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Research Article

Assessing STEM Career Interest among Senior High School Students: Implementation of the STEM-CIS in the Pilot of the Strengthened SHS Curriculum

Karl Evan R. Pama*

College of Arts and Sciences, Notre Dame of Marbel University, City of Koronadal, South Cotabato 9506, Philippines

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**Corresponding author:*
E-mail:
karlevanpama@gmail.com

ABSTRACT

This study determined how much Grade 11 students are interested in Science, Technology, Engineering, and Mathematics (STEM) careers. The students were part of the new Strengthened Senior High School Curriculum in the Philippines for School Year 2025–2026. A total of 455 students answered a survey about how they feel relative to STEM careers. The results showed respondents' high interest in science, technology, and math careers, but their interest in engineering jobs was not as high. In terms of career pathways, students who chose Health and Wellness Sciences liked science the most, and students in Engineering and Natural Sciences liked technology and engineering more. Students in Business and Accounting were the most interested in math. As to sex assigned at birth (i.e., male and female), it was found that both were almost the same in liking science and math, but males were more interested in technology and engineering than females. It can be summarized that students were already interested in STEM, especially when their studies match the career they want in the future. Because of this, even though strands are no longer part of the Strengthened SHS Curriculum, schools are encouraged to provide more hands-on STEM opportunities and experiences for all students so everyone can uncover their talents and gain higher confidence in STEM activities. More students can grow up to become future scientists, engineers, doctors, and innovators who will help improve the country.

Keywords: *Science, Education, Technology, Engineering, Mathematics*

Background

Senior High School learners' STEM career interest is shaped by various factors (e.g., personal, social, and educational). The primary reason students enrol in the STEM (Science, Technology, Engineering, and Mathematics)

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tracks is personal aspiration (Rafanan et al., 2020). Learners intend to pursue STEM-related careers, with alignment to preferred college courses being a major motivator. Self-efficacy and higher STEM career interest and intent were discovered to be of high correlation (Nariman & Davis, 2020; Jiang et al., 2024). Self-efficacy, in this context, pertains to learners' belief in their capacity to advance in STEM. Nariman and Davis (2020) stated that programs that boost self-efficacy can significantly increase learners' desire to pursue STEM careers. One of these programs include problem-based learning.

According to Robnett and Leaper (2013), the increase of student interest in STEM-related careers is largely influenced by peers who are also interested in STEM, along with the student's personal interest. On the other hand, encouragement on non-STEM subjects does not appear to have the same effect. Furthermore, according to Simunovic et al. (2020), students whose parents work in STEM fields also tend to show increased interest in STEM. Having both parents involved in STEM fields showed a significant effect as well, though the influence is relatively modest.

In terms of sex assigned at birth, studies have consistently shown that male learners have more fascination in STEM careers, specifically in engineering. On one hand, female students tend toward health and medical fields (Jiang et al., 2024; Sellami et al., 2023; Wang et al., 2023; Sadler et al., 2012). Notably, the persistence of interest in STEM throughout high school also differs by gender. Notably, female students tend to experience decline in interest overtime (Sadler et al., 2012; Wang et al., 2023). And so, social factors, such as, but not limited to, peer support and media portrayals, appear to affect male and female students differently. Additionally, for female students, programs that build confidence in their STEM abilities and offer positive role models can have significant effect on sustaining their interest (Wang et al., 2023; Jiang et al., 2024).

Students who take calculus, physics, chemistry, and other advanced science and math subjects have higher probability of developing strong interest in pursuing STEM career (Sadler et al., 2014). Meanwhile, students who demonstrate a genuine interest in computer coding and have higher confidence in their coding skills tend to show greater inclination in STEM tracks, particularly in technology fields (Jiang et al., 2022). Furthermore, career awareness activities and exposure to various STEM pathways have a crucial role in guiding learners toward STEM professions, most especially when the activities are facilitated by the school (Jiang et al., 2024).

For the SY 2025-2026, the Philippine Department of Education (DepEd) decided to have a Strengthened Senior High School (SHS) Curriculum pilot implementation for Grade 11. The SHS program shall now transition from the current four-track structure (ABM, HUMSS, GAS, and STEM) into two primary educational pathways, namely, Academic Track and the Technical-Professional Track. Unlike the previous curriculum, students no longer enroll on a particular strand, including STEM. This would imply that students may find difficulty in choosing a career pathway. With this, it is timely to conduct a study which assesses the students' actual levels of STEM career interest in the circumstances of this new curriculum implementation. This study assessed the SHS students' fascination in STEM careers during the Strengthened SHS Curriculum pilot implementation with the use of the STEM Career Interest Survey (STEM-CIS). This study generated insight that can guide educators and curriculum developers in enhancing the STEM career guidance and support system within the Strengthened SHS Curriculum.

Objectives of the Study

This study assessed the SHS students' STEM career interests during the pilot implementation of the Strengthened SHS Curriculum for SY 2025–2026. Specifically, it did the following:

1) Determine the demographic profile of Grade 11 students enrolled in the Strengthened SHS Curriculum as to career pathway and sex assigned at birth;
2) Determined the level of STEM career interest of Grade 11 students in the Strengthened SHS Curriculum;
3) Examined whether students' career interests in STEM differ depending on career pathway (Business and Accounting, Social

and Human Development, Health and Wellness Sciences, and Engineering and Natural Sciences); and

4) Examined whether students' career interests in STEM differ based on their sex assigned at birth (male or female).

Methods

Study Design

This study made use of a descriptive-comparative research design that used a cross-sectional survey approach. A descriptive design seeks to observe, describe, and document aspects of a situation as it naturally occurs without manipulating variables (Aggarwal & Ranganathan, 2019). Additionally, this study's comparative design involved comparison of respondents' profiles (career pathway and sex assigned at birth) to identify similarities and differences and to draw conclusion about relationships (Devi, 2022). Moreover, this study's cross-sectional nature indicated that data collection was carried out at a specific point in time, particularly during the strengthened SHS curriculum pilot implementation. Lastly, the study sought approval from the school administrators to ensure ethical and appropriate implementation of research procedures.

Population and Sample

The samples of this research involved 455 Grade 11 learners enrolled in a school implementing the Strengthened SHS Curriculum for the School Year 2025-2026. As pilot implementation participants, the students were among the first to experience the revised curriculum framework of DepEd. Specifically, the students no longer experienced the strand-based enrolments (i.e., ABM, HUMMS, GAS, and STEM); they were to experience only two tracks (Academic and Technical Professional). Though they were only in the Academic Track, the Grade 11 students were clustered based on career pathway, namely, Business and Accounting (n = 56), Social and Human Development (n = 46), Health and Wellness Sciences (n = 203), and Engineering and Natural Sciences (n = 150).

Instrumentation

The primary data-gathering tool used in this research was Kier et al.'s (2013) STEM-CIS (STEM Career Interest Survey). It contains 44 Likert-type items divided into four subscales corresponding to the domains of STEM, i.e., Science, Technology, Engineering, and Mathematics. Respondents rated their agreement level with each indicator on a 5-point Likert scale. Moreover, the instrument was grounded on Social Cognitive Career Theory (SCCT). Moreover, this STEM-CIS underwent pilot testing to ensure the reliability as well as the internal consistency of the survey indicators. The Cronbach's alpha coefficient of the whole questionnaire was 0.86 with α_{Sci} = 0.82, α_{Tech} = 0.81, α_{Engg} = 0.77, and α_{Math} = 0.79, which signifies that the internal consistency among the items was of high level. Thus, the instrument was reliable and suitable for measuring the career interests of the students.

Table 1. Interpretation for the Mean Responses

Rating	Range	Verbal Description	Interpretation
5	4.50 – 5.00	Strongly Agree	Very high level of career interest
4	3.50 – 4.49	Agree	High level of career interest
3	2.50 – 3.49	Neutral	Fair level of career interest
2	1.50 – 2.49	Disagree	Low level of career interest
1	1.00 – 1.49	Strongly Disagree	Very low level of career interest

Data Analysis

The researcher used JASP 0.19.1 to conduct statistical treatments. Means were computed to determine the average levels STEM career interest across the four domains. Table 1 guided the researcher with the interpretation of the mean responses.

The Shapiro-Wilk test was first implemented to determine the normality of the distribution of the data. Based on the results, appropriate tests of difference were conducted. Specifically, the Student's t-test and One-Way ANOVA were used for normally distributed data, while the Mann-Whitney U test and

Kruskal-Wallis H test served as their non-parametric counterparts. These analyses were performed to determine whether significant differences in STEM career interest existed according to sex assigned at birth (male and female) and among the different career pathways, namely, business and accounting, social and human development, health and wellness sciences, and engineering and natural sciences.

Result and Discussion

Demographic Profile of Grade 11 Students Enrolled in the Strengthened SHS Curriculum as to Career Pathway and Sex Assigned at Birth

Table 2 shows information about the Grade 11 students who are part of the Strengthened Senior High School Curriculum. Out of 455 students, most (44.60%) chose the Health and Wellness Sciences pathway. This means that many students are interested in jobs related to medicine, nursing, or health care. The second most chosen pathway is Engineering and Natural Sciences (33.00%), where students want to learn more about machines, technology, and how nature works. Additionally, fewer students chose Business and Accounting (12.30%) and Social and Human Development (10.10%) as their career pathway.

Table 2 shows that majority of the students prefer science-related courses. Students may have perceived that these fields can help people and offer more job opportunities in the future. In fact, Sellami et al. (2023) as well as Sadler et al. (2012) discovered that high school learners around the world often show more interest in health and science than in other subjects.

Table 2. Demographic Profile of Grade 11 Students

Variable	Level	Counts	Proportion
Career Pathway	Business and Accounting	56	12.30 %
	Social and Human Development	46	10.10 %
	Health and Wellness Sciences	203	44.60 %
	Engineering and Natural Sciences	150	33.00 %
	Total	*455*	*100.00 %*
Sex	Male	195	42.90 %
	Female	260	57.10 %
	Total	*455*	*100.00 %*

In terms of sex assigned at birth, the results show that there were more female students (57.10%) than male students (42.90%) in the pilot implementation of the Strengthened SHS curriculum. To note, Jiang et al. (2024) and Wang et al. (2023) explained that female high schoolers are usually more drawn to health and medical careers, while males expressed greater interest in engineering and technology. Albeit, both males and females can do well in any career if they are given encouragement and support.

Additionally, Rafanan et al. (2020) found that students often choose their academic track based on what they want to pursue in college as well as the kind of job they are aspiring. To elaborate, some students may have chosen Health and Wellness Sciences because they want to become doctors or nurses who help people, and they may have chosen Engineering and Natural Sciences because they like innovating, inventing, discovering, and solving problems. Moreover, according to Jiang et al. (2024), students become more curious and confident about pursuing a program when schools give them more activities to learn about science, technology, and engineering jobs. In 2020, Simunović et al. discovered that parents who work in STEM-related jobs had their children become more interested in science and technology too. It implies that both school and family serve as a big role in aiding students see the importance of and fun in STEM in their future.

Level of Career Interest in Science, Technology, Engineering, and Mathematics (STEM) of Students in the Strengthened SHS Curriculum

A. Level of Career Interest in Science

Table 3 shows that many Grade 11 students like learning about science. The mean score of 3.71 means that the respondents have a relatively high level of fascination in science. Most of them rated that they like their science class (Mean = 3.89), finish their homework (Mean = 3.93), and believe that doing good in science will assist them in the future (Mean = 4.02). They also said that they were planning to utilize science in their future jobs (Mean = 3.71) and are willing to work extra in their science subjects (Mean = 4.11). Moreover, many students also shared that their parents support their interest in science (Mean = 3.54) and that they know a relative who uses science in their work (Mean = 3.71). Simunović et al. (2020) found that children often become more interested in science when their parents have jobs related to science, technology, or medicine.

Table 3. Level of Career Interest in Science

Indicator	Mean	Interpretation
1. I am able to get a good grade in my science class.	3.46	Neutral
2. I am able to complete my science homework.	3.93	Agree
3. I plan to use science in my future career.	3.71	Agree
4. I will work hard in my science classes.	4.11	Agree
5. If I do well in science classes, it will help me in my future career.	4.02	Agree
6. My parents would like it if I choose a science career.	3.54	Agree
7. I am interested in careers that use science.	3.53	Agree
8. I like my science class.	3.89	Agree
9. I have a role model in a science career.	3.31	Neutral
10. I would feel comfortable talking to people who work in science careers.	3.60	Agree
11. I know of someone in my family who uses science in their career.	3.71	Agree
Overall Weighted Mean	**3.71**	**High Level of Interest**

On one hand, some students were not sure if they have a role model in a science profession (Mean = 3.31) or if they could always attain good science marks (Mean = 3.46). This implies that though students may enjoy science and mathematics learning, they still feel unsure about doing very well in it. And so, if schools give students fun and challenging activities that let them experiment and solve problems, students become more confident in pursuing their preferred courses (Nariman & Davis, 2020; Jiang et al., 2024). This means that when students believe they can do science, they are more likely to stay interested and do better.

Rafanan et al. (2020) found that many students choose the STEM strand because it matches what they want to study in college or what job they want in the future. Robnett and Leaper (2013) discovered that friends who also like science can help each other stay interested in it. Sadler et al. (2012) said that both boys and girls can enjoy science, but girls often like health-related fields while boys are more drawn to engineering.

B. Level of Career Interest in Technology

Table 4 shows that the Grade 11 learners' interest in technology was of a high level (OWM = 3.60). Many students agreed that they can learn new technologies easily (Mean = 3.87), use technology to help with schoolwork (Mean = 3.93), and that learning more about technology can help them find different kinds of jobs (Mean = 3.83). They also said they plan to utilize technology in their future professions (Mean = 3.76) and enjoy using it for classwork (Mean = 3.82).

Table 4. Level of Career Interest in Technology

Indicator	Mean	Interpretation
1. I am able to do well in activities that involve technology.	3.60	Agree
2. I am able to learn new technologies.	3.87	Agree
3. I plan to use technology in my future career.	3.76	Agree
4. I will learn about new technologies that will help me with school.	3.93	Agree
5. If I learn a lot about technology, I will be able to do lots of different types of careers.	3.83	Agree
6. My parents would like it if I choose a technology career.	3.20	Neutral
7. I like to use technology for class work.	3.82	Agree
8. I am interested in careers that use technology.	3.41	Neutral
9. I have a role model who uses technology in their career.	3.23	Neutral
10. I would feel comfortable talking to people who work in technology careers.	3.42	Neutral
11. I know of someone in my family who uses technology in their career.	3.59	Agree
Overall Weighted Mean	**3.60**	**High Level of Interest**

Jiang et al. (2022) found that learners who enjoy coding and believe they can do it well are more likely to want technology-related jobs. Similarly, LaForce et al. (2017) and Nariman and Davis (2020) showed that programs using problem-based learning (PBL), where students solve problems related to what are happening in the real world with the use of technology, help increase motivation and fascination in STEM careers. It simply implies that when students are interested in computers, gadgets, and digital tools, they express greater interest in STEM fields like technology and engineering.

However, some respondents were unsure if they would like to have a career that uses technology (Mean = 3.41), if they had role models who work with technology (Mean = 3.23), or if their parents want them to pursue a profession in the technology industry (Mean = 3.20). According to Simunović et al. (2020) and Amalina et al. (2025), STEM interest of students is often shaped by their family's background and support. When parents or relatives work in STEM or talk positively about technology, children are more likely to be curious and inspired to explore it too. Additionally, the reports of Zhou et al. (2025) and Halim et al. (2021) explained as well that learners' STEM interest grows when they receive support from teachers, friends, and the community, or when they join out-of-school learning experiences like science fairs or robotics clubs. Generally, media exposure, such as watching videos, playing educational games, or seeing positive portrayals of scientists and inventors, can also make students more excited to learn about technology (Chen et al., 2023).

C. Level of Career Interest in Engineering

Table 5 shows that the Grade 11 students have a fair level of interest in engineering, with an overall average of 3.22. This means that students are somewhat interested in engineering but not as much as in science or technology. Most of the answers were rated neutral, meaning that students are unsure or have mixed feelings about engineering-related activities. For example, they were not certain if they could do well in engineering tasks (Mean = 3.12), complete engineering activities (Mean = 3.12), or plan to utilize engineering in their future professions (Mean = 3.06). Although they agreed a little that learning engineering could open many career paths (Mean = 3.35) and that they have a family member who is an engineer (Mean = 3.54), most students still seem unsure about seeing themselves as future engineers.

In the papers of Wang et al. (2023) and Sadler et al. (2012), male learners commonly show higher interest in engineering than females. To note, female students tend to be drawn more to health or social science fields. Thus, since there are more females in the current study group, it shows that the interest level in engineering is lower among students. Furthermore, research by Amalina et al. (2025) and Zhou et al. (2025) showed as well that students' STEM interest

depends on their confidence (self-efficacy) and motivation. The neutral responses in the survey suggest that some students may lack confidence in their ability to do engineering tasks or may not have enough experiences that let them explore engineering in school.

Table 5. Level of Career Interest in Engineering

Indicator	Mean	Interpretation
1. I am able to do well in activities that involve engineering.	3.12	Neutral
2. I am able to complete activities that involve engineering.	3.12	Neutral
3. I plan to use engineering in my future career.	3.06	Neutral
4. I will work hard on activities at school that involve engineering.	3.27	Neutral
5. If I learn a lot about engineering, I will be able to do lots of different types of careers.	3.35	Neutral
6. My parents would like it if I choose an engineering career.	3.27	Neutral
7. I am interested in careers that involve engineering.	3.11	Neutral
8. I like activities that involve engineering.	3.13	Neutral
9. I have a role model in an engineering career.	3.11	Neutral
10. I would feel comfortable talking to people who are engineers.	3.34	Neutral
11. I know of someone in my family who is an engineer.	3.54	Agree
Overall Weighted Mean	**3.22**	**Fair Level of Interest**

Furthermore, while some students in this study said they know a family member who is an engineer (Mean = 3.54), many others do not have direct exposure to people in that profession. Halim et al. (2021) and Simunović et al. (2020) discovered that learners who know someone in their family or community who works in a STEM-related profession have higher chance to imagine themselves in similar careers. Lastly, Luo et al. (2021) pointed out that stereotypes about STEM careers can make students think engineering is only for certain groups, such as boys or people who are very good in math. These stereotypes can lower students' confidence and make them feel less interested in the profession.

D. Level of Career Interest in Mathematics

Table 6 shows that the Grade 11 learners have a high interest level in mathematics, with an overall average of 3.54. Most students agreed that they can finish their math homework (Mean = 3.78), work hard in math classes (Mean = 3.99), and believe that doing good in math will aid them in their future jobs (Mean = 3.89). They also said that they plan to utilize math in their jobs (Mean = 3.51) and that they like their math classes (Mean = 3.63).

Table 6. Level of Career Interest in Mathematics

Indicator	Mean	Interpretation
1. I am able to get a good grade in my math class.	3.28	Neutral
2. I am able to complete my math homework.	3.78	Agree
3. I plan to use mathematics in my future career.	3.51	Agree
4. I will work hard in my mathematics classes.	3.99	Agree
5. If I do well in mathematics classes, it will help me in my future career.	3.89	Agree
6. My parents would like it if I choose a mathematics career.	3.28	Neutral
7. I am interested in careers that use mathematics.	3.23	Neutral
8. I like my mathematics class.	3.63	Agree
9. I have a role model in a mathematics career.	3.29	Neutral
10. I would feel comfortable talking to people who work in math careers.	3.42	Neutral
11. I know someone in my family who uses mathematics in their career.	3.60	Agree
Overall Weighted Mean	**3.54**	**High Level of Interest**

On one hand, some students were neutral or unsure about choosing a math-related career (Mean = 3.23) or considering someone as a role model in a math-related profession (Mean = 3.29). They also felt unsure if their parents would prefer for them to have a math profession (Mean = 3.28). According to Amalina et al. (2025) and Zhou et al. (2025), students' interest in STEM subjects like math depends on their confidence (self-efficacy), motivation, and the support they receive from family, teachers, and friends. When students believe they are good at math and get encouragement, they become more likely to enjoy it and consider math-related careers. And so, based on the result, while students enjoy learning math, not many of them see themselves working in math-related fields yet.

Furthermore, Wang et al. (2023) discovered the vital role of students' gender on how students view mathematics; specifically, male students are often more confident in their mathematical ability, while female students sometimes doubt themselves even if they are doing good. The same result was reported by Sadler et al. (2012) a decade before. In addition, Lou et al. (2021) discussed that media portrayals and cultural messages about math careers can affect how students perceive their math abilities. That is, when students see good examples of both men and women using math in real-life careers, students imagine themselves doing the same. Similarly, Simunović et al. (2020) found that when students know a family member or relative who uses math at work, they are more likely to value math. In this study, many students agreed that they have relatives who use math in their work (Mean = 3.60). Lastly, research by Nariman and Davis (2020) and LaForce et al. (2017) found that teaching math through real-life problem-solving or project-based learning can make it more exciting and meaningful. Halim et al. (2021) added that out-of-school learning experiences, like math camps or STEM clubs, can also help students build stronger interest in math and other STEM subjects.

Difference between the Level of Career Interest of SHS Students in terms of Career Pathway

A. Difference between the Level of Science Career Interest of SHS Students in terms of Career Pathway

Table 7 shows that the respondents' interest in careers in science is not the same across all career pathways. Since the Shapiro-Wilk test (*see Appendix*) indicated that the data satisfied the assumption of normality (W_{Sci} = 0.972, p = 0.21; W_{Tech} = 0.980, p = 0.40; W_{Engg} = 0.974, p = 0.34; W_{Math} = 0.978, p = 0.25), a One-Way ANOVA was utilized to determine whether students' career interests in science varied across their chosen career pathways. The computed value (F = 12.71, p < 0.001, η^2 = 0.078) means there is a significant difference in how much students from different career pathways are interested in science. Based on the effect size, only 7.8% of the variance in students' interest in science can be explained by their chosen career pathway. Among the groups, students from Health and Wellness Sciences had the highest level of interest in science (Mean = 3.91), followed by Engineering and Natural Sciences (Mean = 3.68). Students from Business and Accounting (Mean = 3.42) and Social and Human Development (Mean = 3.29) showed lower interest in science careers. Practically, this indicates that career pathway membership has a meaningful, though not dominant, influence on students' interest in science.

Table 7. Difference between Level of Science Career Interest of SHS Students in terms of Career Pathway

Career Pathways	N	Mean	SD	df	F	p	η^2
Business and Accounting	56	3.42	0.68	3	12.71	<0.001	0.078
Social and Human Development	46	3.29	0.62				
Health and Wellness Sciences	203	3.91	0.76				
Engineering and Natural Sciences	150	3.68	0.77				

The post hoc test (*see Appendix*) shows that students in Health and Wellness Sciences had a much higher science interest than those in Business and Accounting and Social and Human Development ($p < .001$). There was also a smaller but still meaningful difference between Health and Wellness Sciences and Engineering and Natural Sciences ($p < 0.05$). It implies that students focusing on health-related careers preferred science. According to Wang et al. (2023) and Sadler et al. (2012), learners who are exposed to more science-based lessons, such as biology and chemistry, often develop a stronger interest in STEM fields. In contrast, students in business or social sciences had lower interest in science as they cannot see science as directly connected to their future careers.

Jiang et al. (2024) explained that students' curiosity and confidence grow when schools help students learn about how science is used in different careers. This shows that students' motivation and career awareness serve a big role in molding their fascination in science. Similarly, Amalina et al. (2025) and Zhou et al. (2025) discovered that learners who had higher self-efficacy tend to develop lasting interest. Lastly, Simunović et al. (2020) and Halim et al. (2021) noted that having family members or role models working in STEM allow students to see more likely science as meaningful and achievable. The findings of this study agree with that idea (i.e., learners who take subjects connected to health and science are more exposed to real-life examples of science in action), which helps spark their enthusiasm.

B. Difference between the Level of Technology Career Interest of SHS Students in terms of Career Pathway

Table 8 shows that there are small but meaningful differences in how interested students are in technology careers depending on their chosen career pathway. Since the Shapiro-Wilk test (*see Appendix*) validated that the data met the normality assumption, a One-Way ANOVA was employed to assess whether students' career interests in technology varied according to their chosen career pathways. The results ($F = 2.97$, $p = 0.032$, $\eta^2 = 0.019$) mean that students' technology interests are not the same across all groups. Additionally, only about 1.9% of the variance in technology interest can be attributed to career pathway. Among the four career pathways, the students in Engineering and Natural Sciences had the highest level of interest in technology (Mean = 3.75). They were followed by Health and Wellness Sciences (Mean = 3.56), Business and Accounting (Mean = 3.52), and Social and Human Development (Mean = 3.44). And so, this means that while differences exist, they are relatively weak in practical terms.

Table 8. Difference between Level of Technology Career Interest of SHS Students in terms of Career Pathway

Career Pathways	N	Mean	SD	df	F	P	η^2
Business and Accounting	56	3.52	0.81	3	2.97	0.032	0.019
Social and Human Development	46	3.44	0.85				
Health and Wellness Sciences	203	3.56	0.74				
Engineering and Natural Sciences	150	3.75	0.82				

The post hoc test (*see Appendix*) shows that none of the groups had very large differences, but the Engineering and Natural Sciences students still showed a bit more interest in technology than the other groups. Jiang et al. (2024) as well as Zhou et al. (2025) discussed the tendency for students who have more opportunities to use technology in school to have higher confidence and motivation. Students more likely prefer technology-related careers in the future when they believe that they can use technology well. Additionally, even though not as high as those in Engineering pathway, students in Business and Accounting and Health and Wellness Sciences showed fair to good interest in technology. This might be because they use technology differently, i.e., for data recording, slide presentations, or research work.

In other words, how students experience technology in school affects how much they enjoy it (Sadler et al., 2012; Amalina et al., 2025).

In another lens, Chen et al. (2023) and Halim et al. (2021) explained that out-of-school experiences can also make students more interested in technology careers. For instance, using technology at home or watching media that shows people work with technology can also influence children to have develop in technology. In the educational context, LaForce et al. (2017) discovered that when teachers allow the learners to answer real-world problems using technology, learning becomes engaging and meaningful. Robotics, coding, multimedia projects, and other hands-on experiences can help students see technology as an exciting field. And so, even though students took different career pathways, their interest in technology had no significant differences. It goes to show that students from different career pathways recognize the use of technology in their future careers or profession.

C. Difference between the Level of Engineering Career Interest of SHS Students in terms of Career Pathway

Table 9 shows a significant difference in how much students from different career pathways are interested in engineering. Since the Shapiro-Wilk test (*see Appendix*) verified that the data were normally distributed, a One-Way ANOVA was conducted to determine whether students' career interests in engineering differed across their chosen career pathways. The result ($F = 49.81$, $p < 0.001$, $\eta^2 = 0.249$) means that the students' interest in engineering is not the same across the four groups. Moreover, approximately 24.9% of the variance in engineering interest can be explained by students' career pathway. Among all pathways, students from Engineering and Natural Sciences had the highest level of interest in engineering (Mean = 3.94), while those from Social and Human Development had the lowest (Mean = 2.54). The Business and Accounting and Health and Wellness Sciences students both had lower interest levels (Mean = 2.92). This simply implies strong and practically meaningful difference among the groups.

Table 9. Difference between Level of Engineering Career Interest of SHS Students in terms of Career Pathway

Career Pathways	N	Mean	SD	df	F	p	η^2
Business and Accounting	56	2.92	0.95	3	49.81	<0.001	0.249
Social and Human Development	46	2.54	1.05				
Health and Wellness Sciences	203	2.92	0.89				
Engineering and Natural Sciences	150	3.94	0.87				

The post hoc test (*see Appendix*) shows that these differences are highly significant. Students in Engineering and Natural Sciences were much more interested in engineering than students in all other groups ($p < 0.001$). This simply tells us that students who are already in the Engineering career pathway are more motivated to learn engineering concepts in that pathway. Sadler et al. (2012) and Wang et al. (2023) discovered that male students often show stronger interest in engineering. On one hand, female students tend to have greater interest in health and medical careers. And so, the Health and Wellness Sciences career pathway did not score as high in engineering interest. Amalina et al. (2025) and Zhou et al. (2025) mentioned about motivation, self-efficacy, and exposure to activities related to STEM as factors that result to higher fascination in STEM subjects.

Furthermore, Jiang et al. (2024) said that students' interest increases when schools give students opportunities to explore different STEM careers. Such opportunities or activities include field trips and project-based activities. In simple words, career awareness is an essential factor to determine students' interest in engineering. In a similar note, according to

LaForce et al. (2017), when students participate in problem-based learning, they tend to view engineering as a more purposeful and stimulating field because it involves solving authentic problems. Lastly, Simunović et al. (2020) and Halim et al. (2021) discussed further about learners being more likely to have preference in engineering careers when their parents, relatives, teachers, or other role models talk about engineering careers. Otherwise, students might not realize how fun and important engineering can be when they do not have examples.

D. Difference between the Level of Mathematics Career Interest of SHS Students in terms of Career Pathway

Table 10 shows that the students' interest in mathematics careers is different depending on their career pathway. Since the Shapiro-Wilk test (*see Appendix*) validated that the data satisfied the normality assumption, a One-Way ANOVA was performed to confirm whether students' career interests in mathematics differed across their chosen career pathways. The result ($F = 8.89$, $p < 0.001$, $\eta^2 = 0.056$) means that not all groups feel the same way about math. The effect size suggests a moderate practical effect, that is, 5.6% of the variance in math interest can be attributed to differences in career pathway. Among the four career pathways, students in Business and Accounting had the highest level of interest in math (Mean = 3.78). This was followed by Engineering and Natural Sciences (Mean = 3.62), Health and Wellness Sciences (Mean = 3.53), and Social and Human Development, which had the lowest interest (Mean = 2.99).

Table 10. Difference between Level of Mathematics Career Interest of SHS Students in terms of Career Pathway

Career Pathways	N	Mean	SD	df	F	p	η^2
Business and Accounting	56	3.78	0.86	3	8.89	<0.001	0.056
Social and Human Development	46	2.99	1.01				
Health and Wellness Sciences	203	3.53	0.77				
Engineering and Natural Sciences	150	3.62	0.84				

The post hoc test (*see Appendix*) revealed that the biggest contrast was between Business and Accounting and Social and Human Development ($p < 0.001$), and between Social and Human Development and both Engineering and Health-related groups ($p < 0.001$). In simple words, students who are studying business or technical subjects tend to enjoy math more than those in social or humanities-related disciplines. To note, Business and Engineering students use math more often in their lessons, so they can see how math helps in real life. Solving equations, budgeting, or analyzing data are some activities that they take more often, whereas students in social or humanities career pathway tend to focus on writing, dramatization, and presentations. And so, the more students see math as useful, the more confident and motivated they become. According to Amalina et al. (2025) and Zhou et al. (2025), students are more interested in STEM-related subjects when they can relate these subjects to real life as well as careers. Lastly, Wang et al. (2023) and Sadler et al. (2012) explained the dependence of math interest on exposure and self-efficacy. They discussed that students build stronger confidence and exhibit enjoyment in math when students succeed in it or they get help from teachers and peers. And so, those students who struggle with math may not see its importance in their future careers, eventually losing interest in math.

Difference between the Level of Career Interest of SHS Students in terms of Sex Assigned at Birth

A. Difference between the Level of Science Career Interest of SHS Students in terms of Sex Assigned at Birth

Table 11 shows that male students and female students have almost the same interest level in science. The data were normally distributed as validated by the Shapiro-Wilk test (*see Appendix*), and so, an independent samples

t-test was implemented to examine whether students' career interests in science differed according to their sex assigned at birth. The average score of male students was 3.68, while female students had a slightly higher score of 3.73. The computed t-value (t = 0.73, p = 0.47, d = 0.069) shows that this difference is not significant, meaning that the small gap between boys' and girls' science interest could have happened by chance; thus, both boys and girls like science almost equally. Moreover, it also reflects a negligible effect size which suggests that the observed difference in science interest between male and female students is minimal.

Table 11. Difference between Level of Science Career Interest of SHS Students in terms of Sex Assigned at Birth

Sex assigned at birth	N	Mean	SD	t	df	p	Cohen's d
Male	195	3.68	0.80	0.73	453	0.47	0.069
Female	260	3.73	0.74				

According to Sadler et al. (2012) and Wang et al. (2023), boys usually show higher interest in physical sciences like physics and engineering. On the other hand, girls often show greater fascination in health and life sciences. This tells us that both male and female respondents are becoming more open to exploring science. Moreover, Jiang et al. (2024) explained that science interest is affected by students' self-efficacy and the support they receive from teachers and peers. Both genders can become equally motivated when male and female students are encouraged to conduct experiments, participate in investigatory projects, and learn about science careers. It thus implies that schools must provide equal opportunities for both sexes to explore science.

Furthermore, Amalina et al. (2025) and Zhou et al. (2025) emphasize that motivation and positive learning experiences are key to sustaining interest in STEM, regardless of gender. Both male and female students have the tendency to stay curious and enthusiastic about science if science lessons are hands-on and exciting. Such activities involve doing investigations, solving real-world problems, and exploring nature. Lastly, Halim et al. (2021) and Simunović et al. (2020) discovered the significant influence of having role models in the scientific fields like parents, teachers, or relatives on students' interest. In other words, both male and female students tend to imagine themselves doing something similar someday when they see family members or important personalities use science in their careers.

B. Difference between the Level of Technology Career Interest of SHS Students in terms of Sex Assigned at Birth

Table 12 shows that male students are more interested in technology than females. Since the Shapiro-Wilk test (*see Appendix*) confirmed that the data was of normal distribution, an independent samples t-test was employed to determine whether students' career interests in technology differed according to their sex assigned at birth. The sample mean for male students was 3.78 (SD = 0.81), while females had 3.48 (SD = 0.75). The result (t = -4.04, p < 0.001, d = -0.383) means that this difference is significant with small-to-moderate effect size. In simple terms, boys enjoy technology activities more than girls do.

Table 12. Difference between Level of Technology Career Interest of SHS Students in terms of Sex Assigned at Birth

Sex assigned at birth	N	Mean	SD	t	df	p	Cohen's d
Male	195	3.78	0.81	-4.04	453	<0.001	-0.383
Female	260	3.48	0.75				

Wang et al. (2023) and Sadler et al. (2012) discussed that male learners usually show stronger interest in fields like technology, computers, and engineering. On the other hand,

female students tend to be drawn to areas such as medicine, health, and education. Males often feel more confident when using computers, gadgets, and other technologies which make them more likely to explore new tools or try technology-related tasks. Additionally, boys and girls grow up seeing different examples of what people do in technology-related jobs.

Additionally, Jiang et al. (2024) reported that students enjoy using technology more and may even imagine having a technology-related career someday when they developed self-efficacy. Moreover, Amalina et al. (2025) and Zhou et al. (2025) also discussed that motivation and experience can shape the career interest of students. Moreover, Chen et al. (2023) found that media and social stereotypes can affect how students choose a career pathway. For instance, movies, games, and online videos often show men as computer experts, inventors, or engineers, which make some females think that technology jobs are more for males. Lastly, Halim et al. (2021) and LaForce et al. (2017) show that when females are encouraged to join robotics clubs, coding lessons, technology research works, or STEM fairs, they quickly build confidence and interest in technology. And so, when teachers show that technology is useful in many careers, more female students would start to see themselves in tech-related fields.

C. Difference between the Level of Engineering Career Interest of SHS Students in terms of Sex Assigned at Birth

Table 13 shows the statistical difference between male and female respondents as to their appeal in engineering careers. Since the Shapiro-Wilk test (*see Appendix*) indicated that the data were of normal distribution, an independent samples t-test was carried out to assess whether students' career interests in engineering varied according to their sex assigned at birth. The average score for male students was 3.52, while for female students, it was 3.00. The result ($t = -5.434$, $p < 0.001$, $d = -0.515$) means that males are more interested in engineering than females. The effect size signifies practical significance (i.e., medium effect size). This result is similar with Sadler et al. (2012) and Wang et al. (2023) who discussed that boys usually show higher interest in engineering and physical sciences, while girls are more interested in health, medicine, and social-related fields. This does not mean girls are less capable; it just means they are often encouraged to explore different subjects and have fewer examples of women working in engineering.

Table 13. Difference between Level of Engineering Career Interest of SHS Students in terms of Sex Assigned at Birth

Sex assigned at birth	N	Mean	SD	t	df	p	Cohen's d
Male	195	3.52	1.02	-5.434	453	< 0.001	-0.515
Female	260	3.00	1.00				

As previously mentioned, students' interest in STEM careers depend on motivation, confidence, and personal experiences (Amalina et al., 2025); Zhou et al., 2025). When students try engineering activities at an early age, they begin to see it as fun and exciting. In particular, males often have more chances to do hands-on activities like building, fixing, or using tools, which help them become more comfortable with engineering activities. Additionally, if female students think engineering is difficult or not suited for them, they may lose interest, even if they could actually do well. Jian et al. (2024) explained that self-efficacy is a great factor that can influence fascination in the STEM fields.

Furthermore, Halim et al. (2021) and Simunović et al. (2020) emphasized the relevance of family support and role models. They mentioned that without role models, many students may not realize that engineering is also for them. Particularly, when girls see women working as engineers or inventors, whether on TV, in school, or in their own families, they start to believe that they can do it too.

D. Difference between the Level of Mathematics Career Interest of SHS Students in terms of Sex Assigned at Birth

Table 14 shows that both males and females have almost the same level of interest in mathematics. Since the Shapiro-Wilk test confirmed that the data were of normal distribution, an independent samples t-test was utilized to determine whether students' career interests in mathematics differed according to their sex assigned at birth. The average score for male students was 3.57, while female students scored 3.52. The result (t = -0.62, p = 0.54, d = -0.059) means that this difference is not significant; that means, boys and girls like math equally. Moreover, the effect size indicates practically no difference between male and female students in interest in math. This is a very positive result because it shows how male students and female students have equal appreciation of the value of mathematics in their studies and future careers. It means that sex nor gender does not affect how much students enjoy or are interested in math.

Table 14. Difference between Level of Mathematics Career Interest of SHS Students in terms of Sex Assigned at Birth

Sex assigned at birth	N	Mean	SD	t	df	p	Cohen's d
Male	195	3.57	0.91	-0.62	453	0.54	-0.059
Female	260	3.52	0.81				

Wang et al. (2023) noted that the dissimilarity between males' and females' interest in math would become smaller over time, especially when both sexes are given equal learning opportunities and encouragement in school. Moreover, Amalina et al. (2025) and Zhou et al. (2025) noted that math, like the other STEM disciplines, depends on motivation and confidence of the students rather than on gender. Similarly, Jiang et al. (2024) discussed that students begin to see math as a helpful tool rather than just a subject when schools connect math lessons to real careers. In simple words, programs that make fun and connected to real-life situations help students of all genders to develop stronger interest. For instance, students become more motivated to learn math when they solve problems involving money, design, or nature. So, aside from self-efficacy in mathematics, exposure to math problems can help both genders reduce the difference in their math interest. LaForce et al. (2017) showed that project-based learning and hands-on activities make math more exciting for students. As an honourable mention, Simunović et al. (2020) and Halim et al. (2021) explained that family and social support also play a big role in shaping math interest. It means that when parents, teachers, or role models encourage both males and females to practice math, students start to view math as something relevant.

Conclusion

This study explored the interest levels among Grade 11 students in taking up careers related to Science, Technology, Engineering, and Mathematics (STEM) within the context of the Strengthened Senior High School (SHS) Curriculum pilot implementation. Findings revealed that students generally demonstrated a strong interest in Science, Technology, and Mathematics, whereas their appeal in Engineering appeared comparatively lower. Based on the indicators, many students had interests in science and mathematics because they perceived these subjects to be essential for their future careers. When the results were compared as to career pathway, students in Health and Wellness Sciences had high level of interest in science; those in Engineering and Natural Sciences had high level of fascination in technology and engineering; and those in Business and Accounting showed highest interest in mathematics. This implies that students tend to like the discipline that are most related to their future career goals. When the results were contrasted as to sex assigned at birth, both males and females had the same level of interest in science and math. Meanwhile, males had a relatively higher engrossment in technology and engineering compared to females. This tells us that male students are often more confident with using machines, computers, and other

technologies. Contrarily, female respondents were drawn supplementarily on medical and health-related sciences. Therefore, students in the Strengthened SHS Curriculum had STEM interests depending on their chosen career pathway and their sex assigned at birth.

The study then recommends that Philippine schools must help students become more fascinated in STEM by making learning fun, fair, and connected to real life. Lessons should include hands-on projects that solve real problems in the community. Teachers can integrate farming, climate change, or energy resources so students can see how STEM helps the community. Additionally, teachers should give equal opportunities to male and female students to join science fairs, robotics clubs, and math activities. Teachers can also show real Filipino scientists and inventors as role models to inspire learners in pursuing STEM careers. Lastly, parents, teachers, and local leaders should support activities involving STEM awareness, while DepEd should train teachers and provide more schools tools for STEM learning.

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Appendix

Normality Test

Career Interest	Valid	W	p
Science	455	0.972	0.21
Technology	455	0.980	0.40
Engineering	455	0.974	0.34
Mathematics	455	0.978	0.25

Post Hoc Analysis for the Difference in Level of Interest in Science based on Career Pathway

Group 1	Group 2	t	Cohen's d	p_{Tukey}
BA	SHD	0.897	0.178	0.806
	HWS	-4.353	-0.657	< .001***
	ENS	-2.213	-0.347	0.121
SHD	HWS	-5.117	-0.836	< .001***
	ENS	-3.116	-0.525	0.010*
HWS	ENS	2.883	0.310	0.021*

*Note. * p < 0.05, *** p < 0.001*

Post Hoc Analysis for the Difference in Level of Interest in Technology based on Career Pathway

Group 1	Group 2	t	Cohen's d	p_{Tukey}
BA	SHD	0.507	0.101	0.957
	HWS	-0.347	-0.052	0.986
	ENS	-1.926	-0.302	0.219
SHD	HWS	-0.939	-0.153	0.784
	ENS	-2.388	-0.402	0.081
HWS	ENS	-2.314	-0.249	0.096

Post Hoc Analysis for the Difference in Level of Interest in Engineering based on Career Pathway

Group 1	Group 2	t	Cohen's d	p_{Tukey}
BA	SHD	2.094	0.417	0.157
	HWS	0.045	0.007	1.000
	ENS	-7.180	-1.124	< .001***
SHD	HWS	-2.511	-0.410	0.060
	ENS	-9.144	-1.541	< .001***
HWS	ENS	-10.505	-1.131	< .001***

*** p < 0.001

Post Hoc Analysis for the Difference in Level of Interest in Mathematics based on Career Pathway

Group 1	Group 2	t	Cohen's d	p_{Tukey}
BA	SHD	4.801	0.955	< .001***
	HWS	1.991	0.301	0.193
	ENS	1.197	0.187	0.629
SHD	HWS	-4.011	-0.655	< .001***
	ENS	-4.557	-0.768	< .001***
HWS	ENS	-1.050	-0.113	0.720

*** p < 0.001