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Examining the Impact of Differentiated Instructions on Students Learning at Primary Level in One of the Private Schools of Karachi

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Abstract
Differentiated instruction is a teaching approach through which teachers adjust their teaching practices to meet the diverse learning needs of individual student in the classroom. The purpose of this study is to examine the impact of differentiated instruction on the learning of Grade 4 students in a private primary school in District Malir, Karachi. The educational problem that motivated this research is that many students in traditional classrooms remain passive learner while being disengaged and unable to comprehend lesson content because teachers use a one-size-fits-all teaching method that does not respond to diverse individual needs in student willingness, ability, and interest. To investigate this problem, the study used a qualitative action research design, which allowed the researcher to actively teach, observe, and reflect on classroom practices across ten lessons. A convenience sample of 20 students Grade 4 were selected by the researcher. Data was collected by using observation, and semi-structured interviews across two phases — a pre-intervention phase using traditional teaching methods and a post-intervention phase using differentiated instruction strategies including flexible grouping, tiered tasks, and hands-on activities. The findings exposed that students demonstrated significantly higher motivation, active participation, stronger critical thinking, and improved collaborative skills after implementing differentiated instructions. Based on these findings, it is recommended that teachers should regularly incorporate differentiated instruction into their lesson planning to enhance student engagement, motivation, learning practices and academic achievement at primary level.

Keywords: Differentiated instructions, diverse needs, cooperative learning

Introduction

Education is one of the most important tools for the development of children, and how teachers deliver lessons plays a major role in how well students learn. In

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every classroom, students come with different backgrounds, abilities, interests, and learning styles. Some students understand things rapidly, while others need more time and support. This difference among students is a natural part of any classroom, and it is the responsibility of teachers and schools to find ways to address these differences efficiently. One approach that has gained a lot of attention in recent years is differentiated instruction. A teaching method where teachers adjust their lessons, activities, and assessments to meet the individual needs of each student.

Differentiated instruction is not a new idea, but it has become increasingly important as classrooms around the world become more diverse. The basic idea behind differentiated instruction is that all students deserve access to quality education, but not all students learn in the same way or at the same pace. Teachers who use differentiated instruction try to understand where each student is in their learning journey and then design lessons that help every student move forward. This could mean giving some students more challenging tasks, providing extra support to students who are struggling, or allowing students to demonstrate their understanding in different ways. The goal is to make sure that no student is left behind and that no student is held back.

(Richards &Usher,2013) studied how teachers in private elementary and middle schools professed and applied differentiated instruction. Her research found that whereas many teachers understood the concept of differentiated instruction, actually putting it into practice in the classroom was a challenge. Teachers reported that they needed more training, time, and resources to successfully differentiate their instruction. This is an important finding because it shows that knowing about a teaching tactic and actually using it effectively are two very different things. Her work laid an important foundation for understanding the gap between awareness and practice when it comes to differentiated tutoring in private school settings.

More recent research has continued to explore how differentiated instruction affects student outcomes. A study published in the International Journal of Instruction in 2025 by Titus examined the effects of differentiated instruction on students' empowered learning skills. The findings suggested that when students are educated through differentiated methods, they feel more confident, more engaged, and more in control of their own learning. This is mostly important at the primary level, where building a positive attitude toward learning can have long-term effects on a student's educational journey. Students who feel empowered in their early years of schooling are more likely to stay motivated and perform better as they move into higher grades.

Similarly, (Adeniran, 2025) conducted a mixed-methods study looking at how differentiated instruction improved primary school learners' outcomes in basic science. Their research showed that students who were taught using differentiated approaches performed expressively better than those who received traditional, one-size-fits-all instruction. The study highlighted that differentiated instruction not only improves academic performance but also increases student contribution and interest in the subject. This kind of evidence is important for schools in Pakistan, where science education at the primary level often relies heavily on memorization and teacher-centered approaches. It suggests that shifting toward differentiated instruction could lead to meaningful improvements in how students learn and understand core subjects.

The role of school leadership in supporting differentiated instruction has also been highlighted in recent literature. (Bukhari, 2023) in a study published in Spry

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Contemporary Educational Practices, explored how school leaders' support effects the use of differentiated instruction in primary grades. The research found that when school principals and administrators actively encourage and support teachers in using differentiated methods, teachers are far more likely to implement these strategies effectively. This finding is highly relevant to the context of private schools in Karachi, where school leadership plays a powerful role in shaping classroom practices. Without strong support from school leaders, even motivated teachers may struggle to constantly apply differentiated instruction in their classrooms.

Further evidence of the benefits of differentiated instruction comes from a mixed-methods study conducted by Kara and Tekindur, which examined its effect on the academic achievement and opinions of third-grade students in science education. Their findings confirmed that students taught through differentiated instruction not only achieved better academically but also held more positive opinions about their science classes. Students reported enjoying their lessons more and feeling that their needs were being met. This aligns with what researchers have been arguing for years — that when teaching is responsive to student needs, both achievement and motivation improve. Against this backdrop, the present study aims to examine the impact of differentiated instruction on students' learning at the primary level in one of the private schools of Karachi, contributing local evidence to a growing body of global research on this important topic.

Research Objectives

Following will be the objective of this research projects:

General Objective

To examine the Impact of Differentiated Instructions on Students learning at primary level in one of the private schools of Karachi.

Specific Objectives

To examine the challenges teachers face during execution of DIs in classroom.

To identify the situation required for applying differentiated instructions in classroom.

To provide strategies for effective implementation of differentiated instructions in primary level classrooms.

Research Questions

What challenges do teachers face when implementing differentiated instruction, and how do they overcome them?

How can teachers recognize the situation required for applying different instructions in classroom?

What are the strategies that could be used for implement different instructions in primary level classroom effectively?

Background:

Education systems around the world have long struggled with the challenge of teaching students who have different abilities, learning styles, and academic needs within the same classroom. For many decades, the traditional approach to teaching was based on the idea that all students should receive the same lesson, at the same pace, and in the same way. This one-size-fits-all model of teaching worked well for some students, but left many others behind. Students who learned faster

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than the class pace became bored and disconnected, while students who needed more time and support often fell behind and lost confidence in their abilities. It was out of this problem that the concept of differentiated instruction was born. A teaching philosophy that recognizes and responds to the individual differences among learners.

Differentiated instruction as a formal concept was largely developed and popularized by Carol Ann Tomlinson in the late 1990s and early 2000s. The main idea is that teachers should modify their content, teaching process, and assessment methods based on the readiness level, learning profile, and interests of each student. Rather than expecting all students to fit into the same mould, differentiated instruction asks teachers to be flexible and creative in how they plan and deliver their lessons. Over the years, this approach has been studied broadly across different countries, grade levels, and subject areas, and a growing body of research has consistently shown that it leads to better learning outcomes for students when implemented properly and consistently.

(Richards-Usher, 2013) conducted a detailed study on how teachers in private elementary and middle schools understood and applied differentiated instruction in their classrooms. Her dissertation at Capella University found that while most teachers had a general awareness of what differentiated instruction means, there was a significant gap between their knowledge and their actual classroom practice. Many teachers reported that they faced serious challenges in implementing differentiated instruction regularly, including lack of proper training, large class sizes, limited planning time, and insufficient instructional resources. This early research was important because it highlighted that simply knowing about differentiated instruction is not enough — teachers need ongoing professional development, administrative support, and practical tools to make it work effectively in real classroom settings.

The private school context adds another layer of complexity to this discussion. Private schools often have more resources and smaller class sizes compared to public schools, which should supposedly make it easier to implement differentiated instruction. However, (Richards-Usher, 2013) research showed that even in private school settings, teachers struggled to move beyond surface-level differentiation. Many teachers adjusted their teaching only minimally, such as by giving faster learners extra worksheets or allowing slower learners more time, rather than truly reforming their instruction to meet diverse needs. This finding raises important questions about teacher preparation and the culture of teaching in private schools, particularly in developing country contexts like Pakistan where private schools play a dominant role in delivering quality education.

In Pakistan, and specifically in a city like Karachi, the education landscape is heavily shaped by private schooling. A large number of families choose private schools over government schools because of the observation that private schools offer better quality education. However, quality education is not just about better buildings or English-medium instruction it is fundamentally about how effectively teachers teach and how well students learn. (Bukhari, 2023), conducted specifically in the Pakistani context and published in active Contemporary Educational Practices, explored how school leaders in primary grades support or hinder the use of differentiated instruction. The study found that school leadership plays a critical role in shaping teacher behavior. When principals and school heads actively

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encouraged and modelled the value of differentiated instruction, teachers were far more likely to adopt and maintain these practices in their classrooms.

At the student level, the benefits of differentiated instruction have been documented across multiple studies. (Titus, 2025), writing in the International Journal of Instruction, investigated how differentiated instruction affects students' empowered learning skills. The study found that students who experienced differentiated teaching were better able to take ownership of their learning, showed greater motivation, and demonstrated stronger critical thinking skills compared to students taught through traditional methods. These findings are especially important at the primary level, where foundational habits of learning are being formed. If students at an early age learn to engage actively with material that is matched to their level and interest, they are more likely to develop into confident and independent learners as they grow.

The subject area of science has also acknowledged specific attention in the differentiated instruction literature. (Adeniran, 2025) conducted a mixed-methods study published in the International Journal of Science Education, looking at how differentiated instruction improved primary school learners' outcomes in basic science. Their results were clear — students who were taught science through differentiated methods significantly outperformed those who received conventional instruction, both in terms of academic scores and in terms of engagement and participation in class. Similarly, Kara and Tekindur examined the effect of differentiated instruction on third-grade students' academic achievement and opinions in science education. They found not only that achievement improved but also that students developed more positive attitudes toward science when their teacher used differentiated methods. These findings collectively suggest that differentiated instruction has the potential to convert learning experiences at the primary level.

Despite this growing international evidence, there remains a significant gap in research focused specifically on how differentiated instruction is being practiced and what impact it is having in private primary schools in Karachi. Most of the existing studies come from Western, African, or South Asian contexts outside Pakistan, and very few have examined the specific realities of private school classrooms in a Pakistani urban setting like Karachi. Teachers in these schools face unique challenges including large enrollments, curriculum pressure, examination-focused teaching cultures, and varying levels of professional training. Understanding whether and how differentiated instruction is being used in these schools, and what effect it has on student learning, is therefore both timely and necessary. This study goals to fill that gap by providing a close and careful examination of differentiated instruction in one private primary school in Karachi.

Literature Review:

Differentiated instruction (DI) has extended fame as a pedagogical approach meant at addressing the diverse needs of students by adapting teaching methods, materials, and assessments to individual differences. Research highlights its potential to increase student engagement and learning outcomes in various educational backgrounds.(Qorib, 2024) highlights the role of DI in nurturing critical variety of learning, chiefly in inclusive education settings, while (Sapan, 2022) prove its efficacy in improving achievement, motivation, and autonomy among English learners. However, challenges in practical

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application persevere, as (Pozas.et.al., 2019) point out, with teachers often struggling to balance differentiation with time and resource boundaries. Leadership support is also a critical factor; (Bukhari, 2023) highlights how school leaders' reassurance significantly impacts of DI practices at the primary level.

Furthermore, the addition of technology, as discussed by (Leahy.et.al., 2019), presents new opportunities for modified learning, however apprehensions like labelling students with learning complications may impact teacher self-efficacy, as explored by (Porta.et.al., 2023). These studies offer a foundation for investigating the impact of DI on student learning in Karachi's private primary schools, a focus that aims to connection world-wide findings with native educational dynamics.

Challenges and strategies to encounter

In developed countries, the application of differentiated instruction (DI) has been widely studied and documented, yet it continues to pose significant challenges even in well-resourced educational systems. Teachers in countries such as the United States, the United Kingdom, and Australia frequently report that translating the principles of DI into reliable classroom practice remains a formidable task. Richards-Usher (2013) found that teachers in private elementary and middle schools perceived differentiated instruction as conceptually sound but operationally difficult, citing inadequate pre-service training, inadequate time for lesson planning, and large class sizes as the primary obstacles to effective implementation. The study highlighted that many teachers had limited exposure to DI strategies during their teacher education programs, leaving them underprepared to address the diverse learning needs of their students. In addition, Kara and Tekindur (2025) noted that even when DI was applied in structured settings, teachers required considerable administrative support and professional development to sustain its application. To overcome these challenges, schools in developed nations have increasingly adopted co-teaching models, professional learning communities, and technology-enhanced instruction, which collectively help allocate the planning burden and allow for more flexible grouping strategies within the classroom.

In developing countries, the challenges related with implementing differentiated instruction are often compounded by systemic resource constraints, overcrowded classrooms, and limited teacher training opportunities. Research conducted in sub-Saharan African contexts, particularly by Adeniran et al. (2025), demonstrated that primary school teachers in Nigeria faced serious difficulties in conveying differentiated science lessons due to a shortage of instructional materials, inadequate classroom infrastructure, and examination-driven curricula that left little room for individualized learning approaches. Despite these constraints, the study found that when teachers were provided with structured guidance and mixed-methods support, learners showed measurable improvement in science outcomes, suggesting that DI remains a viable strategy even in resource-limited settings. Similarly, Titus (2025) observed that teachers in Indian educational institutions struggled with identifying and responding to diverse learning profiles, particularly in large urban classrooms where student-to-teacher ratios were high. The strategies found to be effective in

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these contexts included flexible grouping, peer-assisted learning, and the use of locally available manipulatives to scaffold instruction for different learners. These findings sustain that while the challenges in developing countries differ in magnitude from those in developed nations, the fundamental need for teacher capacity-building and contextual adaptation of DI strategies remains reliable across both surroundings.

In Pakistan, the implementation of differentiated instruction at the primary level is still in its nascent stages, and teachers face a unique convergence of challenges rooted in sociocultural, institutional, and professional factors. The Pakistani educational system is characterized by a strong emphasis on rote learning and standardized examinations, which leaves limited pedagogical space for individualizing instruction. Teachers in both public and private schools often work under rigid curricular frameworks that recommend uniform content delivery, making it difficult to adapt lessons to the varied learning needs of students. Furthermore, many teachers in Karachi and other urban centers have not received formal training in DI methodologies, and awareness of evidence-based differentiation strategies remains limited among school experts. The school leaders' role in supporting DI implementation has been identified as particularly critical; as well-known by the research published in Spry Contemporary Educational Practices (2023), instructional leadership and institutional backing significantly influence whether teachers feel authorized to experiment with differentiated approaches in their classrooms. In the context of private schools in Karachi, where student diversity in terms of learning readiness, language background, and socioeconomic status is pronounced, the need to address these trials through targeted professional development and school-level policy reform becomes especially vital. Without systemic support, individual teacher efforts to differentiate instruction are likely to remain isolated and unsustainable over time.

Application of Differentiated Instruction in the Classroom

The application of differentiated instruction in the classroom is grounded in the recognition that students differ in their readiness levels, learning profiles, and interests, and that effective teaching must respond to these differences through deliberate instructional design. Tomlinson's foundational framework of DI, which has learnt much of the subsequent research in the field, proposes that teachers can differentiate content, process, product, and learning environment to create more equitable and engaging learning experiences. Richards-Usher (2013) originate that teachers who successfully applied DI in elementary classrooms reported using ongoing formative assessment as the keystone of their practice, using diagnostic data to form flexible groups and tailor instructional tasks to students' varying levels of understanding. The study emphasized that DI is not a single instructional technique but rather a comprehensive approach to classroom management and pedagogical decision-making that requires teachers to adopt a proactive mindset toward student diversity. Teachers who comprised this mindset were more likely to experiment with tiered assignments, learning contracts, and choice boards, all of which allowed students to engage with curriculum content at levels appropriate to their readiness while working toward common learning goals.

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The process of applying DI effectively in the classroom also strains that teachers develop a nuanced understanding of when and how to differentiate. Not every lesson or learning objective necessitates full differentiation; rather, teachers must exercise professional judgment to categorize situations where targeted differentiation will produce the greatest learning gains. Titus (2025) explored how DI could enhance students' empowered learning skills, finding that when teachers varied their instructional processes — through guided inquiry, collaborative tasks, and scaffolded reading — students demonstrated greater self-directedness and inherent motivation in their learning. This study highlighted the importance of aligning differentiation strategies with the cognitive demands of specific learning objectives, rather than applying a one-size-fits-all differentiation model indiscriminately. Furthermore, Adeniran et al. (2025) underscored that the application of DI in primary science classrooms required teachers to conduct careful pre-assessment and to plan for multiple entry points within each lesson, ensuring that both high-achieving and struggling learners had access to grade-level content while receiving appropriately challenging or supportive instructional platforms.

Afar instructional design, the application of DI in the classroom is also mediated by the broader school environment and the quality of leadership support available to teachers. The study published in Spry Contemporary Educational Practices (2023) specifically examined how school leaders' support influenced the use of DI in primary grades, concluding that teachers were significantly more likely to apply differentiated approaches consistently when principals provided instructional coaching, allocated collaborative planning time, and connected a clear vision for comprehensive pedagogy. This finding proposes that the classroom-level application of DI cannot be divorced from school-level structures and culture. In private schools in Karachi, where administrative directives and parental expectations significantly shape classroom instruction, cultivating a school-wide commitment to DI requires concentrated efforts from both leadership and teaching staff. The accessibility of resources such as differentiated learning materials, assessment tools, and professional development workshops also plays a conclusive role in allowing or constraining teachers' ability to apply DI principles in meaningful and sustainable ways.

Implementing Differentiated Instruction in Primary Grades

Implementing differentiated instruction in primary grades presents both distinctive opportunities and particular complexities, given the developmental characteristics of young learners and the foundational nature of primary education. Young children display wide variation in cognitive development, prior knowledge, language gaining, and attention spans, making primary classrooms one of the most heterogeneous learning environments in the education system. Kara and Tekindur (2025), in their mixed-methods investigation of third-grade science classes, found that DI had a significant positive effect on students' academic achievement compared to traditional whole-class instruction. The study exposed that students who established differentiated lessons demonstrated not only higher test scores but also more positive attitudes toward learning science, suggesting that DI at the primary level addresses both the cognitive and affective dimensions of student engagement. Teachers who applied DI in these settings used tiered activities, visual supports, and differentiated questioning techniques to ensure that all students could access

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and meaningfully engage with core scientific concepts irrespective of their initial readiness levels.

Adeniran et al. (2025), in their comprehensive mixed-methods study on primary school learners' outcomes in basic science, provided robust proof that DI improves learning results in primary grades across diverse school contexts. The qualitative component of the study exposed that teachers who successfully implemented DI in primary science classes developed strong routines for ongoing assessment and used this data to rearrange student groupings fluidly throughout the academic term. They also reported that implementing DI required a steady, incremental approach — beginning with small adjustments to existing lessons before moving toward fully tiered instructional designs. This staged implementation approach is particularly relevant for primary-grade teachers in Karachi who may be encountering DI for the first time, as it offers a realistic and manageable pathway toward more receptive and individualized teaching. The study also found that school-based professional development, where teachers collaborated to design and refine DI lessons together, was among the most effective mechanisms for building implementation capacity at the primary level.

Finally, the role of school leadership in facilitating the implementation of DI in primary grades cannot be overstated. The research by Spry Contemporary Educational Practices (2023) demonstrated that primary-grade teachers who received reliable instructional support from their school leaders — including regular classroom observation, feedback, and resources for differentiated planning — implemented DI with better loyalty and confidence than those who worked in isolation. Titus (2025) further affirmed that maintainable DI implementation in primary schools requires a systemic approach in which teachers, leaders, and curriculum designers cooperate to align assessment practices, instructional materials, and professional learning with the principles of differentiation. In the setting of private primary schools in Karachi, where teacher autonomy may be limited by institutional directives, fostering a supportive and collaborative school culture becomes a prerequisite for meaningful DI implementation. Collectively, the reviewed literature suggests that when implemented attentively and with sufficient institutional support, differentiated instruction holds significant promise for improving learning outcomes, enhancing student engagement, and dropping achievement gaps among primary-grade students.

In conclusion, the value of differentiated instruction (DI) in improving student learning results at the primary level. Studies have dependably shown that DI can focused to enhanced academic success, improved student motivation, and well educational results. The appraisal also highlights the significance of considering individual differences, learning styles, and cultural circumstances in an instructional design. Research has confirmed that DI strategies like tiered instruction, learning centres, flexible grouping, and technology assimilation can be actual in providing to diverse student.

Significance

This research project is important because it will help improve teaching methods and school rules to better support students' knowledge. Differentiated instruction (DI) is a teaching approach that distinguishes and talks the varied needs of students. Research has shown that differentiated instruction can increase academic performance, motivation, and independence. However,

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teachers' training, attitudes, and school setting play a crucial role in creating differentiated instruction successful.

This study can make an affirmative influence in several ways like it can inform teaching practices and rule decisions based on confirmation. And also help teachers become more confident and accomplished in using differentiated instruction. Moreover, it can advance student learning outcomes, motivation, and engagement. And it can construct learning environments that welcome and maintenance students from diverse backgrounds.

The results of this study can impact teacher training programs, school strategies, curriculum design, and future research on Differentiated instruction and comprehensive education. Finally, this study goals to provide practical approvals for applying DI effectively in secondary school classrooms, leading to better educational results and more wide-ranging learning surroundings.

Methodology

Research Design

This study approves a **qualitative research design** to explore the influence of differentiated instruction on students' learning. Unlike quantitative approaches that reduce human experience to numbers, qualitative inquiry allows the researcher to observe, interpret, and understand the lived classroom experience in its natural situation. This design is mostly suited to the present study because it enables the researcher to capture the shades of student engagement, collaboration, and learning behavior as they unfold in real time.

Action Research

The specific methodology employed is **action research** — a deep, cyclical, and practitioner-led approach that bridges the gap between theory and classroom practice. Rather than witnessing from a distance, the researcher is embedded in the teaching process, actively implementing differentiated instructional strategies and concurrently scrutinising their impact on student learning.

Action research is selected for several compelling reasons. First, it permits the researcher to collect first hand, authentic data from within the classroom environment, ensuring that findings are grounded in real pedagogical experience. Second, its recurring nature — plan, act, observe, reflect — enables constant refinement of instructional strategies across each lesson. Third, it encourages critical self-reflection, prompting the researcher to ask not only *what* is happening in the classroom but *why* it is happening and *how* it can be improved. Finally, action research respects the complexity of classroom dynamics, allowing the researcher to familiarize methods as new visions emerge.

This methodology is especially valuable in the context of differentiated instruction, where teaching strategies must be receptive to the diverse needs, willingness levels, and learning profiles of separate students

Population

All the primary level students are enrolled in private schools of district Malir, Karachi are the population.

Sampling

A convenience sampling technique is employed to select the study's participants. This non-probability method includes selecting individuals who are

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readily reachable and willing to participate, making it a practical and time-efficient choice for classroom-based research.

In this study, **30 Grade 4 students** from a private school in Karachi constitute the sample. This approach is justified on multiple grounds. The researcher has direct and ongoing access to these students as their classroom teacher, which assists natural, uninterrupted data collection. Additionally, the exploratory nature of the study — aimed at generating initial insights into the effects of differentiated instruction — does not claim a large or randomly selected sample. The goal here is depth of understanding, not arithmetical generalization.

Data Collection

In order to collect data, this study pays a multi-method approach certifying a comprehensive understanding of the effect of differentiated instructions on students' learning. The researcher uses lesson plans, observation sheets, and field notes to collect data over a period of 10 lessons.

Phase 1 — Pre-Intervention (Lessons 1–5): In the first phase, five traditional lesson plans are delivered *without* any differentiated instruction approaches. This phase serves as a **baseline**, allowing the researcher to document students' typical levels of engagement, participation, and learning behavior under conventional teaching methods. Observation sheets are used throughout this phase to systematically record what is happening in the classroom.

Phase 2 — Post-Intervention (Lessons 6–10): In the second phase, five redesigned lesson plans are implemented that fully join **differentiated instruction** — including different content, flexible grouping, tiered tasks, and multiple modes of assessment. Observation sheets continue to be used to capture shifts in student behavior, collaboration, and academic engagement compared to the baseline.

Semi-Structured Interviews: Following the intervention phase, brief **semi-structured interviews** are conducted with selected students to capture their personal perceptions and experiences of differentiated instruction. Unlike closed questionnaires, semi-structured interviews allow students to express their thoughts in their own words, offering rich qualitative insights that observation alone cannot provide. The interviews explore questions such as: *How did you feel about the different types of tasks given to you? Did you find the lessons easier or harder to follow? Did working in different groups help you learn better?* These student voices add an essential interpretive layer to the observational data.

Data Analysis

All collected data — observation sheet records, and interview transcripts — are carefully **transcribed and reviewed**. The data are then subjected to **thematic analysis**, a generally used qualitative method that involves identifying, organizing, and interpreting recurring patterns and themes crossways the dataset.

The process follows a systematic sequence: data familiarization, initial coding, theme generation, theme review, and final interpretation. This approach allows the researcher to move beyond surface-level description and uncover deeper meaning in students' learning experiences, ultimately revealing how and why differentiated instruction influences engagement and achievement in the classroom.

Limitations

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The sample size is limited to 30 students of grade 4 from a private school in Karachi, limiting the findings' applicability to other educational situations. The researcher's double role as teacher and researcher effects participants' answers and actions. The study's emphasis on a single grade level and subject area limits transferability, and the short duration (10 lessons) may not seizure long-term effects of differentiated instructions. Dependence on self-reported data and observational notes may be subjective, and the investigating nature and lack of control group limit creating connection.

Results

Pre-Intervention Phase

Student Engagement and Participation

During the pre-intervention phase, traditional lecture-based teaching methods resulted in noticeably limited student engagement and participation. Without interactive activities, visual aids, or hands-on experiences, many students writhed to stay focused and understand the subject matter. Students seated in the back rows or those who were less academically confident were particularly passive and disengaged throughout the lessons.

This was clearly reflected in students' own words. Student A expressed frustration, saying:
"I don't know what goes in a balanced diet. I really don't get it what teacher is saying."
Student B added:
"I wish we could do more fun experiments."
Student C openly confessed:
"Lecture is getting boring. I'm going to sleep."
Student D also shared:
"I just copy whatever is on the board. I don't really understand what it means."
Student E expressed similar frustration:
"Every lesson is the same. We sit, teacher talks, we write. I don't feel like I am learning anything new."

These responses highlight a critical gap between the way content was being delivered and the way students were able to receive and process it. The findings strongly suggest that without diverse, interactive instruction, student engagement remains low and comprehension suffers.

Creativity and Collaboration

The pre-intervention observations also revealed that students had very few opportunities to think creatively or work collaboratively. The one-size-fits-all lecture format left little room for peer communication, group problem-solving, or imaginative exploration of concepts.
Student A remarked:
"We just sit and listen. We don't have something to do, so it is uninteresting."
Student B echoed this:
"I can't take interest. It's just listening and taking notes."
Student D added:
"I want to work with my friends and do activities together, but we never get a chance to do that."
Student E expressed:

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"I don't know how to work in a group properly. We have never really done it in class."

Excitingly, Student A also approached the teacher during the lesson and asked:

"Miss, can you show us how ink spreads in a whole glass of water? Can we do an experiment to understand better?"

This spontaneous request from a student tells a natural desire for hands-on, inquiry-based learning — a desire that traditional methods were failing to meet. The absence of collaborative tasks and practical demonstrations made it difficult for students to envisage abstract scientific concepts, more reinforcing the need for differentiated instructional approaches.

Challenges

Students tackled numerous challenges during the traditional teaching phase. Passive learning environments, limited materials, and a lack of meaningful communication made it difficult for students to develop understanding or confidence.

Student A said:

"I don't understand the circulatory system. Can you use a different teaching method so we can understand better?"

Student B shared:

"I don't feel confident while doing work in groups."

Student C admitted:

"I feel sleepy. That's why I didn't hear what you said about the food chain topic."

Student D reflected:

"When the teacher explains too fast, I lose path and then I feel too shy to ask her to repeat it."

Student E also noted:

"I try to understand but then I forget everything by the time we have a test. I don't know how to remember it properly."

Student F added:

"Science has too many new words. I don't know what most of them mean and nobody explains them in a simple way."

These accounts collectively paint a picture of a classroom where students were physically present but mentally disconnected. The data from this phase recognized a clear baseline, confirming that traditional instruction alone was insufficient to meet the diverse learning needs of Grade 4 students.

Post-Intervention Phase

Student Engagement and Participation

Following the implementation of differentiated instruction across five lessons, a striking transformation in student engagement and participation was observed. Students became noticeably more active, enthusiastic, and responsive during lessons. Hands-on activities and varied instructional approaches apprehended students' attention in ways that lectures had not.

Student A expressed genuine excitement:

"It's amazing that water can be solid, liquid, and gas!"

Student B mirrored on the change in their own learning:

"I understand better when we do activities rather than just listening."

Student C described their experience with a diffusion experiment:

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"Mixing ink droplets in water and watching the colour spread in the whole glass was so cool."

Student D shared:

"I never thought science could be this interesting. Now I actually look forward to coming to class."

Student E added:

"When we got to choose how to show our learning, I felt like the teacher trusted us. That made me want to try harder."

Student F said:

"I used to sit quietly and just hope the lesson would end. Now I raise my hand because I actually know the answers."

These responses align with the findings of Adeniran et al. (2025), who demonstrated that when teachers employ flexible grouping, tiered tasks, and hands-on activities under a differentiated instruction framework, learners show measurable improvements in academic engagement and overall participation. The present study's post-intervention data confirm that active, student-centered learning creates deeper connections to content, making the learning experience both more meaningful and more enjoyable.

Creativity and Collaboration

The introduction of differentiated instruction created rich chances for students to express their creativity and work collaboratively. Project-based learning tasks, such as constructing a model of a balanced diet, required students to apply their knowledge in practical and imaginative ways quite than simply recalling information.

Student A said:

"This model helps me understand how much nutrients are required for daily intake."

Student C shared:

"Learning about states of matter was enjoyable by working with my group members."

Student B added:

"My group had different ideas and we put them all together to make something really good. I felt proud of what we made."

Student D reflected:

"We helped each other in the group. When I didn't understand something, my friend clarified it to me in an easy way."

Student E expressed:

"Making the balanced diet model together was fun. Everyone had a job to do and we finished it as a team."

Student F defined the creative process:

"I drew the pictures and my partner wrote the labels. We worked really well together and our model came out really nicely."

These observations are consistent with Titus (2025), who found that when differentiated instructional strategies are applied in the classroom, students demonstrate greater empowerment, improved collaborative skills, and a stronger sense of competence and meaningfulness in their learning tasks. The post-intervention phase confirmed that incorporating real-world, practical demonstrations meaningfully encourages creativity and teamwork among primary-level students.

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Need for Guidance and Support

Despite the overpoweringly positive response to differentiated instruction, the post-intervention observations also revealed that some students vital additional guidance and support to fully benefit from the new approach. While students were motivated and interested, a number of them found it challenging to independently structure their tasks or apply concepts without further clarification.

With targeted teacher support, however, students quickly gained confidence. Student A remarked:

"The extra guidance really helped me understand how to break the balanced diet model into smaller tasks. I was less stressed because I knew what to do next."

Student B added:

"The teacher's help made it clearer how to put ink in the glass and observe how the particles diffuse. I didn't feel so lost anymore."

Student C reflected:

"I used to feel stuck when I didn't understand about states of matter, but now I know I can ask for help and get the support I need."

Student D shared:

"At first I didn't know where to start with the group task, but when the teacher came to our table and explained, everything became much clearer."

Student E expressed:

"I like that the teacher doesn't just explain once and move on. She comes around and checks if we are okay, and that makes me feel supported."

Student F added:

"I used to be afraid of asking questions in front of everyone, but the teacher made me feel that no question is a silly question. That gave me a lot of confidence."

These findings echo Richards-Usher (2013), who noted that teachers who understand differentiated instruction and provide structured support within it create a positive classroom climate where students feel safe to ask for help, take risks, and engage more fully in their learning.

Motivation and Critical Thinking

One of the most significant outcomes of the post-intervention phase was the marked increase in student motivation and critical thinking. Students were not only more engaged but also began to question, explore, and think more deeply about the concepts they were studying.

Student B shared:

"I understood better when the teacher demonstrated the human body systems one by one."

Student A enthusiastically described their experience with independent experimentation:

"I enjoyed doing experiments more when the teacher said I had to do the diffusion practical by myself. I got excited, and after doing that experiment, I understood better."

Student C reflected:

"I started asking myself 'why' things happen now. Before I just accepted whatever was written in the book, but now I want to find out for myself."

Student D shared:

"When I finished the experiment, I felt really proud. I supposed — I did this myself and I actually understand what happened and why."

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Student E expressed:
"Science makes more sense now. I can connect what I learn in class with things I see at home, like how ice melts or how water boils."
Student F added:
"I want to do more experiments. I feel like I am a real scientist when I do them and that makes me want to keep learning."

These findings strongly support the argument made by Titus (2025) that differentiated instruction, when integrated with authorized learning components such as student choice, meaningful tasks, and independent inquiry, significantly enhances students' intrinsic motivation and deepens their critical thinking skills. Overall, the post-intervention data demonstrate that differentiated instruction not only improves comprehension but also inspires students to take ownership of their learning.

Discussion

The findings of this study align closely with the growing body of international literature affirming that differentiated instruction has a meaningful and positive impact on students' learning outcomes at the primary level. Consistent with Adeniran et al. (2025), whose mixed-methods investigation in Nigerian primary schools recognized that differentiated instruction leads to measurable improvements in learner outcomes — particularly when teachers employ flexible grouping, tiered tasks, and ongoing formative assessment — the present study found that Grade 4 students in the selected Karachi private school showed significantly greater engagement, participation, and understanding when instructional content and processes were adapted to suit varied learning needs. These convergent findings from diverse geographical and cultural contexts lend considerable weight to the argument that differentiated instruction is not a culturally specific pedagogical luxury but rather a universally appropriate framework for improving the quality and equity of primary education.

The study further exposed that students in the pre-intervention phase experienced considerable difficulty in comprehending content delivered through traditional, uniform methods. This finding is consistent with Richards-Usher (2013), who identified a direct relationship between teachers' perception and implementation of differentiated instruction and student achievement, noting that classrooms in which teachers failed to differentiate instruction left many learners — particularly those with diverse learning profiles — disengaged and academically underserved. In the present study, students clearly communicated their frustration with passive, lecture-based learning, and their requests for hands-on activities and practical demonstrations indicated an instinctive awareness of how they learned best. This reinforces the fundamental premise of differentiated instruction as defined by Tomlinson (2005, as cited in Titus, 2025): that effective teaching must respond to students' readiness levels, interests, and learning profiles rather than assuming that one instructional approach will meet everyone's needs.

A particularly significant finding concerns the role of planned teacher support in enabling students to benefit fully from differentiated instruction. While the post-intervention phase proved clear improvements in engagement and motivation, it also exposed that some students required additional scaffolding and guidance to successfully complete differentiated tasks. This aligns with Richards-

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Usher (2013), who highlighted that the successful implementation of differentiated instruction depends not only on the design of varied tasks but also on the teacher's ability to provide ongoing, responsive support within those tasks. When that support was provided in this study, students reported feeling more confident, less overwhelmed, and more capable of working independently — a finding that underscores the devoted relationship between differentiation and formative, supportive teaching.

Finally, the post-intervention data highlighted the power of hands-on, inquiry-based learning as a vehicle for both motivation and deeper understanding. Students who participated in practical experiments — such as the diffusion of ink in water and the states of matter investigation — confirmed higher levels of critical thinking, enthusiasm, and collaborative skill than they had shown under traditional instruction. This is consistent with Titus (2025), who found that when teachers include differentiated processes such as guided inquiry, collaborative tasks, and student choice into their instruction, learners demonstrate greater intrinsic motivation and a stronger sense of competence and influence in their learning. The action research process itself also proved to be a valuable tool for professional reflection, as each observation cycle deepened the researcher's understanding of student diversity and informed more responsive instructional planning.

Conclusion

This study set out to examine the influence of differentiated instruction on the learning experiences of Grade 4 students in a private school in District Malir, Karachi, using an action research design over ten lessons. The findings clearly demonstrate that differentiated instruction, when deliberately and thoughtfully implemented, has a transformative effect on student engagement, creativity, collaboration, motivation, and critical thinking — all of which are crucial dimensions of meaningful learning at the primary level.

The pre-intervention phase confirmed that traditional, lecture-based teaching left many students passive, disengaged, and unable to fully grasp the concepts being taught. In contrast, the post-intervention phase exposed a striking shift in classroom dynamics, with students actively participating in hands-on experiments, working collaboratively on project-based tasks, and expressing genuine curiosity and enthusiasm for science. These findings are consistent with both Adeniran et al. (2025) and Titus (2025), who have demonstrated across different geographical contexts that differentiated instruction creates more inclusive, responsive, and effective learning environments at the primary level.

It is also acknowledged that differentiated instruction does not eliminate all challenges. Some students continued to require additional guidance and support, and the teacher's ability to provide timely, individualized scaffolding was critical to ensuring that all learners could benefit from the approach. As Richards-Usher (2013) rightly noted, the implementation of differentiated instruction is directly tied to the teacher's understanding of its philosophy and their commitment to ongoing professional development and reflective practice.

In conclusion, this study provides contextually grounded evidence that differentiated instruction is a powerful and practical pedagogical approach for primary classrooms in Pakistan's private school sector. Teachers who are willing to move beyond uniform instruction and respond to the diverse needs of their students can create learning environments where every child feels valued, challenged, and

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capable of success. Future research with larger samples, longer timeframes, and multiple school settings would further strengthen our understanding of how differentiated instruction can be scaled and sustained within Pakistan's broader educational landscape.

Recommendations

Following are the recommendations of this study:

- Based on the final research findings, it determined that differentiated instructions had a high level of effect on students learning performance. In light of the findings, the following recommendations were thought to be applicable.
- Teachers should incorporate DI into their lesson plans because it has helpful impact on concept maintenance and academic performance in science subjects.
- Teacher should encourage collaborative activities in classrooms such as teamwork as it improves creativity and problem-solving skills between students.
- Schools should facilitate drilling on differentiated instruction to teachers.
- Schools should provide enough materials so that teachers can join DI in their lesson plans.
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