



Elementary learning styles and application of the Dunn and Dunn learning style inventory model

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Abstract

This study explored the diverse learning styles of elementary pupils in an elementary school in the Philippines. It examined the application of the Dunn and Dunn Learning Style Inventory Model (DDL-SIM) to enhance educational outcomes. Recognizing the unique learning preferences of learners, the research aimed to bridge the gap in learning styles by implementing tailored teaching methods and strategies. Utilizing an explanatory mixed-methods research design, the study engaged all pupils using the complete enumeration sampling technique to ascertain their learning styles across five domains: environmental, emotional, sociological, physiological, and psychological. The survey questionnaire for the quantitative phase and the semi-structured interview guide questionnaire for the qualitative phase were employed, which were subjected to validity and reliability tests by the expert panel of evaluators. The study's data analyses utilized descriptive statistics, Spearman Rho correlation, and thematic analysis. As per the DDL-SIM, quantitative findings revealed significant emotional and physiological preferences, with significant relationships between demographic profiles and their learning styles. Qualitative insights underscored a holistic approach to learning as the generated major theme, emphasizing the interconnectedness of minor themes such as emotional intelligence, social dynamics, physical health, and environmental factors in the learning experiences. The study suggested that educators create tailored learning plans and gender-sensitive approaches and include emotional and physiological aspects in teaching. In support of varied learning styles, it promoted the DDL-SIM of educator's professional development and parent and community participation. Hence, the DDL-SIM recognizes and addresses each learner's unique preferences, promoting a more inclusive and successful learning environment.

Keywords: Dunn and Dunn Learning Model, learning style, environmental learning, emotional learning, sociological learning, physiological learning, psychological learning

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Introduction

From the early stages of children's academic journey, it becomes clear that no two learners feel genuinely alike about their approach to learning. This phenomenon is particularly achieved in elementary settings, marking the period when young minds actively lay the foundation of their knowledge and skills (Szymkowiak et al., 2021). However, elementary learners' learning styles need to be regarded not as a utility but as a necessity when building a curriculum because no lesson is effective unless matters are understood by the learners on their own first and then internalized (Ferreira et al., 2020). The recognition that elementary learners learn differently may turn a classroom from a place of general education into a setting of genuinely personalized learning.

These gaps are observable in elementary schools, where learners prefer learning environments, either quiet or noisy, bright or dim lighting, highly structured or unstructured learning, and react with varying engagement to group or individual tasks (Wu et al., 2021). One learner could forge ahead in a highly interactive and multi-sensory environment. At the same time, another may find the environment too distracting and favor a quiet, steady delve into content, and another may step up to the plate when faced with an open-ended challenge (Widiastuti et al., 2020). These gaps continue to challenge educators in creating inclusive classrooms (Sanger, 2020), with pressure from various quarters calling for more customizable educational arrangements to address individual learner gaps and realize enhanced learning outcomes (Resch & Schrittesser, 2023).

This paper aims to examine the learning styles gap among elementary school children in an elementary school in the Philippines. The paper intended to discover how the individual learning styles under the Dunn and Dunn Learning Style Model differ among the learners, reflecting on their effects on their performance and involvement in classroom activities influence. The study discovered the efficacy of adopting diversified teaching methodologies and approaches through applying the Dunn and Dunn model in a classroom setup, considering the differences in learners' needs and responsibilities. The ultimate goal of the examination is to optimize educational outcomes by equipping teachers with the skills to identify and implement students' unique learning needs, hence bridging the learning styles gap and creating an inclusive classroom environment.

Methodology

The study chose used explanatory sequential mixed-methods design, combining the descriptive quantitative and phenomenology qualitative approaches. The researcher began with collecting and analyzing the quantitative data to build a basis for understanding the research phenomenon. Then, qualitative data collection and analysis followed to extend and “fit” the initial findings, according to what was suggested by Creswell et al. (2003) and explicated by Kajamaa and Mattick (2020). The research was carried out at Aklan, Philippines with a small student body of 49 pupils, emphasizing the unique challenges posed by the area’s isolation and lack of connectivity, as highlighted in the study’s context description (Haynes-Brown, 2023).

The quantitative phase surveyed all pupils of the school using complete enumeration sampling. It was designed to gather broad quantitative data about the pupils’ responses to a survey questionnaire adapted from the Dunn and Dunn Learning Style Inventory. The qualitative phase, on the other hand, employed purposive sampling to select subjects for in-depth interviews and focus groups. Participants were identified to explore both extreme and neutral responses to the phenomena under investigation.

The data collection methods were unique to each phase. Quantitative data was collected through a hard copy of a Likert-scale survey. Additionally, qualitative data collection was done through unstructured interviews and focus group discussions until data saturation was reached. The analysis used descriptive and inferential data for the quantitative part, thematic analysis for the qualitative section, and SPSS and qualitative software for the analysis aided the analysis. Further, an expert panel validated the instruments for a credible outcome. The dual-phase data collection methods and analysis were intended to fully explore and interpret the educational interaction phenomenon with maximum credibility.

Findings

The study analyzed the demography of 49 students through complete enumeration. The number of students across the grades varied greatly, with the most prominent presence exhibited by Grade 6. No gender disproportion was observed, with a slight prevalence of male students. The age grouping varied enormously, signifying the need for targeted age-approached educational solutions. Almost one out of ten pupils were from a low-income family. This fact bears direct reference to resource allocation and student support. The statistics suggest that to maximize

learning outcomes, it is advisable to adopt personalized educational strategies according to the recommendations of the Dunn and Dunn Learning Style Model (Alphonse et al., 2019; Wang & Han, 2021).

This study has proven that learning preferences are closely related to such demographic characteristics of the students as grade level, age, and family size, but not family income. The most important findings include the correlations between grade level and emotional, sociological, and physiological learning styles, which could mean that learning styles change as students move from one grade to another. Additionally, older students tend to have emotionally and socially mature learning preferences. Another interesting finding is the relationship between family size and the choice of environmental and physiological learning styles. This indicates that children from larger families may have different environmental needs and preferences (Tye-Murray, 2022). For family income, there was no statistically significant correlation with learning preferences, pointing to the idea that economic factors do not determine learning styles, and it is essential to focus on personal and developmental characteristics.

The insights from this study revealed the critical need for schools to take a more nuanced understanding of education, which is informed by the changing preferences of students and can be better served with harmonious learning environments. The results call for personalized learning, adaptive teaching approaches, developmentally tailored educational interventions, and academically responsive approaches. Furthermore, understanding the role of family size in determining one's preference for learning can help foster a conducive learning environment that can integrate all students. Comprehensive student knowledge that integrates demographic and learning details is essential to implementing any strategy that seeks to make education better for all.

Conclusion

The research focused on the significance of adaptive instruction in a varied classroom. Because of differences in grade stage, gender, and family economic status, the school emphasized the need to adapt instruction. It was appropriate to listen to the advice of the Dunn and Dunn Learning Style Model. This model was pertinent as it also considers not only the student's learning

style but also their development stage and economic background. The model seemed fair and helped each child to receive the same and sufficient education regardless of their background.

The study's descriptive data revealed the preference for learning by emotional and physiological methods, which underlined the importance of such factors as motivation and exercise in education. This conclusion was consistent with the Dunn and Dunn study accomplished in primary education and demonstrated the need for learning style – responsive strategies. Thus, the conclusion might aid educators in enhancing the learning process to make it relevant to students' preferences.

The Spearman-Rho correlation indicated a significant correlation between student demographics and learning styles. Emotional, sociological, and physiological learning styles were all idolized by other grade levels, genders, and family sizes. The most intriguing aspect is that it seems family money did not affect learning styles. These observations revealed to teachers that they would have to identify and meet the students' learning needs to increase student achievement.

The theme analysis showed the alternative focus of education-based innovation, "Holistic Approach to Learning." It was based on a holistic paradigm with a combination of emotional, social, physical, and environmental factors, with no limited attitude to cognition. Holistic learning was needed for changing the teaching format into a dynamic supportive environment with the priority of emotional intelligence, cooperative learning, and the physical and mental health of the learners.

The study provided several instructional strategies that centered on a personalized learning plan. It considered each student's learning style, preference and environment. There was a need for developmentally appropriate, gender-sensitive, and socioeconomic interventions. Further, the study also highlighted the importance of teacher professional development in understanding such models as the Dunn and Dunn Learning Style Model. It the need for parents and the community to be more inclusive and supportive of diverse learning styles outside the classroom for education to be suitable was also brought to light by the study.

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