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# TEACHERS' EXPERIENCES USING DIFFERENTIATED INSTRUCTION APPROACH IN DEVELOPING HIGHER ORDER THINKING SKILLS (HOTS): BASES FOR IN-SERVICE TRAINING

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## ABSTRACT

This study aimed to determine the views, experiences, challenges, and coping strategies of teachers in the use of the Differentiated Instruction Approach (DIA) to develop Higher Order Thinking Skills (HOTS) in teaching science. It was found that the differentiated instruction approach, as viewed by teachers, is meant to boost learners' interest, address diverse learning needs and abilities, and empower teachers to unlock their potentials. The findings also indicated that teachers' experiences with this approach may make activities suited to learners' interests and abilities and may push learners toward deeper analysis, evaluation, and creativity. The challenges encountered by the teachers include constraints on time, limitations in resources and materials, difficulties in classroom management, and diversity among learners. To address challenges, the teachers' coping strategies are to promote collaboration, design tasks at varying complexity levels, integrate technology, and attend professional development activities.

**Keywords:** *Experiences, Differentiated Instruction Approach, Higher Order Thinking Skills (HOTS), In-Service Training*

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## INTRODUCTION

Every student possesses a distinct background and set of life experiences that shape their individual requirements and how they respond to various situations. Consequently, no two students arrive in the classroom with identical academic capabilities, personal histories, or educational needs. Within any single student body, there is a wide spectrum of diversity regarding learning preferences, linguistic mastery, and overall academic preparedness.

Despite these significant individual variations, students are generally held to uniform standards, requiring them to grasp the same fundamental concepts and skills within the same timeframe. This creates a substantial undertaking for educators, who must navigate these disparate learner profiles to ensure every student achieves success across all curricular areas.

According to the work of Tomlinson, as referenced by Sertel Altun and Huma Nayman (2022), the classroom environment should offer diverse pathways for students to access information, internalize core concepts, and demonstrate their understanding through various outputs. This instructional variety ensures that every learner has a viable route to academic achievement. Differentiated instruction serves as a pedagogical strategy specifically designed to address the unique needs of a diverse student population, aiming to optimize personal development and individual achievement. By meeting students at their current level of proficiency, this approach provides tailored support that guides each child effectively through the learning journey.

There is no single set of strategies that contribute differentiated instruction. Instead, the practice rests on principles that require teachers to continuously assess simply relying on

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the curriculum, teachers use differentiated instruction to match the activities, tasks, and assessment to each student's learning style, capabilities, and interest.

Differentiated instruction is one bridge in order to provide understanding between current researches to students' performance outcomes.

Educators often perceive their classrooms as uniform entities, frequently overlooking the diverse levels of academic readiness present among their students. This generalization can lead to a problematic instructional gap, where some learners find themselves overwhelmed by tasks that exceed their current abilities, while others remain disengaged because the material fails to provide a sufficient challenge.

To address these disparities, many teachers employ cooperative and collaborative learning strategies, which restructure classroom activities into integrated academic and social experiences. This approach fosters an environment where students must interact and support one another to reach common objectives, effectively bridging the gap between individual differences through collective effort. In this approach, the teacher serves not only as a source of knowledge but also as a facilitator who guides and supports learners. Furthermore, education aims to integrate teaching methods with human development theories, ensuring that students' multiple intelligences are nurtured through effective and varied instructional strategies.

From the researcher's perspective, public secondary schools commonly have diverse and heterogeneous student groupings, which require responsive teaching approaches. To address this, differentiated instruction is aligned with the curriculum while being tailored to

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students' varying learning needs and preferences. It emphasizes the development of creative and critical thinking through the use of varied instructional strategies and flexible learning formats.

To align with the objectives of the K–12 Science curriculum, the Department of Education prioritizes the cultivation of students' critical thinking abilities. In light of this goal, the present study investigated the application of differentiated instruction as a specialized approach to improving higher-order thinking skills within the sciences. By qualitatively analyzing the firsthand experiences, viewpoints, obstacles, and adaptive strategies of educators at a high school in Iloilo's fourth district during the 2025–2026 academic year, the research sought to evaluate the comprehensive influence of this teaching method on the evolution of students' analytical capabilities.

## MATERIALS AND METHODS

### Research Methodology

This chapter outlines the research methodology, design, and specific participants involved, while also detailing the data collection procedures, instruments, and analytical techniques employed. The primary objective of the investigation was to examine the firsthand experiences of educators utilizing a Differentiated Instruction Approach (DIA) to foster Higher-Order Thinking Skills (HOTS) within Science classes in one of the schools in fourth district of Iloilo throughout the 2025-2026 academic year.

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**Research Method**

This investigation utilized a descriptive qualitative approach, primarily employing intensive interviews to gather data. The choice of a descriptive method allowed for a meticulous documentation of the phenomenon in its natural state, ensuring that variables remained unmanipulated.

As noted by Elliott (2025), this strategy is designed to offer a precise account of contemporary conditions, professional habits, or interpersonal dynamics within school settings. It is particularly adept at capturing authentic human experiences and behaviors without infringing upon the participants' daily environments.

Interviews were conducted in a relaxed, face-to-face setting, fostering an atmosphere conducive to deep reflection. The central aim was to distill the participants' core perspectives and social realities through their spontaneous verbal responses.

**Research Design**

The study was grounded in a phenomenological design, which provides the philosophical basis for examining subjective realities. The goal of phenomenology is to comprehend how individuals interpret their personal world, often highlighting how these internal perceptions diverge from conventional viewpoints. By gathering individual impressions through interviews—a staple technique in sociology and psychology—the researcher explored conscious experiences from a first-person perspective. This approach seeks to describe "lived" phenomena as they are felt, intentionally avoiding the imposition of external causal theories or preconceived notions (Biemel & Spiegelberg, 2024).

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**Participants of the Study**

The study focused on ten (10) science educators from a specific secondary school in the 4th district of Iloilo during the 2025–2026 academic year. The cohort was split evenly, consisting of five (5) teachers from the Junior High School level and five (5) from the Senior High School level.

**Sampling Design**

A purposive sampling (or judgmental sampling) strategy was applied to select these individuals. According to Nikolopoulou (2023), this non-probability method involves choosing specific subjects because they meet the exact criteria necessary for the research objectives. Rather than selecting at random, the researcher used professional judgment to identify participants who could offer the most profound insights into the study's specific goals.

**Research Instrument**

The data were collected using a self-constructed interview schedule. In qualitative methodology, this instrument functions as a formal guide—comprised of structured or open-ended prompts—that ensures consistency across different sessions (Socio.health, 2024). This standardization allows for a more reliable comparison of data across the participant group.

The schedule was organized around four primary thematic inquiries: Teacher perceptions of Differentiated Instruction (DI); Practical experiences in utilizing DI to foster Higher-Order Thinking Skills (HOTS) in Science.; Obstacles encountered when implementing DI for HOTS development; and Strategies used by educators to overcome these identified challenges.

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To ensure no detail was lost, the researcher utilized audio and video recording tools, provided that participants granted explicit consent.

**Validity of the Research Instrument**

To establish content validity, the draft instrument underwent a rigorous review process involving the research adviser, the Dean of the Graduate School, and a specialist jury. These evaluators—experts in Science, assessment, and research design—reviewed the questions for clarity and relevance.

As defined by Creswell & Creswell (2023), validity ensures that an instrument truly captures the concepts it intends to measure, providing a credible reflection of the subject. The panel's feedback and corrections were integrated using the evaluation criteria established by Good and Scates (1972), as cited in Soqueña (2021), ensuring the tool was perfectly aligned with the study's theoretical framework.

**Data Gathering Procedures**

The study formally commenced only after securing the necessary permits from the Schools Division Superintendent, District Supervisors, local school heads, and the Dean of the Graduate School. Once authorization was granted, the researcher conducted interviews at locations most convenient for the participants, ensuring a comfortable environment for discussion. Throughout this process, a systematic procedure was followed: participants first signed informed consent forms to formally acknowledge their voluntary participation, after which they were provided with a preview of the research instrument to familiarize them with the scope of the inquiry. During the sessions, mobile devices were utilized to record both

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audio and video, ensuring all responses were captured in full detail, and once the interviews concluded, the gathered data were systematically organized and consolidated in preparation for the transcription phase.

**Data Analyses**

The collected data were analyzed using thematic analysis, a qualitative methodology designed to identify, interpret, and report recurring patterns within narrative information. This approach allowed the researcher to uncover insights into the participants' experiences regarding the use of DIA to develop HOTS in Science education.

According to Braun and Clarke (2023), thematic analysis provides a flexible and rigorous framework for examining qualitative data, enabling researchers to detect both explicit and implicit meanings. Nowell et al. (2021) further note that this method improves the credibility and transparency of a study through a systematic coding process.

The analysis adhered to a standardized six-phase process (Braun and Clarke, 2023):

Familiarization with Data: Repeatedly reading the transcripts in both the local language and English.

Generating Initial Codes: Assigning concise labels to significant data segments.

Searching for Themes: Organizing these codes into overarching themes and sub-themes.

Reviewing Themes: Verifying that these themes accurately represent the entire dataset.

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Defining and Naming Themes: Creating academically rigorous titles for the final thematic analysis.

Producing the Report: Integrating the findings and direct quotes into the final narrative while connecting them back to the study's theoretical framework.

## RESULTS AND DISCUSSIONS

The objective of this research was to identify the perspectives, first-hand experiences, difficulties, and adaptation methods of educators employing a Differentiated Instruction Approach (DIA) to cultivate Higher-Order Thinking Skills (HOTS) within science classes. The study was conducted in a high school in the fourth district of Iloilo during the 2025-2026 academic year.

The study employed a qualitative research methodology, specifically utilizing in-depth interviews, within a phenomenological research design.

The participants of the study were ten (10) public secondary Science teachers. Five (5) science teachers teaching in Junior High School and five (5) science teachers teaching in Senior High School. There are two (2) male science teachers and eight (8) female science teachers.

Following the completion of the interview series, the researcher consolidated all the collected data. This information was then systematically organized, examined, and interpreted through a thematic approach.

The following are the findings of the study:

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Based on the results of the in-depth interview with the participants, it was found out that differentiated instruction approach as viewed by teachers helps to boost learners' interest, address diverse learning needs and abilities, and empower teachers to unlock their potentials.

It was found out that experiences of teachers in using differentiated instruction approach in developing HOTS in teaching science are to make activities suited to learners' interests and abilities and push learners toward deeper analysis, evaluation, and creativity.

It was also found out that the challenges encountered by teachers in using differentiated instruction approach in developing HOTS in teaching science include constraints on time, limitations in resources and materials, difficulties in classroom management, and diversity among learners.

The teachers' coping strategies on the challenges encountered in using differentiated instruction approach in developing HOTS in teaching science are to promote collaboration, design tasks at varying complexity levels, integrate technology, and attend professional development activities.

## CONCLUSION

Based on the findings, the following insights were drawn:

Teachers perceive differentiated instruction as a strategy that not only engages students by catering to their varied strengths and learning preferences but also provides educators with opportunities to enhance their teaching effectiveness. This approach appears to support personalized learning experiences, foster student motivation, and allow teachers

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to optimize instructional practices to bring out the best in each learner.

Teachers' use of differentiated strategies in science instruction helps tailor learning experiences to students' individual preferences and skill levels, encouraging them to engage more thoughtfully with the material. This approach promotes advanced cognitive engagement, enabling students to think critically, make informed judgments, and generate original ideas.

Implementing differentiated strategies in science teaching presents several practical obstacles for educators. Teachers face pressures related to scheduling and planning, scarcity of instructional tools and materials, difficulties in maintaining order and structure in the classroom, and the complexity of meeting the needs of students with varied abilities and backgrounds. These factors can limit the consistent application of approaches designed to foster higher-level thinking.

Teachers address the difficulties of implementing differentiated instruction by employing proactive and flexible strategies. They foster teamwork among students and colleagues, create learning tasks that match different skill levels, utilize digital tools to enhance engagement and efficiency, and participate in ongoing training to strengthen their instructional skills. These approaches help educators manage challenges while supporting students' advanced thinking and problem-solving abilities.

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