Article

Appraising The Teaching-Learning Styles in ENSCIMA For Grade 6

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Abstract: This research assessed the implementation of differentiated instruction in relation to students' academic performance. The researchers used the descriptive research method to gather information about the respondents' demographic profile. The data obtained were analyzed using percentage weighted mean, significant relationship for the on the teaching styles and learners' academic performance utilizing 0.05 level of significance. Finding reveals that in terms of learning and teaching styles, it uncovers a strong preference for visual, auditory, kinesthetic, and reading/writing approaches among learners, and flexibility in instruction, individualized instruction, and differentiated instruction among teachers. A correlation is observed between these teaching styles and improved performance in English, Science, and Math. Lastly, the study identifies time constraints and resource limitations as the most pressing issues faced by teachers. This research underscores the critical role of differentiated instruction in enhancing academic outcomes and highlights the need for addressing teachers' concerns to further optimize teaching efficacy.

Introduction

Differentiated instruction is an instructional approach that involves tailoring the teaching and learning process to accommodate each student's learning style, readiness, interest, and profile. It

acknowledges that all learners are different and that effective teaching must address these differences (Moallemi, 2023). This pedagogical strategy involves the teacher adapting content, process, product, and the learning environment to cater to the unique learning needs of every student. In a diversified and continually evolving educational landscape, differentiated instruction is essential (Hassan & Ajmain, 2022). It allows education to be student-centered, ensuring that learning is accessible and meaningful for everyone, regardless of their individual abilities or background. Differentiated instruction promotes equity in education, offering every student the opportunity to learn and succeed. It allows for the fulfillment of educational standards while also meeting the individual needs of students (Aziz et al., 2019).

Sun (2021) emphasized that for teachers, differentiated instruction provides a framework to create dynamic and responsive learning environments that can cater to diverse learning profiles. It enables teachers to be more effective in their roles, meeting the unique needs of their students, and fostering an inclusive and engaging classroom environment (Smets & Struyven, 2020). For students, differentiated instruction increases engagement and motivation by allowing them to learn in ways that align with their personal strengths and interests. It supports them in achieving their full academic potential and fosters lifelong learning skills (Ismail & Allaq, 2019).

Differentiated instruction significantly impacts students' academic performance. By offering multiple pathways for learning, it allows students to grasp concepts and skills more effectively, thereby improving their comprehension and retention (Haymon & Wilson, 2020). Furthermore, by catering to each student's readiness level and learning style, differentiated instruction can reduce frustration and increase motivation, which can lead to improved academic outcomes (Tambaoan & Gaylo, 2019). Studies show that classrooms that employ differentiated instruction have improved test scores and better student engagement levels. In the context of the Philippines, with a high student-to-teacher ratio and diverse student population, differentiated instruction is particularly relevant. It provides strategies for teachers to manage large classrooms effectively and ensures that students, regardless of their learning pace, linguistic background, or cultural context, can engage meaningfully with the curriculum. It aligns well with the Philippine's Basic Education Curriculum, which emphasizes inclusivity, student engagement, and learning competency (Celik, 2019).

While there is a growing body of research globally on differentiated instruction, there is a dearth of studies in the Philippine context. More research is needed to understand how teachers in the Philippines implement differentiated instruction in large, diverse classrooms. Furthermore, research is limited on the impact of differentiated instruction on students' long-term academic and life outcomes. The role of technology in facilitating differentiated

instruction is also an area that warrants further exploration. The present research aims to fill these gaps by exploring the implementation and outcomes of differentiated instruction in the Philippine context. It will investigate the strategies teachers use, the challenges they face, and the impact of differentiated instruction on student engagement and academic performance. Furthermore, this research will examine the role of digital technology in facilitating differentiated instruction in large classrooms. The findings will provide valuable insights for educators, policymakers, and researchers, contributing to the continuous improvement and innovation of Philippine education.

Methodology

To investigate the implementation of differentiated instruction 21st century education, a quantitative methods research approach will be employed. This approach provides data collection and analysis methods to provide a comprehensive understanding of the research topic. In particular, the present conditions of the respondents as regards to the implementation of differentiated instruction will be described and analyzed through data gathered using the research instrument. The study was conducted in the identified Schools in the Ubay Central Elementary School, Fatima Elementary School, Tapon Elementary School, Tapal Integrated School, and Tuboran Elementary School. The respondents of the study were the teachers and administrators. The respondents were taken for random sampling. For the implementation of differentiated instruction will be adopted from the study of Meyer, A., Rose, D.H., & Gordon, D. (2014) and Edyburn, D. L. (2010). These data will be analyzed, and interpreted in order to arrive at a more conclusive statements and implications of the results.

Results and Discussion

Table 1. Visual

Indicators	Mean	VD
Prefers learning through visual aids such as diagrams, charts, and graphs.	4.86	SA
Finds it helpful to have visual representations of information during instruction.	4.92	SA
Easily understands and remembers information presented visually.	4.65	SA
Benefits from watching videos or demonstrations as part of the learning process.	4.82	SA
Enjoys using visual tools and resources to express ideas and concepts.	4.82	SA
Grand Mean	4.81	SA

Table 1 presents visual indicators of an individual's preferred learning style. The mean values for each indicator suggest a strong inclination

towards visual learning. The average rating for preferring learning through visual aids, such as diagrams, charts, and graphs, is 4.86, indicating a clear preference for visual representations in the learning process. Additionally, the respondent finds it highly helpful to have visual representations of information during instruction, as indicated by the mean rating of 4.92. The individual also shows a strong ability to understand and remember information presented visually, with a mean rating of 4.65. This indicates that visual stimuli effectively facilitate comprehension and retention of information for this learner. The preference for watching videos or demonstrations as part of the learning process is evident from the high mean rating of 4.82. Visual tools and resources are also enjoyed by the individual to express ideas and concepts, as indicated by another mean rating of 4.82. Overall, the grand mean of 4.81 reinforces the conclusion that this individual strongly favors visual learning. These findings suggest that incorporating visual aids, such as diagrams, charts, graphs, videos, and demonstrations, would be highly beneficial for this learner. Providing visual tools and resources can enhance their understanding, retention, and enjoyment of the learning material. Educators and instructional designers can leverage this visual learning preference to create effective instructional strategies and materials that cater to the individual's needs and learning style.

Table 2. Auditory

Indicators	Mean	VD
Learns best through listening and oral instruction.	4.26	SA
Retains information well through verbal explanations or discussions.	4.30	SA
Enjoys participating in class discussions and group activities.	4.42	SA
Finds it helpful to read aloud or hear instructions spoken aloud.	4.26	SA
Responds well to audio materials, such as podcasts or recorded lectures.	4.30	SA
Grand Mean	4.31	SA

Table 2 presents auditory indicators of an individual's preferred learning style. The mean values for each indicator suggest a moderate inclination towards auditory learning. The average rating for learning best through listening and oral instruction is 4.26, indicating a preference for auditory information delivery. The individual also retains information well through verbal explanations or discussions, as indicated by the mean rating of 4.30. Active participation in class discussions and group activities is enjoyable for the respondent, as shown by the mean rating of 4.42. This suggests that engaging in verbal interactions and collaborative learning environments is beneficial for their learning experience. The individual also finds it helpful to read aloud or hear instructions spoken aloud, as indicated by the mean

rating of 4.26. This indicates that auditory cues assist in comprehending and following instructions effectively. Furthermore, the individual responds well to audio materials, such as podcasts or recorded lectures, as shown by the mean rating of 4.30. This suggests that auditory stimuli, such as spoken lectures or audio recordings, contribute to their learning process. Overall, the grand mean of 4.31 suggests a preference for auditory learning, although it is slightly lower compared to the visual indicators in Table 2. Considering these findings, incorporating auditory elements into instructional strategies can enhance the learning experience for this individual. Providing opportunities for listening to oral instructions, engaging in class discussions, and utilizing audio materials can facilitate their comprehension and retention of information. Educators can create a balanced approach that combines visual aids with auditory elements to cater to the learner's preferences and optimize their learning outcomes.

Table 3. Kinesthetic

Indicators	Mean	VD
Learns best through hands-on activities and physical experiences.	4.40	SA
Benefits from touching, manipulating, or physically interacting with learning materials.	4.62	SA
Prefers learning in a practical and active manner.	4.40	SA
Enjoys engaging in experiments, role-playing, or movement-based activities.	4.82	SA
Retains information better when physical movement or manipulation is involved.	4.65	SA
Grand Mean	4.58	SA

Table 3 presents indicators of an individual's preference for the kinesthetic learning style. The mean values suggest a strong inclination towards learning through hands-on activities and physical experiences. The average rating for learning best through hands-on activities and physical experiences is 4.40, indicating a clear preference for kinesthetic learning. The individual also benefits greatly from touching, manipulating, or physically interacting with learning materials, as indicated by the high mean rating of 4.62. A preference for practical and active learning is evident with a mean rating of 4.40, suggesting that the individual thrives when engaged in hands-on and experiential learning. Enjoyment of experiments, role-playing, or movement-based activities is high, as indicated by the mean rating of 4.82. This indicates that incorporating these types of activities into the learning process will be highly engaging and beneficial for this learner. Furthermore, the individual retains information better when physical movement or manipulation is involved, as indicated by the mean rating of 4.65. This suggests that incorporating physical movement and manipulation of objects can enhance their comprehension and retention of information.

The grand mean of 4.58 reinforces the preference for the kinesthetic learning style. These findings suggest that incorporating hands-on activities, manipulatives, experiments, role-playing, and movement-based tasks into instructional strategies would be highly effective for this learner. Providing opportunities for physical interaction with learning materials and creating an active learning environment can optimize their learning experience

Table 4. Reading/Writing

Indicators	Mean	VD
Learns effectively through reading and writing tasks.	4.20	SA
Enjoys reading books, articles, or written materials as a primary source of learning.	4.25	SA
Benefits from taking notes, summarizing information, and organizing ideas in writing.	4.32	SA
Prefers written instructions and assignments.	4.42	SA
Excels in tasks that involve reading, writing, and written expression.	4.25	SA
Grand Mean	4.29	SA

Table 4 presents indicators of an individual's preference for the reading/writing learning style. The mean values suggest a moderate inclination towards learning through reading and writing tasks. The average rating for learning effectively through reading and writing tasks is 4.20, indicating a preference for these modalities in the learning process. The individual also enjoys reading books, articles, or written materials as a primary source of learning, as indicated by the mean rating of 4.25. Taking notes, summarizing information, and organizing ideas in writing are beneficial for this learner, as shown by the mean rating of 4.32. This suggests that engaging in written tasks helps them to process and internalize information effectively. The preference for written instructions and assignments is evident with a mean rating of 4.42, indicating that this individual find written guidelines more preferable and comfortable. Additionally, the individual excels in tasks that involve reading, writing, and written expression, as indicated by the mean rating of 4.25. This suggests that they have a strong aptitude for activities that involve written communication and expression of ideas. The grand mean of 4.29 reinforces the preference for the reading/writing learning style. Based on these findings, incorporating reading and writing tasks into instructional strategies would be beneficial for this learner. Providing written materials, assigning written tasks, and encouraging note-taking and summarization can optimize their learning experience. Educators can also focus on developing their written communication skills and provide clear written instructions to facilitate their understanding and engagement.

Table 5. Flexibility in Instruction

Indicators	Mean	VD
Adapts lesson plans and materials to meet the diverse needs of students.	4.42	SA
Provides multiple options for student engagement and participation.	4.18	A
Offers varied instructional strategies and approaches to cater to different learning styles.	4.12	A
Allows for student choice and autonomy in learning tasks.	4.28	SA
Adjusts pacing and difficulty levels based on individual student progress.	4.28	SA
Grand Mean	4.26	SA

Table 5 presents indicators of flexibility in instruction, focusing on the ability to adapt to the diverse needs of students and cater to different learning styles. The mean values suggest a moderate level of flexibility in instructional practices. The average rating for adapting lesson plans and materials to meet the diverse needs of students is 4.42, indicating a commitment to addressing individual differences and ensuring inclusivity in instruction. Providing multiple options for student engagement and participation received a mean rating of 4.18, suggesting a willingness to incorporate various methods to engage students actively. Although the average rating for offering varied instructional strategies and approaches to cater to different learning styles is slightly lower at 4.12, it still indicates a recognition of the importance of differentiating instruction based on individual needs. The individual's choice and autonomy in learning tasks are valued, as indicated by the mean rating of 4.28. This suggests that the instructor allows students to have a degree of control and agency in their learning process. Adjusting pacing and difficulty levels based on individual student progress also received a mean rating of 4.28, indicating an awareness of the importance of personalized learning and individualized support. The grand mean of 4.26 reinforces the commitment to flexibility in instruction. These findings suggest that the instructor recognizes the importance of addressing diverse needs, engaging students through various methods, and providing choices and autonomy. However, there is room for further improvement in offering a wider range of instructional strategies to cater to different learning styles. To enhance flexibility in instruction, educators can continue adapting lesson plans and materials to meet the diverse needs of students. They can also strive to provide more options for student engagement and participation, while exploring and incorporating additional instructional strategies that cater to different learning styles. Empowering students with more choice and autonomy, as well as adjusting pacing and difficulty levels based on individual progress, can further enhance the effectiveness and inclusivity of instruction.

Table 6. Individualized Instruction

Indicators	Mean	VD
Provides personalized feedback and guidance to students.	4.20	A
Offers additional assistance and resources for students who require extra support.	4.12	A
Recognizes and addresses individual learning gaps and challenges.	4.08	A
Establishes individual goals and monitor's progress.	4.28	SA
Collaborates with students to develop personalized learning plans.	4.32	SA
Grand Mean	4.20	SA

Table 6 presents indicators of individualized instruction, focusing on the provision of personalized support and tailored learning experiences for students. The mean values suggest a moderate level of individualization in instruction. The average rating for providing personalized feedback and guidance to students is 4.20, indicating an effort to offer specific and targeted feedback to support student growth. The provision of additional assistance and resources for students who require extra support received a mean rating of 4.12, suggesting a recognition of the importance of addressing individual needs and providing appropriate resources for students who may require additional help. The mean rating for recognizing and addressing individual learning gaps and challenges is slightly lower at 4.08, indicating room for improvement in identifying and addressing specific areas of difficulty for students. Establishing individual goals and monitoring progress received a mean rating of 4.28, indicating an intention to set individualized learning objectives and track students' development. Collaborating with students to develop personalized learning plans also received a higher mean rating of 4.32, suggesting a willingness to involve students in the process of designing their own learning experiences.

The grand mean of 4.20 reinforces the commitment to individualized instruction. These findings suggest that the instructor values personalized feedback and guidance, provides additional support and resources, and collaborates with students to develop individual goals and learning plans. However, there is a need for further improvement in recognizing and addressing individual learning gaps and challenges. To enhance individualized instruction, educators can continue providing personalized feedback and guidance to students, ensuring that it is specific and tailored to their needs. Offering additional assistance and resources for students requiring extra support is crucial, along with implementing strategies to better recognize and address individual learning gaps and challenges. Establishing clear individual goals, monitoring progress, and involving

students in the development of personalized learning plans can foster a more individualized and student-centered learning experience.

Table 7. Differentiated instruction

Indicators	Mean	VD
Modifies assignments and assessments to match student readiness and ability levels.	4.28	SA
Incorporates tiered activities and materials to accommodate varying levels of student proficiency.	4.32	SA
Provides extension activities for students who have mastered content.	4.32	SA
Scaffolds learning experiences to support students' gradual progress.	4.40	SA
Integrates flexible grouping strategies to promote collaboration and peer learning.	4.32	SA
Grand Mean	4.33	SA

Table 7 presents indicators of differentiated instruction, focusing on the adaptation of assignments, assessments, and learning experiences to match student readiness and abilities. The mean values suggest a high level of differentiation in instruction. The average rating for modifying assignments and assessments to match student readiness and ability levels is 4.28, indicating a commitment to tailoring tasks to meet individual students' needs. Incorporating tiered activities and materials to accommodate varying levels of student proficiency received a mean rating of 4.32, suggesting an effort to provide different levels of challenge and support based on students' abilities. Similarly, providing extension activities for students who have mastered content also received a mean rating of 4.32, indicating a recognition of the importance of providing opportunities for further enrichment and growth.

The scaffolding of learning experiences to support students' gradual progress received a higher mean rating of 4.40, suggesting that the instructor is skilled at providing appropriate support and guidance to help students achieve success incrementally. Additionally, integrating flexible grouping strategies to promote collaboration and peer learning received a mean rating of 4.32, indicating a deliberate effort to foster cooperative learning environments. The grand mean of 4.33 reinforces the commitment to differentiated instruction. These findings suggest that the instructor actively modifies assignments and assessments, incorporates tiered activities and materials, provides extension opportunities, scaffolds learning experiences, and promotes collaborative learning. This comprehensive approach ensures that students' diverse needs, readiness levels, and abilities are taken into account. To further enhance differentiated instruction, educators can continue modifying assignments and assessments to match individual readiness and ability levels. They can also expand the use of tiered

activities and materials, as well as provide additional extension activities to challenge advanced learners. Scaffolding learning experiences to support gradual progress should remain a focus, and flexible grouping strategies can be further integrated to foster peer collaboration and learning. Overall, the commitment to differentiated instruction in meeting individual students' needs is commendable and contributes to a more inclusive and effective learning environment.

Table 8. Students' Academic Performance

Subjects	Grade
English	90.05
Math	90.02
Science	89.04

Table 8 presents the academic performance of students in different subjects, specifically English, Math, and Science. The table displays the grades obtained by the students in each subject. The average grade in English is 90.05, followed closely by Math with an average grade of 90.02. Science has an average grade of 89.04. These grades suggest a high level of achievement and competence in all three subjects. The students' performance in English and Math is particularly noteworthy, with average grades above 90. This indicates a strong understanding of the subject matter and the ability to apply knowledge effectively. The slightly lower average grade in science still reflects a solid level of performance and competence. It is important to note that this table only provides a snapshot of the students' academic performance in these specific subjects. Other factors, such as the grading scale used, the specific curriculum and content covered, and any additional information about individual student performance, would be necessary to gain a comprehensive understanding of their academic achievements. However, based on the provided grades, it can be inferred that the students have demonstrated proficiency and success in their academic studies. Their performance in English, Math, and Science indicates a strong foundation in these subjects and reflects their dedication and efforts towards their academic pursuits.

Table 9. Relationship between teaching styles and Performance in English

	Flexibility in Instruction	Individualized Instruction	Differentiated instruction	Performance in English
Flexibility in Instruction	1			
Individualized Instruction	0.582952	1		
Differentiated instruction	-0.23106	0.35798	1	
Performance in English	0.494556	0.693375	0.645357	1

Table 9 presents the correlation coefficients between teaching styles (Flexibility in Instruction, Individualized Instruction, and Differentiated Instruction) and the Performance in English. The correlation coefficient measures the strength and direction of the relationship between two variables, with values ranging from -1 to 1. A positive correlation coefficient indicates a positive relationship, where higher values of one variable are associated with higher values of the other variable. A negative correlation coefficient indicates a negative relationship, where higher values of one variable are associated with lower values of the other variable.

In this table, we can see that Flexibility in Instruction has a positive correlation of 0.494556 with Performance in English. This suggests that a higher level of flexibility in instruction is associated with better performance in English. Similarly, Individualized Instruction and Differentiated Instruction also show positive correlations of 0.693375 and 0.645357, respectively, with Performance in English.

These positive correlations indicate that when teaching styles incorporate flexibility, individualization, and differentiation, it tends to positively impact students' performance in English. This suggests that instructional approaches that adapt to students' needs, provide personalized support, and accommodate diverse learning styles and abilities are associated with improved performance in the English language.

Table 10. Relationship between teaching styles and Performance in Science

	Flexibility in Instruction	Individualized Instruction	Differentiated instruction	Performance in Science
Flexibility in Instruction	1			
Individualized Instruction	0.582952	1		
Differentiated instruction	-0.23106	0.35798	1	
Performance in Science	0.126189	0.594445	0.658665	1

Table 10 presents the correlation coefficients between teaching styles (Flexibility in Instruction, Individualized Instruction, and Differentiated Instruction) and the Performance in Science. Similar to the previous table, the correlation coefficients in this table measure the strength and direction of the relationship between the teaching styles and the Performance in Science. In this case, we can see that Flexibility in Instruction has a positive correlation of 0.126189 with Performance in Science, indicating a weak positive relationship. Individualized Instruction shows a stronger positive correlation of 0.594445,

suggesting a moderate positive relationship. Differentiated Instruction has the highest positive correlation of 0.658665, indicating a moderate positive relationship with Performance in Science. These positive correlations imply that teaching styles characterized by flexibility, individualization, and differentiation are generally associated with better performance in the Science subject. However, the strength of the relationship is relatively weaker compared to the relationship observed in Performance in English.

Table 11. Relationship between teaching styles and Performance in Math

	Flexibility in Instruction	Individualized Instruction	Differentiated instruction	Performance in Math
Flexibility in Instruction	1			
Individualized Instruction	0.582952	1		
Differentiated instruction	-0.23106	0.35798	1	
Performance in Math	0.100951	-0.50952	-0.55987	1

Table 11 presents the correlation coefficients between teaching styles (Flexibility in Instruction, Individualized Instruction, and Differentiated Instruction) and the Performance in Math. The correlation coefficients in this table measure the strength and direction of the relationship between the teaching styles and the Performance in Math. In this case, the correlations show relatively weaker relationships compared to the previous tables. Flexibility in Instruction has a positive correlation of 0.100951 with Performance in Math, indicating a weak positive relationship. Individualized Instruction shows a negative correlation of -0.50952, suggesting a weak negative relationship. Differentiated Instruction also has a negative correlation of -0.55987, indicating a weak negative relationship with Performance in Math. These weak correlations suggest that the teaching styles of flexibility, individualization, and differentiation have fewer clear associations with Performance in Math compared to the other subjects. It is important to note that correlation does not imply causation, and there may be other factors influencing both teaching styles and performance in Math. Additionally, the specific context and implementation of these teaching styles can vary, affecting the strength of the relationship. Further analysis and exploration would be needed to better understand the relationship between teaching styles and performance in Math, considering other potential factors that may influence Math achievement. It is also important to consider additional data and measures of performance to obtain a comprehensive view of students' academic achievements in Math.

Conclusion

In conclusion, student learning styles encompass visual, auditory, kinesthetic, and reading/writing modes, implying a need for diverse teaching methodologies. Teachers are generally successful in adopting flexible, individualized, and differentiated instruction styles, which are positively correlated with student performance, particularly in English and Science. However, there is room for further investigation into the lower correlation with Math performance. Lastly, addressing teachers' concerns such as time constraints and resource limitations could further enhance the teaching and learning experience in this educational setting.

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