformation by introducing innovative tools that support instructional planning, assessment, learner engagement, and data-driven decision-making. In science education, where abstract concepts and inquiry-based learning are essential, AI offers promising opportunities to enhance visualization, personalization, and real-time feedback for learners (Park et al., 2023).

Recent research highlights that while many educators express positive attitudes toward AI, they also experience challenges related to **limited technical skills, insufficient training, ethical concerns, and lack of clear implementation guidelines** (Cabero-Almenara et al., 2024). These challenges are more pronounced in developing and public-school contexts, where access to resources and structured professional development programs may be limited. As a result, AI tools are often underutilized or applied in ways that do not fully align with pedagogical goals, particularly in science instruction.

Within this context, **ICT Coordinators play a critical yet often overlooked role.** They serve as key agents in facilitating technology integration, supporting teachers, managing digital infrastructure, and aligning technological innovations with curricular goals. Their experiences, insights, and challenges in using AI for teaching science provide valuable information that can inform school-based interventions and capacity-building initiatives.

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However, existing literature has primarily focused on classroom teachers' perceptions, leaving a gap in understanding the perspectives of ICT Coordinators who oversee and guide AI implementation at the school level (Saharuddin et al., 2025).

Given the increasing demand for effective AI integration in education, there is a need to systematically examine the experiences of ICT Coordinators in using AI for teaching science. Understanding their practices, challenges, coping strategies, and recommendations can serve as a strong foundation for developing a contextualized Enhancement Program. Such a program can strengthen professional competencies, address existing gaps, and promote the meaningful and sustainable integration of AI in science education.

Hence, this study aimed to explore ICT Coordinators' experiences on the use of Artificial Intelligence in teaching science as a basis for an enhancement program that supports innovative, ethical, and effective instructional practices.

MATERIALS AND METHODS

Research Methodology

This chapter details the research methodology, study design, and selection of participants, alongside the instruments used for data collection and the procedures for data analysis. The investigation sought to explore the experiences of Information and Communication Technology (ICT) Coordinators regarding the implementation of Artificial Intelligence (AI) in science instruction, which served as the foundation for a proposed Intervention Program.

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Research Method

This research employed a qualitative phenomenological design, which sought to investigate and interpret the firsthand experiences of ICT Coordinators as they integrated Artificial Intelligence (AI) into science instruction in one of the municipalities in the first district.

Qualitative descriptive research is widely used to provide a **comprehensive summary of events, experiences, and phenomena in everyday language** while staying close to participants' perspectives (Sandelowski, 2021). Phenomenology focuses on how individuals **perceive, experience, and interpret phenomena**, capturing the **essence of their experiences** in their own words (Creswell & Poth, 2018; Van Manen, 2021). This approach is appropriate because it allows the researcher to **delve deeply into participants' perspectives**, uncovering shared meanings, challenges, coping mechanisms, and recommendations related to AI integration.

Phenomenological research is particularly suitable for this study as it seeks to **describe and interpret the lived experiences** of ICT Coordinators, providing insight into the **human, contextual, and professional factors** that shape their engagement with AI in science teaching (Kim et al., 2020). Unlike quantitative or descriptive designs, phenomenology prioritizes participants' voices, making it possible to understand **not just what coordinators do, but how they experience and make sense of AI integration**.

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Research Design

The research utilized a thorough qualitative phenomenological approach, which was deemed the most suitable framework for investigating the firsthand experiences of ICT Coordinators regarding the incorporation of Artificial Intelligence (AI) into science instruction. This specific methodology emphasized the importance of understanding how individuals perceive, encounter, and interpret a particular phenomenon from their own unique perspectives (Creswell & Poth, 2018; Van Manen, 2021).

This design is particularly suited for this study because it allows the researcher to **capture the essence of ICT Coordinators' experiences**, including the challenges, coping strategies, and recommendations that shape their professional practice.

Phenomenological research seeks to uncover the **shared meanings and structures of experience** among participants. In this study, the ICT Coordinators' narratives were analyzed to reveal the **common themes and patterns** that characterize their engagement with AI in science teaching. By focusing on lived experiences, phenomenology provides a **deep and holistic understanding** of the phenomena, which can inform the development of a context-sensitive **Intervention Program** for AI integration.

By using a phenomenological design, the study captured the **essence of ICT Coordinators' experiences with AI integration**, providing valuable insights into their challenges, strategies, and recommendations. These findings serve as the foundation for

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designing an **Intervention Program** aimed at supporting effective and sustainable AI integration in science teaching.

Participants of the Study

The study comprised ICT Coordinators currently stationed from every school in a municipality located in the first district, who were selected due to their front line roles in assisting educators with the implementation of Artificial Intelligence (AI) in science classes. As the primary catalysts for technological adoption in their respective schools, these coordinators were uniquely situated to offer authentic accounts of the obstacles, methodologies, and personal encounters related to AI integration. Their perspectives were deemed essential for grasping the complexities of AI usage in science pedagogy and for establishing the groundwork for a tailored Enhancement Program.

A group of twelve (12) ICT Coordinators was specifically chosen through purposive sampling to participate in the research. The final sample size was established based on the concept of data saturation, meaning that the interviewing process persisted until no novel themes or unique insights were generated from further participants (Braun & Clarke, 2022). This methodological choice guaranteed that the research captured a profound and detailed representation of the coordinators' firsthand experiences while avoiding unnecessary repetition.

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Sampling Design

The investigation employed purposive sampling, which is a non-probability technique frequently utilized in qualitative inquiry (Etikan et al., 2016; Gentles et al., 2021). This sampling method enabled the researcher to handpick participants with direct, firsthand exposure to the phenomenon under study, thereby ensuring the acquisition of substantial, significant, and pertinent data. In this specific research, the selection prioritized ICT Coordinators who were actively engaged in mentoring educators on the implementation of Artificial Intelligence (AI) within science pedagogy in the District of Guimbal.

Research Instrument

The data collection tool for this investigation consisted of an interview schedule developed by the researcher.

This primary instrument was specifically crafted to delve into the firsthand experiences of ICT Coordinators as they incorporated Artificial Intelligence (AI) into the science curriculum. In phenomenological research, the **researcher is considered the key instrument**, and tools such as semi-structured interviews are employed to capture **rich, detailed narratives** that reflect participants' authentic experiences. The interview guide serves as a **framework** to direct the conversation while allowing participants the freedom to express their experiences, perceptions, emotions, and reflections in their own words.

The semi-structured nature of the instrument allowed for **flexibility and probing**, enabling the researcher to follow up on significant statements, clarify ambiguities, and explore

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unexpected themes that emerged during the interviews (Roulston & Shelton, 2020). This flexibility is essential in phenomenological research, where the goal is to **capture the depth, meaning, and essence of participants' experiences** rather than limiting responses to predefined categories.

Validity of the Research Instrument

Before its implementation, the researcher-developed interview schedule underwent a stringent validation process to guarantee its precision, pertinence, and suitability for documenting the firsthand experiences of ICT Coordinators regarding AI integration in science pedagogy. The tool was evaluated by the research advisor, the Dean of the Graduate School, and a specialist panel possessing established expertise in research methodology, educational assessment, and English language proficiency. Feedback from the reviewers was carefully analyzed and incorporated into the final instrument. Revisions included rewording unclear questions, adding probing questions to encourage deeper reflection, and refining the structure to ensure **consistency and focus**. This process ensured that the instrument is **credible, reliable, and capable of eliciting rich qualitative data**, in line with the principles of phenomenological research (Hadi & Closs, 2021; Kumar, 2024; Van Manen, 2021).

Data Gathering Procedures

Information for this research was gathered through comprehensive, semi-structured interviews conducted with ICT Coordinators from every school in a municipality located in the first district. These participants were intentionally selected based on their practical

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involvement in assisting teachers with AI integration in science and their readiness to recount their personal experiences. Before the sessions commenced, participants received a thorough orientation regarding the study's objectives, the protocols involved, and ethical safeguards, such as the guarantee of anonymity and their right to exit the study at any point.

With the subjects' permission, the interviews were audio-recorded and subsequently transcribed word-for-word, supplemented by field notes that documented contextual details and non-verbal communication. The researcher utilized probing techniques to delve deeper into emerging concepts and clarify responses, ensuring a holistic representation of the coordinators' perspectives. Following this, the transcripts were systematically organized and evaluated using phenomenological thematic analysis to pinpoint key statements and recurring themes. Throughout the entire procedure, strict ethical standards—including the secure management of data and participant confidentiality—were maintained to uphold the study's overall credibility and academic integrity (Creswell & Poth, 2018; Van Manen, 2021; Braun & Clarke, 2022).

Data Analysis

The data gathered from the in-depth interviews with ICT Coordinators were analyzed using a **phenomenological approach** to described and interpret their lived experiences in using Artificial Intelligence in teaching Science. All interview recordings were transcribed verbatim and carefully reviewed several times to achieve familiarity and immersion in the data. Significant statements and meaningful expressions related to AI use, challenges encountered,

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coping strategies, and recommendations for improvement were identified and coded. These codes were examined for patterns and organized into emerging themes that reflected the shared experiences of the participants. Throughout the analytical process, bracketing was implemented to mitigate researcher bias, ensuring that all interpretations remained firmly rooted in the participants' original perspectives. To verify the precision of the transcriptions and subsequent findings, member checking was performed. The themes that emerged from this process provided the framework for understanding the experiences of ICT Coordinators and informed the creation of a proposed Enhancement Program aimed at bolstering AI integration within science education.

The interview transcripts were scrutinized using Thematic Analysis (Braun & Clarke, 2023), a methodology recognized for its effectiveness in identifying, interpreting, and organizing recurring patterns within qualitative datasets.

The analysis followed a rigorous and standardized six-stage thematic procedure to ensure a comprehensive interpretation of the data. It began with data familiarization, which required an exhaustive reading and re-reading of the transcripts in both the original local language and their English translations to establish a deep connection with the content. This was followed by the generation of initial codes, where significant data segments were assigned concise shorthand labels such as "shared phone," "fear of judgment," or "poor signal." During the third stage, searching for themes, these initial codes were organized into broader patterns; for instance, codes like "no insult" and "private correction" were clustered under a single

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thematic heading. These themes were then subjected to a review process, where they were refined and cross-referenced against the complete dataset to ensure they authentically represented the participants' intent and the study's primary objectives. Once the themes were validated, the fifth stage involved defining and naming themes, resulting in the development of clear, scholarly titles slated for presentation in Chapter 4. Finally, the process concluded with producing the report, a stage that involved weaving the themes and supporting direct quotations into a cohesive narrative that aligned the data interpretation with the study's overarching theoretical framework.

RESULTS AND DISCUSSIONS

The investigation was carried out to evaluate the firsthand experiences of Information and Communication Technology (ICT) Coordinators regarding the application of Artificial Intelligence (AI) within science pedagogy. These findings served as the foundation for an Intervention Program from every school in a municipality located in the first district during the 2025-2026 academic year.

Specifically, this determined the experiences of ICT coordinators in using of AI in teaching science, the difficulties that they encountered, the coping strategies that they use, and the recommendations that they impart to help enhance the usage of Artificial Intelligence in teaching science.

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A qualitative in-depth interview was the research methodology employed. To better understand the lived experiences of ICT Coordinators utilizing AI in science education, the study used a phenomenological research approach.

The study comprised twelve (12) ICT Coordinators from every school in a municipality located in the first district. These specific educators were selected due to their professional roles and direct experience utilizing Artificial Intelligence (AI) within the science curriculum.

To ensure the instrument's integrity, the interview schedule underwent a formal validation process by a panel of specialists. The researcher integrated all evaluative feedback and recommendations provided by these experts to refine the final tool.

Necessary authorizations were secured from the Office of the District Supervisor, and the respective School Heads, alongside informed consent from each participant, to facilitate the data collection process. The researcher personally administered the interviews at venues chosen by the participants for their convenience.

The qualitative data were scrutinized using a thematic analysis approach to identify recurring patterns and insights.

The investigation yielded the following findings:

Based on the responses gathered, several themes emerged which describe their experiences and perceptions regarding AI integration in science instruction. These are support

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tools for teaching and lesson preparation, increased learner engagement and support tools for diverse learning needs.

Based on the responses of the participants, the study highlights the lack of reliable internet connectivity and limited access to technological devices. The challenges experienced by the ICT Coordinators were grouped into several themes, namely: Limited Internet Connectivity and Technological Resources, and Concerns About Academic Integrity and Overreliance in AI. These highlight the different difficulties encountered by the teachers in integrating AI into science instructions.

The responses of the participants show that they can employ strategies to overcome the challenges they encounter. The responses resulted in the theme: Preparing Activities Ahead of Time as a Coping Strategy. This theme demonstrates how they manage the challenges associated with the integration of AI in teaching science.

Insights

These insights highlight how AI influences instructional practices, the barriers encountered by teachers, and the strategies they employ to address these challenges.

AI serves as an effective support tool for teaching and lesson preparation, enabling ICT Coordinators to enhance the delivery of science instruction. It helps simplify complex concepts, generate instructional materials, and create more engaging learning experiences. Additionally, AI contributes to increased learner engagement and support for diverse learning

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needs, allowing teachers to implement more interactive and differentiated approaches in the classroom.

However, the integration of AI is hindered by significant challenges, particularly limited internet connectivity and technological resources. These constraints restrict the consistent and effective use of AI tools in teaching. Moreover, concerns about academic integrity and overreliance on AI were identified, as teachers fear that excessive dependence on AI may affect students' critical thinking and independent learning skills.

ICT Coordinators demonstrate resilience by adopting coping strategies, specifically "Preparing Activities Ahead of Time as a Coping Strategy." This proactive approach allows them to manage potential disruptions and maintain the continuity of instruction.

Overall, the findings suggest that while AI offers valuable benefits in science education, its successful integration requires adequate resources, proper guidance, and a balanced implementation.

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CONCLUSION

Based on the findings, the following recommendations are forwarded:

Given that AI serves as an effective support tool for teaching and enhances learner engagement, it is recommended that schools implement continuous training and capacity-building programs for ICT Coordinators and teachers. These programs should focus on maximizing the use of AI in lesson preparation, instructional delivery, and differentiated teaching strategies to further improve science instruction.

To address the challenges of limited internet connectivity, technological resources, and concerns regarding academic integrity, school administrators and the Department of Education should strengthen technological infrastructure and establish clear policies on the ethical use of AI. Ensuring access to reliable internet, sufficient devices, and responsible AI guidelines will facilitate a more effective and balanced integration in the classroom.

Considering the coping strategies employed by ICT Coordinators, teachers are encouraged to adopt proactive instructional planning and collaborative practices. Preparing activities ahead of time, sharing best practices, and fostering peer support can help educators effectively manage challenges and sustain the integration of AI in science education.

The Innovative Science Teaching through AI program is designed to strengthen the knowledge, skills, and competencies of ICT Coordinators and science teachers in integrating Artificial Intelligence (AI) into teaching and lesson preparation. It provides practical training through seminars, hands-on workshops, and collaborative activities that enable educators to

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utilize AI for lesson planning, instructional material development, and learner assessment while promoting responsible and ethical use.

The program also addresses common challenges, such as limited internet connectivity and concerns about overreliance on AI, by introducing adaptive and context-based strategies. Through this initiative, participants are expected to develop AI-assisted lesson plans, enhance student engagement, and foster collaborative practices among educators. Ultimately, the program aims to empower teachers to effectively utilize AI as a tool for innovative, inclusive, and improved science instruction.

Lastly, future researchers are encouraged to undertake comparable studies encompassing a more extensive participant base or diverse academic environments to explore the impact of AI in the educational sector more deeply. Subsequent research could also investigate the longitudinal consequences of AI integration, specifically focusing on its lasting influence on student academic achievement, engagement levels, and the development of critical thinking abilities.

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