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Examining the Influence of Elementary Teachers' Innovative Strategies on Intermediate Pupils' Learning Styles

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ABSTRACT

This study explored the use of innovative teaching strategies—constructivist, collaborative, reflective, integrative, and inquiry-based—and their influence on the learning styles of intermediate pupils at Yusop Dais Elementary School. A descriptive quantitative design was employed, using a researcher-developed questionnaire for teachers and a student learning style instrument adapted from Abrami and Venkatesh. Findings revealed that most pupils preferred visual learning styles, followed by auditory and kinesthetic. Among the strategies, the constructivist approach was the most frequently applied by teachers. Statistical analysis showed no significant influence of visual and auditory learning styles on the effectiveness of constructivist, collaborative, integrative, or inquiry-based strategies. However, a significant relationship was found between the kinesthetic learning style and the reflective strategy. These findings indicate that while various innovative strategies are commonly used, their effectiveness may vary depending on students' preferred learning styles. The results underscore the importance of aligning teaching strategies with learners' needs to improve engagement and academic performance. Teachers are encouraged to consider diverse learning preferences and adapt their instructional approaches accordingly to ensure more inclusive and effective teaching practices.

Keywords
Collaborative Learning
Elementary Education
Inquiry Learning
Learning Styles
Teacher Innovation

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Introduction

Teaching strategies might sound like a complicated concept, but put simply, it's just the method and practice of teaching in general, especially about academic subjects or theoretical concepts [1]. Pedagogy can refer to all levels of teaching, from nursery and primary up to higher education. When it comes to the fundamentals of strategies, there are five different approaches to consider. Each of these approaches is usually placed on a spectrum from teacher-focused to learner-focused strategies. As the names suggest, teacher-focused pedagogy revolves around teachers, putting them at the centre of the learning process, while learner-focused pedagogy is centred around learners playing an active role in the learning process [2]-[5].

There are five approaches to pedagogy: the constructivist approach, the collaborative approach, the reflective approach, the integrative approach, and the inquiry-based approach. The constructivist approach is handy for allowing learners to take a more active role in the learning process, as it encourages them to use their previous knowledge as a foundation for understanding new concepts, as opposed to passively receiving information [6]. The collaborative approach allows learners to create an environment where people can interact with each other by sharing experiences and knowledge [7]. This can be done in a variety of ways, including exchanging ideas and information, and even evaluating or monitoring somebody else's work. A reflective approach can be done through processes such as self-evaluation and self-reflection, used as ways to essentially learn more about your practice [8], improve a certain practice (like small groups and cooperative learning) [9], or to focus on problems learners are having [10]. The integrative approach is more commonly used in higher education, but it can still be quite useful at other stages of education, too, as it can help learners gain a broader understanding of the world around them by linking together bits of related information. Studies have shown that this kind of approach can help learners stay engaged in the topics they're learning about. Inquiry-Based approach requires more than simply giving correct answers to questions, and it encourages more thoughtful and engaged participation from learners [11]. This makes it incredibly effective when teaching science, as many science topics are more easily learned through an understanding of processes rather than isolated facts.

The study of teaching methods and how they affect pupils is referred to as pedagogy. For students to learn more effectively and for them to develop high-order thinking skills, an

effective and well-considered pedagogy is essential. A robust pedagogy is necessary to guarantee that students can learn well through online learning, which poses certain problems and opportunities for instructors. This might entail employing teaching methods and resources that are suitable for the students' ages, as well as having an awareness of the many stages of a child's development and how they can impact learning.

The most effective strategies incorporate a variety of teaching methods, including a thorough teacher's manual, organized group work for the entire class, guided learning, assessment practice, and individual activity. These strategies make appropriate use of questioning and dialogue in order to improve higher-order thinking and meta-cognition. At Structural Learning, it is the role of the teacher to try to avoid educational fads like learning styles (it was originally believed that children should be classified as either Visual, Kinesthetic, or Aural Learners).

The process of picking up new knowledge, skills, values, attitudes, behaviors, and other things is known as learning. Learning also includes the capacity to stop and reflect before acting or to use critical thinking as a tool for learning new things to boost our performance both inside and outside of the classroom.

This study aligns with the distinctive features and guiding principles of the Philippines' DepEd K to 12 Basic Education Program [12]. The learner is the very reason for the entire curriculum system. Its primary emphasis is on the learner's holistic learning and growth. An instructor provides an environment in which the learner enjoys learning, participates in meaningful learning activities, and achieves success because he or she is valued, embraced, and feels secure, even if he or she makes mistakes during his or her learning exploration. He/she is empowered to make choices to become responsible for his/her learning in the classroom and for a lifetime.

Pupils should be aware of their unique learning preferences. Although it is generally unrealistic for educators to tailor their instruction to students' preferences, students shouldn't be classified as having a single learning style. Instead, instructors must understand that different learning styles will predominate among different students. Teachers must use teaching methods that help students with various learning preferences learn efficiently. This means that in order to guarantee that the learning is accessible to the greatest number of students, instruction must be planned to incorporate a variety of learning opportunities and suitable assessments. Applying a variety of instructional strategies in the classroom and when organizing the learning chances for students should maximize benefits.

There are three types of learning styles: visual, auditory, and kinesthetic [13]. Visual refers to the pupils' learning through what they see. Auditory refers to the pupils' learning

through what they hear, and kinesthetics refers to the pupils' learning through the use of movements. Although there were numerous international and national studies conducted in the past about learning styles, it is noted there is no study has been conducted yet that focuses on examining the influence of elementary teachers' innovative strategies on intermediate pupils' learning styles. This study aims to determine the relationship between the teachers' teaching strategies and the pupils' learning Styles for the improvement of their academic performance. Recognizing that Philippine education ranks at the bottom compared to other countries, as indicated by the recently conducted PISA [13], it is hoped that this research will serve as a tool for improvement.

According to the Philippines, the results revealed that Filipino 15-year-old students are five to six years behind their foreign peers, particularly in three learning areas: Mathematics, Science, and English. This was very alarming due to the very poor performance of the students. However, this study will help understand how teaching strategies can contribute to developing the learning styles of the pupils. One of the duties of teachers is to maintain the quality of education. By conducting this research, we will help determine how students can learn easily and quickly, especially in terms of different learning styles.

This study aimed to examine the influence of elementary teachers' innovative strategies on the intermediate pupils' learning styles and determine how these teachers' strategies affect pupils' learning styles.

Methodology

A. Research Design

This study utilized the descriptive quantitative research design to examine the influence of elementary teachers' innovative strategies on intermediate pupils' learning styles at Yusop Dais Elementary School. Specifically, it employed a quantitative approach where the survey question checklists were used to collect numeric data from the teacher and pupil respondents for statistical analysis and interpretation purposes. The descriptive qualitative research is focused on describing characteristics of a population or phenomenon being studied. This type of research involves collecting numerical data to describe and analyze the features of a particular group or situation. The goal is to identify patterns, trends, or relationships within the data without necessarily drawing causal inferences.

B. Research Locale

This study was conducted at Yusop Dais Elementary School, which is located in Barangay Sanga-Sanga, Bongao, Tawi-Tawi. It is one of the public schools under the Ministry of Basic, Higher and Technical Education (MBHTE), found in Bongao District 2 Cluster, with more than five hundred pupils and forty-five teachers. It is situated nearby to Mindanao State University-Tawi-Tawi College of Technology and Oceanography and Sanga-Sanga Airport. It takes five

minutes from MSU-TCTO to the said school via motor single and 10 minutes on walking. The main reason why we chose Yusop Dais Elementary as a school for respondents because, it is within walking distance to conduct the study of the researcher and it is situated nearby to MSU-TCTO, and of course, it can conserve expenses.

C. Research Respondents

The respondents of this study were the intermediate teachers and pupils of Yusop Dais Elementary School. The selection of the teachers was based on the plantilla item; therefore, volunteers and Para Teachers were not included; only those who hold permanent items based on the records of the school profile. As for the pupils, only those who were officially enrolled in this school as intermediate pupils during SY 2023-2024 were included as the respondents to provide information about the learning styles total enumeration was employed. Therefore, there were 45 teachers with 60 pupils who were our respondents in the study.

D. Research Instrument

The instrument of this study consisted of two types. The first type is for the teachers, while the second type is for the pupils. It is a survey questionnaire checklist to gather data on the learning styles of the intermediate pupils of Yusop Dais Elementary School. The researchers used a questionnaire checklist to gather information from the teacher respondents, which consisted of 25 items. The first part is about the personal information of the teacher raters, while the second part consists of statements on the teachers' innovative strategies. When rating, they used a Likert scale: always=5, often=4, sometimes=3, seldom=2, and never=1.

The second type of instrument is the pupil as rater, which was adopted from Abrami and Venkatesh [15]. The instrument has been categorized into parts. The first is about pupils' personal information, while the second part is about the learning style of pupils, which consists of visual, auditory, and kinesthetic learning styles. Each learning style has ten statements in order to collect the numeric data from the pupil-respondents. Under the first type of instrument for the teachers, the researchers made a questionnaire, performed a pilot test at Pangasinan Elementary school to measure if the instrument is reliable for the intermediate teachers.

E. Data Collection Procedures

Before the conduct of data gathering, the researchers secured first all requirements, particularly the letter from the Dean of the College of Education to the principal of Yusop Dais Elementary School, allowing the researchers to administer the questionnaire checklists to the target respondents. Upon the approval of the request letter, the researchers immediately went to the respective school and handed over the letter to the school principal, together with the informed consent as part of ethical consideration, and also for the respondents to be aware of

their involvement in this study. The purpose of the Informed Consent is actually to ensure that the respondents still have the option to either participate or not.

Furthermore, the interested respondents were given the Informed Consent and signed the form by showing their willingness to be part of the study. On the part of the pupils, their parents signed their Informed Consent form. Afterwards, the school head, teacher, and pupil respondents were gathered in one room for a short orientation, where the researchers explained the purpose of the study and its contribution to the institution. The researchers emphasized to the respondents that their responses or answers are secured and kept in strict confidence.

Finally, the survey questionnaire checklists were distributed among the respondents for the actual collection of data. First, the survey questionnaires were sent to the 45 intermediate teachers and 60 intermediate pupils.

Results and Discussions

Frequency distribution and percentage were used to determine the learning style preference of the pupils as visual, auditory, and kinesthetic. The 60 respondents were classified in accordance with their learning style preference questionnaire. Table 1 shows the frequency distribution and proportion of pupils' learning style preferences. Data were analyzed using frequency and preference.

Table 1. The frequency distribution and proportion of pupils' learning style preferences

Learning Style	f	p
Visual	40	66.7%
Auditory	11	18.3%
Kinesthetic	9	15.0%
Total	**60**	**100.0%**

Table 1 presents the proportion of pupils' learning style preferences with their respective frequency and percentage. Among the three learning styles, Visual (f = 40, p = 66.7%) was the most preferred, followed by Auditory (f = 11, p =18.3%), with Kinesthetic (f = 9, p = 15.0%) as the least preferred. This shows that the majority of the respondents were visual learners and that they are quick to learn; when they see something, it helps them to remember it better. Visual learners are at a higher level compared to other learning styles.

This finding is supported by Robinson [16]. Visual learners usually enjoy reading books, surfing the internet, watching movies or documentaries, and may appear to daydream during a session with a lot of verbal activities. Preferred learning styles can also be included in an individual's or learner's action plan. The action plan can help learners work using their strengths and help with their challenges.

Table 2 shows the extent of innovative teaching strategies being used by teachers in intermediate classrooms, using the mean and standard deviation score rating below the table was used to interpret the mean obtained.

Table 2. Teachers' Innovative Strategies

Statements	Mean	SD	Interpretation
Constructivist			
I encourage my pupils to construct knowledge through their experiences and interaction with the environment.	4.82	0.44	Always
I allow my pupils to explore, question, and discover concepts through hands-on activities and problem-solving tasks.	4.69	0.47	Always
I present pictures/images that are relevant and familiar to my learners so that they can easily relate during discussions.	4.62	0.53	Always
I act as a facilitator to guide my pupils in their exploration and provide opportunities for reflection and discussion.	4.84	0.64	Always
I assess my pupils through processes, problem-solving abilities, and their ability to connect new knowledge with existing understanding.	4.73	0.58	Always
Collaborative			
I provide some tasks that allow my pupils to work together in groups to achieve common learning goals.	4.51	0.55	Always
I encourage my pupils to collaborate to foster teamwork, develop their communication skills, and their ability to share and consider different perspectives.	4.60	0.50	Always
During story time, I use reading strategies such as read aloud and shared reading during story time to enhance group learning.	4.80	0.50	Always
I create a supportive environment that encourages my pupils' active participation and effective group dynamics.	4.84	0.42	Always
In terms of assessment, evaluate the individual and group performance to recognize both individual contributions and group achievements.	4.87	0.40	Always
Reflective			
I allow my pupils to review, analyze, and gain insights from their experiences.	4.56	0.62	Always
I encourage my pupils to think critically about themselves, such as identifying their strengths and their areas for improvement.	4.84	0.37	Always
I take time to reflect on the best strategies that I think are appropriate and effective for the group of learners I handle.	4.84	0.52	Always
For reflective activities, I include writing and self-assessment as part of reflective activities to facilitate a deeper understanding of my pupils.	4.27	0.62	Always
When I evaluate the output of my pupils, I provide structured reflections on projects or assignments as part of my evaluation (example: I ask my pupils to reflect on what enables them to accomplish the assigned task or projects).	4.27	0.86	Always
Integrative			
I integrate the concepts and knowledge from different learning areas to provide a holistic understanding for my pupils.	4.76	0.43	Always
I emphasize to my pupils the relevant and real-world applicability of the lesson they learned inside the classroom.	4.80	0.79	Always
For class activities, I encourage my pupils to connect their understanding from different subjects to foster a broader perspective on the topics we discussed as part of class activities.	4.89	0.49	Always
In my classroom, I assign projects, presentations, or assignments that require pupils to apply knowledge from multiple disciplines in my classroom.	2.76	0.57	Sometimes
I use creative expressions such as songs, poems, and drama to help my pupils learn new concepts.	3.64	0.86	Often
Inquiry-Based			

Statements	Mean	SD	Interpretation
I provide opportunities for my pupils to go on field trips to develop their curiosity and their desire to explore and understand the world.	2.71	0.97	Sometimes
I encourage my pupils to take an active role in their learning by formulating questions, conducting investigations, and drawing conclusions.	4.40	0.62	Always
I serve as a guide for my pupils to provide resources, support, and opportunities to enhance their critical thinking and problem-solving skills.	4.93	0.33	Always
I cultivate my learners' critical thinking and problem-solving skills, and their passion for lifelong learning.	4.87	0.40	Always
I assess my pupils' ability to ask meaningful and relevant questions and their ability to communicate their answers or findings.	4.80	0.55	Always

Legend: Always=5; Often=4; Sometimes=3; Seldom=2; Never=1

Table 3 below shows the summary table of the results of the difference in Teachers' Innovative Strategies using mean and standard deviation.

Table 3. The results of the different Teachers' Innovative Strategies

Teachers' Innovative Strategies	N	Min	Max	Mean (M)	SD
Constructivist	45	3.00	5.00	4.7422	0.30338
Collaborative	45	3.60	5.00	4.7244	0.28696
Reflective	45	2.60	5.00	4.5556	0.41754
Integrative	45	3.80	5.00	4.5689	0.25568
Inquiry-based	45	3.60	4.80	4.3422	0.30636
Valid N (listwise)	**45**				

Legend: Always=5; Often=4; Sometimes=3; Seldom=2; Never=1

This table provides descriptive statistics for five different teaching strategies: Constructivist, Collaborative, Reflective, Integrative, and Inquiry-based. The table includes the number of observations (N), the minimum score (M), the maximum score (M), the mean score (M), and the standard deviation (SD) for each teaching strategy. Among the five teachers' innovative strategies, the highest is constructivist, based on 45 observations, the scores ranged from 3.00 to 5.00, with an average score of 4.7422 and a standard deviation of .30338 under the constructivist, indicating that most of the teachers are constructive in terms of their teaching strategies. The lowest among the teachers' innovative strategies is the inquiry-based, based on 45 observations, the scores ranged from 3.60 to 4.80, with an average score of 4.3422 and a standard deviation of .30636 means that the teachers are not totally using the inquiry-based teaching strategies. Followed by the second highest is the collaborative because most of the teachers are using the constructivist and collaborative than the other teachers' innovative strategies. The "Valid N (listwise)" row indicates that there were 45 valid observations used in the statistical analysis for each teaching strategy.

Table 3 essentially provides a summary of the distribution of scores for each teaching strategy, allowing for a comparison of the strategies based on their average effectiveness and the variability of their effectiveness. This finding is supported by Dysthe and Poonam [17], who state that providing learners with interactive activities is crucial for enhancing classroom interaction and promoting effectiveness in English language instruction.

Table 3 presents the results of a statistical analysis exploring the influence of different teaching strategies (independent variables) on different learning styles (dependent variables). The teaching strategies include Inquiry-based, Integrative, Reflexive, Collaborative, and Constructivist methods, while the learning styles are Visual, Auditory, and Kinesthetic. Each row of the table provides the Beta Coefficient, R-square (R2), F-value, p-value, and interpretation for each combination of teaching strategy and learning style. The Beta Coefficient represents the degree of change in the dependent variable for each unit of change in the independent variable. R-squared (R2) is a statistical measure that represents the proportion of the variance for a dependent variable that's explained by an independent variable or variables.

Table 4 shows the Significant influence of the Teachers' innovative Strategies on intermediate pupils' Learning Styles. Data were analyzed using the Beta Coefficient, R-square (R2), F-value, p-value, and score rating below the table was used to interpret the main obtained.

Table 4. Significant influence of the Teachers' innovative Strategies on intermediate pupils' Learning Styles

Independent Variable	Dependent Variable	Beta Coefficient	R^2	F	p-value	Interpretation
Inquiry-based	Visual	0.169	0.050	0.413	0.662	Not Significant
Integrative		-0.282			0.493	
Reflective		-0.130			0.692	
Collaborative		0.198			0.684	
Constructivist		0.340			0.475	
Inquiry-based	Auditory	-0.579	0.370	1.239	0.133	Not Significant
Integrative		-0.584			0.154	
Reflective		-0.212			0.511	
Collaborative		0.563			0.245	
Constructivist		0.464			0.202	
Inquiry-based	Kinesthetic	0.362	0.133	1.201	0.334	Significant (Reflective) *Significant at p < 0.05
Integrative		0.385			0.933	
Reflective		0.307			0.027*	
Collaborative		0.457			0.991	
Constructivist		0.445			0.441	

Legend: Always=5; Often=4; Sometimes=3; Seldom=2; Never=1

Table 4 presents the results of a statistical analysis exploring the influence of different teaching strategies (independent variables) on different learning styles (dependent variables). The teaching strategies include Inquiry-based, Integrative, Reflexive, Collaborative, and Constructivist methods, while the learning styles are Visual, Auditory, and Kinesthetic. Each row of the table provides the Beta Coefficient, R-square (R2), F-value, p-value, and interpretation for each combination of teaching strategy and learning style. The Beta Coefficient represents the degree of change in the dependent variable for each unit of change in the independent variable. R-squared (R2) is a statistical measure that represents the

proportion of the variance for a dependent variable that's explained by an independent variable or variables. The F-value is a value you get when you run an ANOVA test or a regression analysis to find out if the means between two populations are significantly different. The p-value is used in hypothesis testing to help support or reject the null hypothesis. It represents the probability that the results of the test occurred at random. If the p-value is less than 0.05, it's statistically significant.

The interpretation column provides a summary of the statistical significance of the results. For example, when the teaching strategy is Reflective and the learning style is Kinesthetic, the p-value is 0.027, which is less than 0.05. This indicates that the influence of Reflective teaching on kinesthetic learning is statistically significant. For all other combinations, the p-value is greater than 0.05, indicating that the influence is not statistically significant.

This finding is supported by Awla [18], involving learners in an active process. Learning requires identifying and understanding learners' learning styles and teachers' teaching styles. He believes that recognizing and understanding teachers' and pupils' learning styles will help pupils engage in active learning. Jantan and Razali [19] supported the idea that learning styles are the ways learners concentrate, process information, and obtain knowledge and experiences.

Understanding students' learning styles is crucial in enhancing teaching effectiveness, as it allows educators to adapt strategies that align with learners' preferences and improve academic outcomes. Awla [18] emphasizes the importance of aligning teaching styles with students' learning preferences to foster better engagement. Similarly, Jantan and Razali [19] explore the VARK model, highlighting how visual, auditory, reading/writing, and kinesthetic modalities influence learning processes. Athapaththu [20] connects this adaptability to strategic planning in education, underlining the necessity of formulating effective strategies to achieve instructional goals. Research also suggests that effective teaching depends on the strategic use of diverse instructional methods [21], [22], and incorporating appropriate learning strategies can significantly impact students' understanding and retention, especially in subjects like social studies [23]. Lawton and Sarode [24] further assert that thoughtful teaching strategies are instrumental in enhancing student achievement, emphasizing the need for a student-centered approach.

Conclusions

Based on the findings of the study, it is concluded that the implementation of innovative teaching strategies, such as inquiry-based, collaborative, reflective, integrative, and constructivist approaches, showed varying effects on different learning styles. Among the learning styles, the study found that the visual learning style had no significant influence on any of the innovative strategies. On the other hand, the auditory learning style did not show a

significant influence on any of the innovative strategies. Additionally, the study highlighted that the kinesthetic learning style had a significant positive influence on the effectiveness of the reflective strategy. These findings suggest that teachers' innovative strategies can be tailored to accommodate and support different learning styles among intermediate pupils. By understanding and incorporating the preferred learning styles of students, teachers can enhance their instructional approaches and promote more effective learning outcomes.

Conflict of Interest

The authors declare that there is no conflict of interest.

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