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LEARNING STYLES AND SENIOR HIGH SCHOOL TRACK OF STUDENTS IN THE CITY DIVISION OF IMUS

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ABSTRACT

Learning style preferences are widely discussed in Philippine classrooms and guidance offices, yet little is known about how they are distributed across students' family backgrounds and senior high school (SHS) tracks. This descriptive-correlational study determined the socio-demographic profile (sex, gross family monthly income, occupation of parents, and highest educational attainment of parents), the dominant learning style (visual, auditory, kinesthetic), and the SHS track of students in the City Division of Imus, and tested whether learning style differs across socio-demographic groups and is related to SHS track. Participants were 357 students from four public senior high schools in A.Y. 2023–2024, selected through stratified random sampling from a population of 4,540. Data were gathered through a three-part questionnaire administered via Google Forms from February 1 to 15, 2024, and were analyzed using frequencies, percentages, the chi-square test of independence, the contingency coefficient, and Cramér's V. Most participants were female (55%), and the largest group belonged to the lower middle-income class (32%). Visual was the dominant learning style (40%), followed by auditory (29%), kinesthetic (20%), and a combination of styles (10%). Sixty percent of participants were in the Academic Track (HUMSS, 33%), 39% in the Technical-Vocational-Livelihood Track, and 1% in the Sports Track. Learning style differed significantly by sex ($\chi^2 = 13.425$, $p = .004$), family income ($\chi^2 = 26.197$, $p = .002$), parents' occupation ($\chi^2 = 21.673$, $p = .010$), and parents' highest educational attainment ($\chi^2 = 15.420$, $p = .017$), although all associations were small (Cramér's V = .14–.19). Learning style was not significantly related to SHS track ($\chi^2 = 3.889$, $p = .274$; V = .10). Because learning styles are self-reported preferences rather than validated predictors of learning, the findings suggest that students' backgrounds, rather than their preferred way of learning, are more closely tied to how they describe their learning, and that track advising should rest on interests, aptitudes, career intentions, and family circumstances. Schools are encouraged to use learning style information only as a starting point for student self-reflection and to adopt multimodal instruction for all learners.

Keywords: *learning styles, VAK, senior high school track, socio-demographic profile, descriptive-correlational, career guidance, Imus City*

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INTRODUCTION

Background of the Study

In a competitive world, education is an essential requirement for every individual. It facilitates learning, knowledge, and skills that enable individuals to increase their productivity and improve their quality of life. Education is the process of facilitating learning, or the acquisition of knowledge, skills, values, beliefs, and habits, whether through storytelling, discussion, teaching, training, or research, and it has a large impact on a person's capability to think, feel, or act in formal and informal situations ("Education," n.d.). People who have received an adequate education also tend to communicate more fluently with others who differ from them by culture, nation, or race, because their knowledge and understanding are wider.

Until recently, the Philippines was the only country in Asia with a 10-year pre-university cycle, which lowered the opportunities of Filipino degree holders to compete in an increasingly global job market. Starting in 2011, the educational system was restructured, and on January 30, 2013, Republic Act No. 10533, known as the Enhanced Basic Education Act of 2013 or the K to 12 Law—"An Act Enhancing the Philippine Basic Education System by Strengthening Its Curriculum and Increasing the Number of Years for Basic Education, Appropriating Funds Therefor and for Other Purposes"—a consolidation of Senate Bill No. 3386 and House Bill No. 6643, was passed by the Senate and the House of Representatives. It was signed by President Benigno "Noynoy" S. Aquino III on May 15, 2013 and was operationalized through its implementing rules and regulations (Department of Education [DepEd] Order No. 43, s. 2013). The K to 12 program added two years to the country's basic education, so that all Filipino students complete one year of kindergarten, six years of elementary education (Grades 1 to 6), four years of junior high school (Grades 7 to 10), and two years of senior high school (Grades 11 to 12) (DepEd, 2012).

Through school year 2025–2026, senior high school was organized into four tracks: the Academic Track, which includes the Accountancy, Business and Management (ABM), Humanities and Social Sciences (HUMSS), Science, Technology, Engineering and Mathematics (STEM), and General Academic (GAS) strands; the Technical-Vocational-Livelihood (TVL) Track (e.g., Home Economics and Computer Systems Servicing); the Sports Track; and the Arts and Design Track. These tracks respond to the desired competencies and skills of K to 12 learners and are meant to meet the country's need for human capital that is prepared for productive ventures (Mercado, 2012). Because the two additional years entail further costs that some Filipino families cannot afford, the government provides a tuition voucher for incoming Grade 11 students, as well as for currently enrolled Grade 11 and Grade 12 students who wish to continue their studies.

The structure of senior high school is now changing. DepEd Memorandum No. 012, s. 2026 announced the nationwide implementation of a Strengthened Senior High School Curriculum for incoming Grade 11 students beginning in school year 2026–2027, which reduces the former four tracks to two, the Academic and the Technical-Professional (TechPro) tracks, and replaces named strands with elective clusters (DepEd, 2026). The data in this study were collected in A.Y. 2023–2024 under the earlier structure, and the findings are therefore interpreted in relation to the HUMSS, ABM, STEM, and TVL strands that students actually took. The question of how learner characteristics relate to the path a student chooses nevertheless remains relevant, because students under the new structure must still choose between pathways and electives.

The national learning context gives these questions urgency. In the 2022 Programme for International Student Assessment (PISA), Filipino 15-year-olds averaged 355 points in mathematics, 347 in reading, and 356 in science, compared with OECD averages of 472, 476, and 485, respectively (OECD, 2023). A report of the Congressional Policy and Budget Research Department (CPBRD, 2024) further noted large gaps between private and public school students in all three domains. These results show why schools need to understand their learners better, including how

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learners prefer to study. They do not, by themselves, show that any particular instructional approach is the remedy, and that distinction matters for how learning styles should be used.

Successful education is directly linked with positive academic performance. A learner's performance plays an important role in the successful development of young people in society; pupils who do well in school are better able to make the transition into adulthood and to achieve occupational and economic success (Regier, 2015). Good study habits contribute significantly to academic performance and are one of the main indicators of successful achievement. When pupils develop good study habits and discipline, they are assured of performing well in their academic pursuits; if study habits are not improved, students will continue to perform poorly in tests and may not realize their full potential (Ebele & Olofu, 2017; Poudel, 2016). As Nelson Mandela said, "Education is the most powerful weapon which you can use to change the world" (Mandela, as cited in Duncan, 2013). In recent years, the Philippine education system has aimed to cultivate "globally competitive" Filipinos for the future success of the nation, and both private and public institutions strive to achieve this goal by revamping the structure of their curricula, including through the Senior High School Program (Montemayor, 2018).

Apart from study habits, learning style is often said to play an important part in students' academic performance, since it can help them enhance their learning and encourage self-directed learning. A learning style is both a characteristic that indicates how a student learns and likes to learn and an instructional strategy that informs the cognition, context, and content of learning. Studies have stated that students' learning performance could be improved if proper learning style dimensions were considered when developing any learning or instructional process (Nzese, 2015). Students show preferences for certain learning styles and strategies in various learning activities, and they are motivated to learn when these activities match their styles and strategies. Teachers, on the other hand, tend to teach in the style to which they are accustomed, assuming it is appropriate for their students, and are often unaware of, or neglect, students' learning styles. When this happens, students may perform poorly in class because of anxiety, and the institution may fail to attain its desired objectives. This challenges teachers to provide a range of learning experiences that are compatible with students' styles and strategies. The Philippine classroom is no exception: how to address students' different learning preferences and styles is a continuing problem. Most teachers are observed to engage in traditional instruction, in which one lesson is designed to meet the needs of all learners, and many believe they are using differentiated instruction when they are not (Aranda & Zamora, 2016).

At the same time, the learning styles concept itself is contested. Many people, including educators, believe that learning styles are set at birth and predict both academic and career success, even though there is no scientific evidence to support this common myth, according to research published by the American Psychological Association (Nancekivell et al., 2020). Teachers of young children are more likely to hold this essentialist view, and as a result, many parents and educators may be spending time and money on products, services, and instructional techniques that are not effective. The present study therefore treats learning style as a self-reported learning preference and asks how it is distributed across students' social backgrounds and senior high school tracks, rather than whether matching instruction to style improves learning.

Students' backgrounds are an equally important part of the picture. Family income, parents' occupations, and parents' education shape the resources, expectations, and learning experiences that students bring to school, and they are consistently associated with achievement (Sirin, 2005). In the Philippines, the senior high school years also require students to choose a track, a decision that research links mainly to intended college course, personal preference, parental influence, and family finances (Nazareno et al., 2021; Tortor et al., 2020). Guidance counselors, whose work is anchored on the Guidance and Counseling Act of 2004 (Republic Act No. 9258), are often the professionals who help students make this decision. Whether the way students prefer to learn has any bearing on the track they take is therefore a practical question for guidance and counseling.

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Despite the popularity of learning styles in Philippine education, few local studies examine learning styles together with socio-demographic characteristics and SHS track in a single analysis, and fewer still do so for public senior high school students in a specific school division. This study addresses that gap for the City Division of Imus.

Review of Related Literature and Studies

This section presents the literature and studies gathered from books, journals, websites, and theses that provided insights into the learning styles, socio-demographic profile, and senior high school tracks of students. High school is an important period in an adolescent's life: students make decisions about their courses and their future educational and career plans, and each carries a unique history that shapes how he or she views the world. Learning is a continuous process, and learning barriers can delay or stop it. One such barrier is a mismatch in the teaching-learning approach, which occurs when methods, techniques, and strategies are used inappropriately for the learners. Recognizing a learner's way of learning can lead to more effective learning.

Learning styles: concepts and models

Learning styles have been used synonymously with cognitive style and thinking style; they refer to a way of behaving or approaching a situation that is characteristic of or favored by a particular person. From a psychological standpoint, learning styles involve more complexity, especially in formal education, and can be defined as the preferred methods by which an individual perceives and transforms his or her learning experiences (Naqvi & Naqvi, 2017). The VARK model of Fleming and Mills (1992) describes four sensory preferences: visual, aural, read/write, and kinesthetic. Its authors presented the questionnaire not as a diagnostic inventory but as a "catalyst for reflection" that helps students think about how they study, and Fleming and Baume (2006) later described it as a starting place for a conversation about learning. The VAK model used in this study is a three-modality version of the same idea. Its self-assessment questionnaire, widely circulated by BusinessBalls (Chislett & Chapman, 2005), asks respondents to choose among forced-choice options that are tallied as mostly visual, auditory, or kinesthetic, with blended profiles possible (Mind Tools, 2024). Other models, such as Kolb's (1984) experiential learning styles, describe learning processes rather than sensory modalities, and the sensory models and Kolb's model together dominate the learning styles literature in higher education (Newton, 2015).

Understanding these differences can greatly affect how teachers handle students, set up group projects, and support individual learning. Without this understanding, some students may lag behind their classmates in part because their unique learning style has not been activated. Learning styles take a variety of forms, and not all people fit neatly into one category because there is plenty of overlap; nevertheless, most learners align with the following styles (Elrick, 2018):

- **Visual learners** prefer seeing and observing things, including pictures, diagrams, and written directions. This is also referred to as the "spatial" learning style.
- **Auditory learners** learn better when the subject matter is reinforced by sound. They would rather listen to a lecture than read written notes and often use their own voices to reinforce new concepts and ideas. They like to read aloud, are not afraid to speak up in class, and are good at explaining things verbally; they may also be slower readers and may repeat what a teacher tells them.
- **Kinesthetic (tactile) learners** learn through experiencing or doing things. They like to act out events or use their hands to touch and handle objects in order to understand concepts. They may struggle to sit still, may be good at sports or like to dance, need breaks when studying, and might not have great handwriting.

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- **Reading/writing learners** prefer to learn through written words. Although there is some overlap with visual learning, they are drawn to expression through writing, reading articles online, keeping diaries, looking up words in the dictionary, and searching the internet for just about everything.

Perceptual learning style preferences have also been examined in language-learning contexts, where they have been related to reading comprehension and learning strategies (Chavosh & Davoudi, 2016; Muniandy & Shuib, 2016), and learning style preferences are often said to be influential in learning and academic achievement. Previous studies have reported a close association between learning style and academic performance, and learning styles have been described as predictors of academic performance (Nursen, 2018).

The scientific debate on learning styles

The assumption that instruction should be matched to each learner's style has been tested and has not held up. Pashler et al. (2008) defined the "meshing hypothesis," which predicts that learners with one style learn best with instruction in that style while learners with another style learn best with a different method, and they reviewed the literature against this standard. They found that, at most, one arguable piece of evidence met the standard, and they concluded that there was no adequate evidence base to justify incorporating learning styles assessments into general educational practice. Rogowsky et al. (2015) tested the hypothesis experimentally with college-educated adults and found no relationship between auditory or visual preference and either comprehension aptitude or learning from audio versus text, and a later study with younger learners again found that providing instruction based on students' learning style preferences did not improve learning (Rogowsky et al., 2020). Willingham et al. (2015) distinguished styles, or how one prefers to do things, from abilities, or how well one does them, and concluded that scientific support for styles theories is lacking. Kirschner (2017) urged researchers and educators to stop propagating the learning styles myth.

Despite this evidence, belief in learning styles remains widespread. Newton (2015) found that 89% of recent higher education papers on learning styles endorsed their use, either implicitly or directly. Newton and Miah (2017) surveyed 114 academics in the United Kingdom and found that 58% believed in the use of learning styles, although only 33% reported having used them in the previous twelve months. Nancekivell et al. (2020) identified two groups of believers: those who hold an essentialist view, in which styles are innate, fixed, and heritable, and those who see styles as shaped by experience; educators who worked with younger children were more likely to hold essentialist views. Even essentialist believers, however, tend to endorse multimodal instruction (Nancekivell et al., 2021), which is consistent with the evidence-based advice to teach important content in more than one way for all learners.

Two points follow for the present study. First, the VAK questionnaire can legitimately describe what students say they prefer, and that is how it is used here. Second, a preference is not the same as an aptitude or a determinant of learning, so findings about learning style should not be read as evidence that any group of students needs, or benefits from, a particular kind of instruction.

Studies on learning styles abroad

Naqvi and Naqvi (2017) investigated learning styles, gender, and academic performance among postgraduate management students in India. The learning style preferences of the sample concentrated on the assimilating and converging styles, and no significant difference in learning style was found by gender. Males scored higher in Finance and Marketing, whereas females scored higher in Human Resource and International Business, although the pattern was not consistent across all groups. Among Czech students, Blanka (2016) found respondents to be more active than reflective and more visual than verbal learners, with males being more visual than females. They were also more sequential than global learners, and these tendencies were more pronounced among students of technical high schools.

Ling et al. (2017) examined the impact of learning styles on the academic performance of 200 MBA students in a private college in Malaysia using descriptive and regression analyses; visual and sequential learning had a significant

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impact on academic performance, while active and verbal learning did not. Nzesei (2015), in a correlational study among secondary school students in Kenya, found that most students were trimodal learners, followed by bimodal (visual-auditory) and unimodal (visual) learners. The single kinesthetic modality was the least preferred, chosen by only two female students. No significant difference in learning style preference was found between male and female students or between high and low achievers, but there was a strong, statistically significant positive relationship between learning styles and academic achievement among trimodal learners and among both male and female students.

Rezaeinejad et al. (2015) studied learning styles and educational achievement among Iranian high school students. Among students in the experimental sciences field, the visual-verbal learning style correlated positively and significantly with mean scores, and the same held for mathematics students; among humanities students, the sequential-global, visual-verbal, and sensing-intuitive styles were not significantly related to mean scores. A Kruskal-Wallis test showed significant differences between humanities students and the mathematics and experimental students with active-reflective learning styles, and second-grade students in all fields differed significantly in active-reflective and visual-verbal styles. Aysyad (2018) described the learning styles of senior high school students in Bengkulu Province and their perceptions of local-oriented, learning style-based English learning materials, and concluded that students preferred such materials. The article used a quantitative approach to examine the effectiveness of the materials and thus left open the reasons behind the students' choices, a gap the present study partly addresses by examining the background factors associated with learning style. Bawalsah and Haddad (2020), using the same VAK questionnaire with Jordanian tenth-graders with learning disabilities, reported that males preferred the auditory style and females the kinesthetic style; the special sample limits generalization, but the study shows that sex differences in VAK preferences have been reported.

Reyneri et al. (2016) studied the impact of learning style preference in the classroom and found differences between achievers and underachievers in their preferences for quiet or sound, flexibility or structure in assignments, and need for mobility. Many low achievers showed a strong need for tactile and kinesthetic modalities, while persistence appeared key to the achievers' sustained high performance across content areas.

Several other sources point to the practical value of recognizing differences among learners. Bisson (2014) argued that parents, guardians, and teachers should create environments in which children can go beyond imposed parameters, experiment, and discover their strengths and weaknesses. Lumanog (2016) found that most college freshmen at Bukidnon State University were auditory and visual learners and that students perceived student-centered teaching as effective; informing teachers of their students' learning styles helps them cater to students' needs. Smith (2017) reported that students improve when they think about how they learn, whether or not the material is matched to their supposed style, and cited the activity-based learning approach introduced in 2006 in all primary schools in Tamil Nadu, India (about 37,000 schools and 40 million children), whose success showed that letting children work through the curriculum with friends at their own pace and in their own style was far more effective than obliging all to follow a teacher's instructions. Sutherland (2017) recounted how discovering that she was a visual learner led her to change her study habits (watching videos and drawing pictures to outline complex concepts), illustrating that awareness of one's preferences can be used to one's advantage when studying. St. Louis (2017) noted that understanding visual, auditory, and kinesthetic learners and adjusting how an educator teaches improves communication and helps prevent frustration and misunderstanding between educators and students. Taken together, these sources are best read as supporting reflective, flexible teaching and learner self-awareness, consistent with the original intent of the VARK model, rather than as evidence that matching teaching to style raises achievement.

Studies on learning styles in the Philippines

Cabual (2021) studied second-year college students in Nueva Ecija using a customized VARK instrument. Visual was the predominant style (52.76%), and there was no significant difference in learning styles by sex or field of

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specialization. The study concluded that some people discover a dominant learning style while others use various styles in different circumstances, which contradicts Kolb's view that people are born with a preference for a particular style. Magulod (2019) studied 75 applied-science students at Cagayan State University using Reid's Perceptual Learning Style Preference Questionnaire in a descriptive-correlational design. The students preferred visual, group, and kinesthetic styles, with a moderate level of study habits and a good level of academic achievement. Perceptual learning styles differed significantly by academic performance, fathers' occupation, and type of high school graduated from, and study habits differed by academic standing in high school, writing skills, mothers' education, and test anxiety. Learning styles, study habits, and academic performance were significantly related.

Gonzales and Reyes (2016) examined first-year liberal arts students in Physical Science at the Lyceum of the Philippines University and found satisfactory academic performance, with students often learning through the visual and kinesthetic modalities, sometimes through the auditory modality, and with academic performance associated with the auditory modality. Tio (2023), the study closest to the present one, surveyed 356 Grade 11 students at a science and arts academy and reported that learning styles did not differ significantly across SHS tracks, although competency in General Mathematics did. Most of these Philippine studies involve college students or a single school; studies of public senior high school students that examine learning style, family background, and track together are scarce.

Socio-demographic profile and learning

A socio-demographic profile is the combination of social and demographic characteristics that identify people in a specific group or population. It gives clear and detailed data about a specific group and helps categorize its members according to their common characteristics. Organizations and researchers generally collect such data through surveys, interviews, and questionnaires. In this study, the socio-demographic profile covers sex, gross family monthly income, occupation of parents, and highest educational attainment of parents. Sex refers to the biological and physical characteristics assigned at birth on the basis of physiology and genes that determine whether a person is male or female. Gross family monthly income refers to the total income from all sources of every earning member of the family before taxes or other deductions.

Socio-economic status is among the most studied correlates of achievement. Sirin (2005), in a meta-analysis of 58 studies covering more than 100,000 students, found a medium to strong relation between socio-economic status and academic achievement, with the strength varying by how status was measured and by the characteristics of students and schools. Indrahadi and Wardana (2020) found that socio-demographic, student, and school factors all affected the academic performance of Indonesian high school students, with socio-demographic factors being the strongest. PISA 2022 shows the same concern in the Philippine setting: about 36% of Filipino test-takers fell in the bottom international socio-economic quintile (OECD, 2023). These studies explain why family background is a plausible correlate of how students describe their learning, but they concern achievement, not learning style, and they do not show that background determines style.

Senior high school track: policy, choice, and outcomes

Republic Act No. 10533 became law in 2013 and gave rise to the K to 12 curriculum, which covers kindergarten and twelve years of basic education: six years of primary education, four years of junior high school, and two years of senior high school. It aims to provide sufficient time for learning concepts and skills and to prepare graduates, who are globally competitive, for tertiary education, middle-level skills development, employment, and entrepreneurship. Upon reaching senior high school, students choose among four tracks. The Academic Track is for students who plan to continue to college and prepares them for more advanced university courses. The Technical-Vocational-Livelihood (TVL) Track offers subjects focused on job-ready skills, with practical knowledge and matching certificates to help students apply for their desired jobs after graduation. The Sports Track equips students with sports-related, physical fitness, and safety knowledge and is for those who want to enter the athletics, fitness, and recreation industries. The

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Arts and Design Track is for students interested in the arts and offers subjects that enhance skills in visual design and performing arts.

Research on how students choose among these options points mainly to career intentions and family circumstances. Nazareno et al. (2021) surveyed 3,813 Grade 11 students and found that intended college course was strongly associated with track and strand choice, that personal preference and parents were important factors, and that sex, age, birth order, number of siblings, and monthly family income showed moderate associations. Tortor et al. (2020), studying 214 SHS students in Mandaue City, found that self-choice was the strongest influence on strand selection and that financial status was significantly associated with self-choice, while parent and peer influence were not; the authors used an adapted questionnaire that was not validated. Abragan et al. (2022) examined the problems and challenges in implementing the K to 12 curriculum and found that many parents viewed the program negatively, as an additional physical and financial burden that would only increase students' loads, while others viewed it positively, as a means of helping students choose the career that best suits them. They concluded that a detailed awareness and understanding of the curriculum would help address implementation problems and encourage participation.

Evidence on outcomes suggests that track and course choices carry consequences. Orbeta and Potestad (2020), using Labor Force Survey rounds from 2018 to 2020, found mixed and in some cases poorer labor-market outcomes for senior high school graduates than for their peers, and the fourth Philippine graduate tracer study found that although 85% of graduates had a first job after graduation, only about 70% considered their college degree relevant to that job (Tutor et al., 2019). These findings underline the importance of sound career guidance at the time students choose a track, and they raise the question of whether learner characteristics such as learning style should have any part in that guidance.

Theoretical Framework

At every level of education, people have preferences and methods that work best for them. To maximize learning abilities, it helps to understand which learning style is most efficient for an individual; more often than not, people identify themselves as either auditory or visual learners. The main theory used in this study is the VAK learning style model, an adaptation of the VARK model of Fleming and Mills (1992), which was used to examine the relationship between learning styles and the senior high school track of students in the City Division of Imus. The VAK model aims to identify the most preferred and common ways in which learners learn best and holds that learners generally prefer to learn in one of three ways: visual, auditory, or kinesthetic.

- **Visual.** A visually dominant learner absorbs and retains information better when it is presented in, for example, pictures, diagrams, and charts.
- **Auditory.** An auditory-dominant learner prefers listening to what is being presented and responds best to voices, for example in a lecture or group discussion. Hearing his or her own voice repeating something back to a tutor or trainer is also helpful.
- **Kinesthetic.** A kinesthetic-dominant learner prefers a physical experience, likes a "hands-on" approach, and responds well to being able to touch or feel an object or learning prop.

The study adopts VAK as a model of self-reported preference, consistent with its origin as a tool for reflection, and it recognizes the limit set by the evidence-based critique discussed above (Pashler et al., 2008; Willingham et al., 2015): a preference is not shown to determine how well a student learns. Two further perspectives explain why socio-demographic variables and track are included. Bronfenbrenner's (1979) ecological systems theory holds that development is shaped by nested environments, from the family and school, in which a student participates directly, to the wider settings, such as parents' workplaces, that affect the student indirectly. Family income, parents' occupation, and parents' education are indicators of these environments, and they may therefore be associated with

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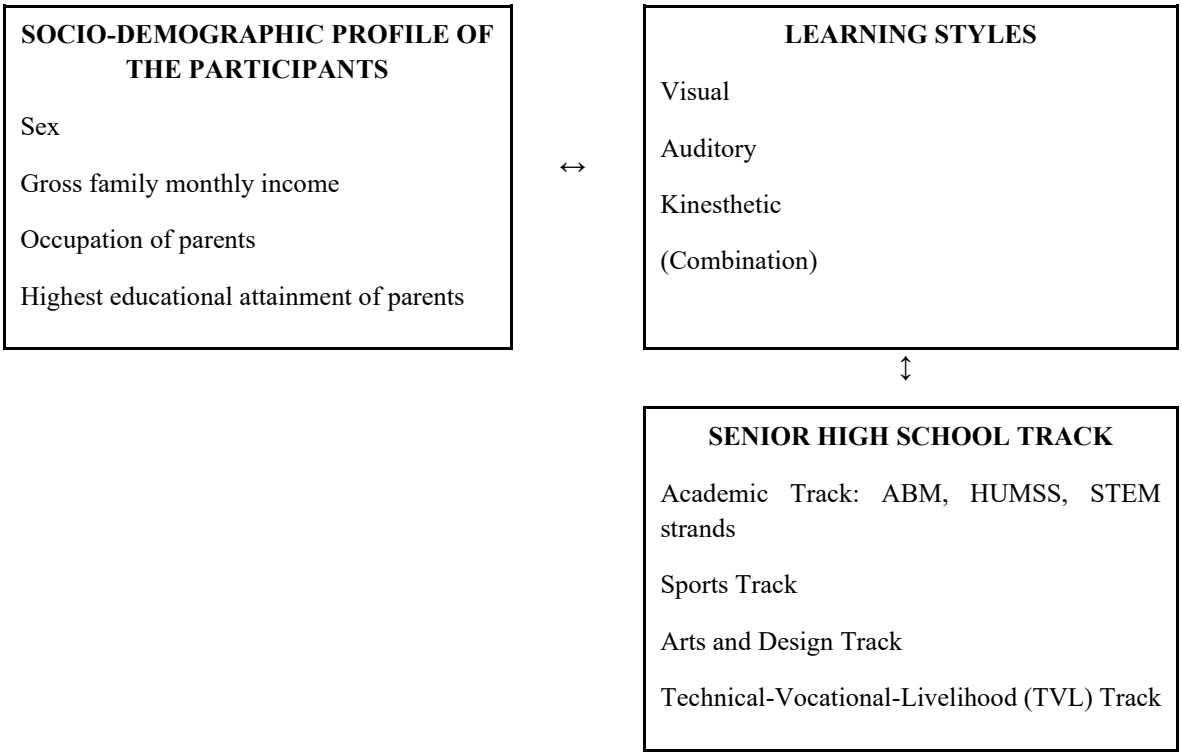
the learning experiences students report and prefer. Bourdieu's (1986) notion of cultural capital similarly suggests that families differ in the educational resources and dispositions they pass on. Finally, a career-decision lens, in which track choice reflects aspirations, family circumstances, and resources (Nazareno et al., 2021; Tortor et al., 2020), explains why learning style is hypothesized to be only weakly related, if at all, to the track a student selects.

In relation to these perspectives, the students' socio-demographic characteristics were examined in order to identify the preferred learning style of the participants according to their sex, gross family monthly income, occupation of parents, and highest educational attainment of parents. The senior high school track taken by the students (Academic, Technical-Vocational-Livelihood, Sports, and Arts and Design) was also considered in relation to their learning styles.

Conceptual Framework

Figure 1 presents the conceptual framework of the study, which describes the relationships among the variables identified. The socio-demographic profile of the senior high school students in the City Division of Imus (sex, gross family monthly income, occupation of parents, and highest educational attainment of parents) is examined in relation to learning styles (visual, auditory, kinesthetic, and combination), and learning styles are in turn examined in relation to the senior high school track. The arrows indicate associations to be tested, not causal paths: the study does not assume that family background causes a learning style or that a learning style causes a track choice.

Figure 1. Research paradigm of the study



Statement of the Problem and Objectives

This study aimed to determine the learning styles and senior high school track of students in the City Division of Imus and to investigate the relationship between them. Specifically, it sought to answer the following questions and, correspondingly, to attain the following objectives:

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1. What is the socio-demographic profile of the participants in terms of (a) sex; (b) gross family monthly income; (c) occupation of parents; and (d) highest educational attainment of parents? *(Objective: to determine the socio-demographic profile of the participants.)*

2. What is the dominant learning style of the participants: (a) visual; (b) auditory; or (c) kinesthetic? *(Objective: to determine the dominant learning style of the participants.)*

3. What is the senior high school track of the participants: (a) academic; (b) technical-vocational-livelihood; (c) sports; or (d) arts and design? *(Objective: to determine the senior high school track of the participants.)*

4. Is there a significant difference in the learning style of the participants when grouped according to socio-demographic profile? *(Objective: to determine whether such a difference exists.)*

5. Is there a significant relationship between learning style and senior high school track of the participants? *(Objective: to determine whether such a relationship exists.)*

Hypotheses

Based on the problems presented, the study was guided by the following null hypotheses, tested at the .05 level of significance:

1. **H_{01}:** There is no significant difference in the learning style of the participants when grouped according to socio-demographic profile.

2. **H_{02}:** There is no significant relationship between learning style and senior high school track of the participants.

Significance of the Study

The results of this study may be of help to the following:

- **Learners.** The findings can help them reflect on their strengths and weaknesses. Knowing their preferred ways of learning can help them improve their study habits, provided they treat these preferences as a starting point for trying a variety of strategies.

- **Teachers.** Teachers can become more aware of the differences among their students and provide varied, multimodal learning experiences that develop every student's academic performance.

- **Guidance and counseling center.** The study can help guidance counselors design programs on study habits and track and career advising, and it cautions them about the limits of learning style information for placement decisions.

- **School administrators.** The study can help administrators plan professional development and support programs, and it may guide the future modification of educational policies, curricula, and strategies toward more effective delivery of learning.

- **Department of Education.** The study can contribute to the Department's goal of continuously improving itself to better serve its stakeholders, including as it implements the Strengthened Senior High School Curriculum.

- **Future researchers.** The ideas presented may serve as reference data for new research and are of help to those who wish to study the topic further or are already doing similar research.

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Scope and Delimitation of the Study

The study was conducted among students of four public senior high schools in the City Division of Imus in A.Y. 2023–2024. It covered 357 SHS students who answered the survey questionnaire. Public senior high school students were chosen mainly because the researcher regarded them as a "best case" population that would yield the highest percentage of correct answers attainable and because they were readily accessible to the researcher. The socio-demographic profile of the participants was limited to sex, gross family monthly income, occupation of parents, and highest educational attainment of parents. The study describes self-reported learning style preferences and their associations with background and track; it did not measure achievement, study habits, or the effect of any instructional method. Because the participants were drawn only from public schools in one school division, and under the track structure in force in A.Y. 2023–2024, the findings may not be generalized to private-school students, other divisions, or the restructured senior high school curriculum.

Definition of Terms

The following terms are defined as they were used in this study.

- **Learning style** refers to the students' strong preference for a way of learning, namely visual, auditory, or kinesthetic, as reported on the VAK questionnaire. *Visual* refers to learners who easily absorb and retain information when it is presented through pictures, graphs, posters, maps, and charts. *Auditory* refers to learners who easily absorb and retain information by hearing or listening to what is presented. *Kinesthetic* refers to learners who easily absorb and retain information through active and physical experiences. *Combination* refers to learners whose responses show no single dominant style.
- **Senior high school track** refers to the track chosen by the student in senior high school. The *Academic Track* prepares students for more advanced university courses so that they can continue their education in college. The *Arts and Design Track* offers subjects that enhance students' skills in visual design and performing arts. The *Sports Track* covers sports-related, physical fitness, and safety knowledge. The *Technical-Vocational-Livelihood Track* offers practical knowledge with matching certificates to help students apply for their desired jobs.
- **Socio-demographic profile** refers to the social and economic condition of the respondents in terms of sex, gross family monthly income, occupation of parents, and highest educational attainment of parents. *Sex* refers to the biological and physical characteristics of a person. *Gross family monthly income* refers to the combined monthly income of the family. *Occupation* refers to the parents' occupation, which determines the type of education children receive from their parents. *Highest educational attainment* refers to the highest academic degree earned and completed by an individual, classified as college level or graduate.
- **Association** refers to a statistical relationship between two categorical variables as tested by the chi-square test of independence; it does not imply causation.

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METHODS

Research Design

The study used a descriptive-correlational research design. Descriptive research aims to accurately and systematically describe a population, situation, or phenomenon (McCombes, 2019); it includes the description, recording, analysis, and interpretation of the present nature, composition, and processes of the phenomenon under study. A questionnaire was used to determine the socio-demographic profile, learning styles, and senior high school track of currently enrolled SHS students in the City Division of Imus. The correlational component followed Creswell (2002), who described correlational design as using statistical tests to establish patterns between two variables, and Bold (2001), who noted that the purpose of a correlational study is to establish whether two or more variables are related. The design was appropriate because the researcher sought to determine the relationship between learning styles and senior high school track. Because all variables were categorical, relationships were tested through the chi-square test of independence, which establishes association but not causation. Data were collected at a single point in time, making the study cross-sectional.

Locale of the Study

The study was conducted in the Schools Division of Imus City, Cavite, specifically in four public senior high schools, during A.Y. 2023–2024. The schools were selected because they enroll students in the full range of tracks and strands in the division and were accessible to the researcher.

Participants and Sampling

The participants were students enrolled in A.Y. 2023–2024 in the following public senior high schools in the City Division of Imus: General Pantaleon Garcia SHS, General Juan Castañeda SHS, General Flaviano Yengko SHS, and Governor Juanito Reyes Remulla SHS. Participants were required to (1) be SHS students in the City Division of Imus, (2) be taking different tracks, and (3) be enrolled in A.Y. 2023–2024. From a population of 4,540 SHS students, 357 participants were selected through stratified random sampling, with each track or strand serving as a stratum and the number of participants in each stratum proportional to its share of the population. Table 1 shows the distribution of the population and sample by track.

A sample of 357 drawn from a population of 4,540 yields a margin of error of approximately ±5% at the 95% confidence level for a proportion estimated at 50%, which is adequate for the descriptive and chi-square analyses reported. The number of participants in some strata, notably the Sports Track (n = 3) and several TVL strands, is small, and this limits comparisons within those strata.

Table 1. Population of senior high school students and number of participants by track

Track	SHS students' population	Number of participants
ABM	663	52
HUMSS	1,520	119
STEM	562	44
Sports	37	3
TVL-HE	598	47
TVL-CSS	683	53

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TVL-EIM	148	12
TVL-SMAW	61	5
TVL-EPAS	60	5
TVL-Tech-Draft	86	7
TVL-Industrial Arts	122	10
Total	**4,540**	**357**

Research Instrument

The researcher used a survey questionnaire as the main data-gathering tool. The instrument consisted of three parts. Part I gathered the socio-demographic profile of the participants: (a) sex; (b) gross family monthly income; (c) occupation of parents; and (d) highest educational attainment of parents. Part II was the learning styles questionnaire, adapted from the VAK learning styles self-assessment of BusinessBalls (Chislett & Chapman, 2005). It is a forced-choice self-assessment whose responses are tallied as mostly visual, auditory, or kinesthetic; respondents without a clearly dominant style were classified as having a combination of styles, which accounts for the combination category in the results. Part III asked for the participant's senior high school track: (a) Academic Track (ABM, HUMSS, or STEM strand); (b) Sports Track; (c) Arts and Design Track; or (d) TVL Track. Because the learning styles questionnaire was adapted from an existing, previously used instrument, further validation was not required.

Family income was classified using the income clusters based on multiples of the official poverty line, a typology developed by the Philippine Institute for Development Studies using Philippine Statistics Authority poverty thresholds (Albert et al., 2018, 2020). In this typology, poor families fall below the poverty line, low-income families earn one to two times the poverty line, lower middle-income families two to four times, and middle-income and higher families more than four times the poverty line.

The reliability of the VAK Learning Styles Self-Assessment Questionnaire was reported in a 2020 study published in the *International Journal of Education*, in which correlations of each item with the total scale ranged from 0.63 to 0.91, the average inter-item correlation was 0.78, and Cronbach's α was 0.81. These coefficients were considered satisfactory for use in the present study (Bawalsah & Haddad, 2020). It should be noted that the questionnaire is a self-assessment tool intended to prompt reflection (Fleming & Mills, 1992) rather than a psychometrically validated diagnostic instrument, and that its forced-choice format limits the meaning of internal consistency coefficients; this is acknowledged as a limitation.

Data Gathering Procedure

A formal letter of request, dated January 10, 2024 and noted by the thesis adviser, was sent to the Schools Division Superintendent of the Department of Education, Imus City, to seek permission to conduct the study. The Division granted its approval on January 15, 2024, on the conditions that coordination be made with school principals; that the activity not disrupt classes or interfere with the regular school activities, consistent with the Department's "Time-on-Task" policy; that participation be voluntary; that minimum health protocols be observed; and that a copy of the completed study be given to the Schools Division Office and the Imus City library. Letters of request were then presented to the principals of the four public senior high schools, and upon their approval the instrument was distributed to the master teachers. The questionnaire was administered online as a Google Form, with the assistance of teachers in disseminating the link to students, from February 1 to 15, 2024. Participants were asked to spare a few

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minutes to answer the questionnaire. An informed consent form was included in the Google Form to ensure the confidentiality of the data in compliance with Republic Act No. 10173, or the Data Privacy Act of 2012. Responses were automatically tabulated in Google Sheets and stored in Microsoft Excel files that were encrypted with a password for security.

Statistical Treatment of Data

Frequency distribution and percentage were used to describe the socio-demographic profile, learning style, and senior high school track of the participants. The chi-square test of independence was used to test the difference in learning style across socio-demographic groups (Problem 4) and the relationship between learning style and senior high school track (Problem 5). The contingency coefficient (C) and Cramér's V were used to describe the strength of association. Because C cannot reach 1.0 in small tables, Cramér's V, computed as the square root of χ^2 divided by $n(k - 1)$, where k is the smaller number of rows or columns, is also reported; it was computed from the reported chi-square values and interpreted using the conventional benchmarks of Cohen (1988), under which values near .10 are small, near .30 medium, and near .50 large. The null hypotheses were tested at the .05 level of significance: a null hypothesis was rejected when $p < .05$ and accepted (not rejected) otherwise.

Ethical Considerations

The thesis proposal was approved by the university Ethics Review Board (ERB). Prior to data collection, full consent was obtained from the Schools Division Superintendent of the Department of Education, Imus City, and permission was secured from the school principals. The survey was sent to the master teachers of the four schools through an online platform (Google Forms), and an introductory message explaining the purpose of the study and requesting consent to participate preceded the survey. Because the participants were students, the data collection was coordinated with school principals and teachers, participation was voluntary, and participants were free to refuse. The confidentiality and anonymity of the information collected were guaranteed, personal data were handled in accordance with the Data Privacy Act of 2012 (Republic Act No. 10173), the data were used for academic purposes only, and the highest level of objectivity was maintained in collecting and analyzing the data.

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RESULTS

The results are presented in the order of the research questions stated in the problem. A total of 357 senior high school students participated.

Socio-Demographic Profile of the Participants

Sex. As shown in Table 2, 162 participants (45%) were male and 195 (55%) were female, so females outnumbered males by 33 participants.

Table 2. Distribution of participants by sex

Sex	Frequency	Percent
Male	162	45
Female	195	55
Total	**357**	**100**

Gross family monthly income. As shown in Table 3, 79 participants (22%) had a combined family monthly income below ₱12,082, which belongs to the income cluster of the poor. There were 93 participants (26%) with ₱12,082 to ₱24,163 (low-income class), 114 (32%) with ₱24,164 to ₱48,327 (lower middle-income class), and 71 (20%) with ₱48,328 and above (middle-income to rich). Nearly half of the participants (48%) therefore came from poor or low-income families.

Table 3. Distribution of participants by combined family monthly income

Combined family monthly income	Income cluster	Frequency	Percent
Below ₱12,082	Poor	79	22
₱12,082 to ₱24,163	Low-income	93	26
₱24,164 to ₱48,327	Lower middle-income	114	32
₱48,328 and above	Middle-income to rich	71	20
Total		**357**	**100**

Occupation of parents. As shown in Table 4, 107 participants (30%) had parents employed in a private company, 88 (25%) had parents employed in the government sector, 79 (22%) had parents engaged in business or entrepreneurial activities, and 83 (23%) had self-employed parents. The distribution was fairly even, with private-sector employment the most common.

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Table 4. Distribution of participants by parents' occupation

Parents' occupation	Frequency	Percent
Private company employee	107	30
Government employee	88	25
Business owner / entrepreneur	79	22
Self-employed	83	23
Total	**357**	**100**

Parents' highest educational attainment. As shown in Table 5, 115 participants (32%) had parents who attended primary or secondary school, 110 (31%) had parents who reached college level, and 132 (37%) had parents who graduated with a bachelor's or postgraduate degree.

Table 5. Distribution of participants by parents' highest educational attainment

Parents' highest educational attainment	Frequency	Percent
Primary / secondary school	115	32
College level	110	31
Bachelor's / postgraduate degree	132	37
Total	**357**	**100**

Learning Style of the Participants

Table 6 shows that 144 participants (40%) were visual learners, 103 (29%) were auditory learners, 73 (20%) were kinesthetic learners, and 37 (10%) used a combination of learning styles. Visual was therefore the dominant learning style, followed by auditory, kinesthetic, and combination styles. The 95% confidence interval for the proportion of visual learners is roughly 35% to 45%, so the lead of visual over auditory (11 percentage points) is larger than sampling error alone would be expected to produce.

Table 6. Learning styles of the participants

Learning style	Frequency	Percent
Visual	144	40
Auditory	103	29
Kinesthetic	73	20
Combination	37	10
Total	**357**	**100**

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Senior High School Track of the Participants

As shown in Table 7, 215 participants (60%) were in the Academic Track: 52 (15%) in the ABM strand, 119 (33%) in the HUMSS strand, and 44 (12%) in the STEM strand. The Sports Track was chosen by 3 participants (1%). The Technical-Vocational-Livelihood track was chosen by 139 participants (39%): 47 (13%) in the HE strand, 53 (15%) in CSS, 12 (3%) in EIM, 5 (1%) in SMAW, 5 (1%) in EPAS, 7 (2%) in Tech-Draft, and 10 (3%) in Industrial Arts. No participant was in the Arts and Design Track. The majority of participants were thus in the Academic Track, with the HUMSS strand having the most participants. Because the sample was drawn proportionally from the population (Table 1), these percentages mirror the track distribution of the four schools.

Table 7. Senior high school track of the participants

Track	Strand	Frequency	Percent
Academic Track	ABM	52	15
	HUMSS	119	33
	STEM	44	12
	Subtotal	**215**	**60**
Sports Track		3	1
Technical-Vocational-Livelihood Track	HE	47	13
	CSS	53	15
	EIM	12	3
	SMAW	5	1
	EPAS	5	1
	Tech-Draft	7	2
	Industrial Arts	10	3
	Subtotal	**139**	**39**
Total		**357**	**100**

Difference in Learning Style According to Socio-Demographic Profile

Table 8 presents the results of the chi-square test of the difference in learning style when participants were grouped according to socio-demographic profile. The p-values were all below the .05 level of significance; learning style therefore differed significantly by sex ($\chi^2 = 13.425$, $p = .004$), family income ($\chi^2 = 26.197$, $p = .002$), parents' occupation ($\chi^2 = 21.673$, $p = .010$), and parents' highest educational attainment ($\chi^2 = 15.420$, $p = .017$). Hypothesis H_{01} was rejected for all four socio-demographic variables. The effect sizes, however, were small: the contingency coefficients ranged from 0.190 to 0.261 and Cramér's V from .14 to .19. The differences are statistically reliable but account for only a modest part of the variation in learning style.

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Table 8. Test of difference in learning style of the participants when grouped according to socio-demographic profile

Socio-demographic profile	df	χ^2	p-value	Contingency coefficient	Cramér's V	Decision on H_0
Sex	3	13.425	.004	0.190	.19	Reject
Family income	9	26.197	.002	0.261	.16	Reject
Parents' occupation	9	21.673	.010	0.239	.14	Reject
Parents' highest educational attainment	6	15.420	.017	0.203	.15	Reject

Note. Cramér's V was computed from the reported chi-square values with n = 357.

Because five chi-square tests were performed, the possibility of a chance finding should be considered. Under a Bonferroni-adjusted level of .01 (.05 divided by five), the differences by sex and family income would remain significant, the difference by parents' occupation (p = .010) would be at the threshold, and the difference by parents' education (p = .017) would no longer be significant. The results for parents' occupation and education should therefore be interpreted more cautiously than those for sex and family income.

Relationship Between Learning Style and Senior High School Track

As shown in Table 9, the relationship between learning style and senior high school track was not statistically significant ($\chi^2 = 3.889$, p = .274), and the contingency coefficient of 0.104 (Cramér's V = .10) indicates a negligible association. Hypothesis H_{02} was therefore accepted (not rejected): there is no significant relationship between the learning style and the senior high school track of the participants.

Table 9. Test of relationship between learning style and senior high school track of the participants

Variables	df	χ^2	p-value	Contingency coefficient	Cramér's V	Decision on H_0
Learning style and SHS track	3	3.889	.274	0.104	.10	Accept

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DISCUSSION

Summary of Key Findings

Three findings stand out. First, visual was the most common learning style among the students, while auditory, kinesthetic, and combination styles were each reported by smaller groups. Second, learning style differed significantly across sex, family income, parents' occupation, and parents' education, but the associations were small. Third, learning style was not significantly related to the senior high school track the students took. Each finding is discussed below in relation to the literature.

Socio-Demographic Profile

Females outnumbered males among the participants (195 vs. 162). This contrasts with earlier findings that males have had higher enrolment in STEM subjects at the tertiary level and that their overall academic performance was rated higher than that of females (Ullah & Ullah, 2019), a situation that often translated into employment opportunities for males in science and engineering professions and into high-ranking positions in these fields (Maltese & Cooper, 2017). It is consistent, however, with the PISA 2022 results for the Philippines, in which girls outperformed boys in reading and mathematics (OECD, 2023).

On family income, the largest group belonged to the lower middle-income class (32%), but nearly half of the participants (48%) came from poor or low-income families. Income matters because, according to Adzido et al. (2016), when parents have a solid financial status, their children have improved motivation and learning processes that result in better academic accomplishments; some respondents in the same study, however, asserted that family income is not a significant predictor of better academic performance, and students from lower-earning families tend to be determined to uplift their socio-economic status after acquiring a college degree. The Wing Institute at Morningside Academy (2022) likewise reported that students from families with greater financial capability remain more proficient in mathematics than students from underprivileged families across all grades, and that the gap widens as students from high-status families keep improving. The financial capability of the family thus plays a role in educational outcomes.

The participants' parents were fairly evenly distributed across private-sector employment (30%), government employment (25%), self-employment (23%), and business ownership (22%). Occupational prestige is a component of socio-economic status that encompasses both income and educational attainment, since occupational status reflects the education required for a job and its income level (Gachathi, 1976). Parents with better occupations make adequate provision for their children's education and give them economic, social, psychological, and emotional support, which makes it possible for children to perform well; parents with less prestigious occupations, because of instability and financial problems, may be unable to provide adequate modern facilities to enhance their children's education (Memo et al., 2010).

With respect to parents' education, 37% of the participants had parents with a bachelor's or postgraduate degree, 31% had parents who reached college level, and 32% had parents who attended only primary or secondary school. Parental socio-economic status, of which education is a component, is consistently associated with students' achievement (Sirin, 2005). The kind of occupation a parent engages in determines income and social status and is reflected in different styles of child rearing, discipline, and reaction to children; parents in prestigious occupations tend to provide security to their children by being able to meet emergencies, absorb economic shocks, and offer a comfortable life. In the light of Bronfenbrenner's (1979) ecological perspective, these family circumstances form part of the environment in which students' learning preferences develop.

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Learning Style

Visual was the dominant learning style, with 144 of 357 participants (40%). This agrees with Filipino studies that used similar self-report instruments: Cabual (2021) found visual to be the predominant style among Nueva Ecija college students, and Magulod (2019) found that visual, group, and kinesthetic styles were the major styles of students at Cagayan State University. Raiyin (2016) explained that visual learners use their eyes to collect visual information, and found that students' results are better with visual learning than with traditional learning systems and that it has a significant impact on the development of students' skills. This agrees with Aisami (2015), who found visual aids to be effective for both learning and performance.

The prominence of the visual style should be interpreted with care. Self-report questionnaires reflect what students say they prefer, and part of the popularity of the "visual learner" label may come from item wording and from the cultural visibility of the label itself (Nancekivell et al., 2020). Moreover, a preference for visual material does not show that visual instruction produces better learning for those students than for others. A defensible reading, consistent with multimedia learning principles, is that well-designed visuals combined with words help most learners (Mayer, 2009). The result therefore supports the use of visual aids in the classroom for all students, which does not depend on classifying students by style.

Auditory was the second most common style (103 participants, 29%). Kayalar and Kayalar (2017) explained that auditory learners learn best by hearing or through verbal communication and are good at retaining information through auditory representation, and that such learners benefit from reading lessons or questions aloud and from conversing and exchanging ideas with others. Twenty percent of the participants (73) were kinesthetic learners, who learn best through active and physical activity and easily recall information or events through movement. Thirty-seven participants (10%) used a combination of the three styles. Although most students prefer one style, with visual most dominant, some prefer to use a variety of styles in order to learn. This is similar to the findings of Busan (2014), where, among 230 students, 73% preferred one learning style, 22% preferred two, and the rest preferred three, and it fits Cabual's (2021) conclusion that some students discover a dominant style while others use various styles in different circumstances.

Senior High School Track

Most participants (60%) were in the Academic Track, and HUMSS was the most populous strand (33%), while the TVL track accounted for 39% and the Sports Track for only 1%. Track choice in the Philippines has been linked mainly to intended college course, personal preference, parental influence, and family finances (Nazareno et al., 2021; Tortor et al., 2020). Nazareno et al. also reported moderate associations of track choice with sex and monthly family income, which suggests that the female majority and the income distribution of the present sample may have a bearing on its track distribution, although track choice was not analyzed by sex or income in this study. The concentration in the HUMSS strand is also consistent with the very large HUMSS population in the four schools (Table 1).

Differences in Learning Style by Socio-Demographic Profile

Learning style differed significantly by sex, family income, parents' occupation, and parents' highest educational attainment, so the null hypothesis of no significant difference was rejected for each. The associations were small (Cramér's V from .14 to .19), and, after adjusting for the number of tests, the findings for sex and family income are more secure than those for parents' occupation and education. The differences should therefore be read as modest tendencies rather than strong patterns, and causal language should be avoided.

The finding on sex runs contrary to Cabual (2021), who found no significant difference in learning style by sex, to Nzesei (2015), who found no significant difference in learning style preference between male and female students, and to Naqvi and Naqvi (2017), who likewise found no significant difference in learning style by gender. It is closer

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Volume 1 Issue 4 Pages 2057-2083
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to studies that reported sex differences in VAK preferences, such as Bawalsah and Haddad (2020), who found that males preferred the auditory style and females the kinesthetic style among Jordanian students with learning disabilities, and Blanka (2016), who reported that males were more visual than females among Czech students. The mixed international evidence suggests that the sex difference found here is best treated as specific to this sample.

The findings on family background are consistent with Magulod (2019), who found that fathers' occupation made a significant difference in the perceptual learning styles of Filipino university students, and with the broader literature linking socio-economic status to students' learning experiences (Sirin, 2005). Plausible mechanisms are those described by Bronfenbrenner (1979) and Bourdieu (1986): families with different incomes, occupations, and levels of education provide students with different learning resources, such as access to books, internet connectivity, and devices, and different expectations about how to study, and these experiences may shape how students describe their preferred way of learning. For example, students with limited access to digital materials may report different preferences from those with ample access. The present study did not measure such resources, so this explanation is a hypothesis for future research.

Relationship Between Learning Style and Senior High School Track

No significant relationship was found between learning style and senior high school track ($p = .274$), and the association was negligible ($V = .10$). In other words, the way students prefer to learn does not differ meaningfully among the tracks they chose. This agrees with Tio (2023), who, in a sample of similar size, reported that learning styles did not differ significantly across SHS tracks, and with Cabual (2021), who found no difference in learning styles across fields of specialization. It is also what the critique literature would predict: if learning style is a preference that does not determine how well a person learns (Pashler et al., 2008; Willingham et al., 2015), there is little reason to expect it to determine curricular placement. By contrast, Blanka (2016) found that students of technical high schools were more active and sequential than other students, and Rezaeinejad et al. (2015) found that the relationship between learning style and achievement differed by field of study, so differences by field are not impossible, but they were not found here.

A more likely explanation is that students choose tracks for reasons other than how they like to learn. Studies of track choice point to intended college course, personal interest, parental influence, and finances as the principal factors (Nazareno et al., 2021; Tortor et al., 2020). Whether a track fits a student's later work matters as well: tracer-study evidence shows that substantial minorities of graduates find their first job unrelated to their degree (Tutor et al., 2019), and labor-market outcomes of senior high school graduates have been mixed (Orbeta & Potestad, 2020). These findings suggest that the energy of guidance counselors is better directed toward career exploration, aptitude and interest assessment, and family counseling about costs than toward matching tracks to learning styles.

Implications for Guidance, Teaching, and Policy

For guidance counselors, the results support using VAK-type questionnaires only in the way their authors intended: as a prompt for students to reflect on how they study and to try a wider range of strategies (Fleming & Mills, 1992; Fleming & Baume, 2006). The results do not support using learning style to recommend or place students in a track. For teachers, the results support planning lessons that present important content in more than one way, combining words with pictures, discussion, and hands-on practice for all learners, instead of classifying students by style (Mayer, 2009; Nancekivell et al., 2021). For schools and the Department of Education, the finding that learning style varies modestly with family background is a reminder to attend to differences in students' resources and home learning conditions. As the Strengthened Senior High School Curriculum moves students into Academic and Technical-Professional pathways with elective clusters, the same principle applies: advising should rest on interests, aptitudes, career intentions, and family circumstances.

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Limitations

Several limitations should be considered. First, the design was cross-sectional and correlational, so the associations found cannot be interpreted as causal. Second, learning styles were measured with a self-report, forced-choice questionnaire that is a reflective tool and not a psychometrically validated instrument, and the validity of matching instruction to learning styles remains contested; the findings describe preferences, not demonstrated learning outcomes. Third, the participants came from four public schools in one school division and were chosen partly for accessibility, which limits generalization. Fourth, some groups, particularly the Sports Track (n = 3), several TVL strands, and the combination style, were very small, which limits comparison across tracks and may produce sparse cells in the chi-square tables. Fifth, five chi-square tests were run without correction for multiple testing, and family income was reported by students, which may be subject to error. Sixth, the track structure analyzed here has since been superseded by the Strengthened Senior High School Curriculum, so the findings describe the A.Y. 2023–2024 cohort and cannot be applied directly to the new structure.

Conclusions

Based on the findings, the following conclusions were drawn:

1. The senior high school participants in the City Division of Imus were predominantly female, and most belonged to the lower middle-income class, although nearly half came from poor or low-income families.
2. The dominant learning style of the participants was visual, followed by auditory, kinesthetic, and a combination of styles. These are self-reported preferences.
3. Most participants were in the Academic Track, particularly the HUMSS strand.
4. The null hypothesis of no significant difference in learning style when participants are grouped by socio-demographic profile was rejected for sex, family income, parents' occupation, and parents' highest educational attainment; learning style differed significantly across these groups, although the associations were small.
5. The null hypothesis of no significant relationship between learning style and senior high school track was accepted; learning style and track were not significantly related.

Recommendations

In light of the results, the following are recommended:

1. **Department of Education.** The Department may consider using the findings as a reference in underscoring the vertical alignment of the senior high school track, and under the Strengthened Senior High School Curriculum the choice of pathway and electives, with the courses students will take up in college. Advising on pathway and electives should be based on interests, aptitudes, career intentions, and family circumstances, not on learning style.
2. **Schools.** Schools may help students determine their dominant learning style, using the results as a self-reflection and study-skills conversation starter, and may monitor socio-economic barriers that affect students' choices and learning conditions.
3. **Guidance counselors.** Guidance counselors may incorporate learning style information into study-habits programs while avoiding its use for track placement, and may strengthen career guidance activities, including interest and aptitude assessment and counseling of parents on costs and options.

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4. **Teachers.** Teachers may consider using teaching styles that match the dominant learning styles in the learning environment, with greater use of visual aids while still providing auditory and hands-on activities for other learners, and may take part in training that distinguishes learner preferences from evidence-based instructional strategies.

5. **Future researchers.** Future researchers may explore other variables such as study habits, motivations in learning, teaching styles, and career intentions; use validated instruments and achievement outcomes; replicate the study in private schools and other divisions with larger samples for the smaller tracks; apply the analysis to the new pathway and elective cluster structure; and use experimental designs if the effect of matching instruction to preference is to be tested.

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Volume 1 Issue 4 Pages 2057-2083
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Volume 1 Issue 4 Pages 2057-2083
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