

Senior high school academic strand and mathematics performance of students

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Abstract

This study examines the relationship between Senior High School (SHS) Academic Strands and the college performance of Bachelor of Secondary Education (BSEd) students majoring in Mathematics. This research investigates how the chosen SHS strand influences college success in the BSEd major in Mathematics program. The data included academic performance through the grades of the respondents, perception on the alignment of the senior high school academic strand on their college course, and their demographic information such as age and gender. The findings reveal that age and gender have no correlation with academic performance. Students generally 'Agree' that their SHS strand aligns well with their college course. In addition, STEM graduates achieved higher grades in Non-Math, Math, and TWAG than students from other strands. However, no significant correlation was found between SHS strands and grades in Non-Math subjects and TWAG, though a significant correlation was observed between SHS strands and Math grades. This indicates that STEM students generally excel in Mathematics-related subjects compared to other strands. Further research is needed to explore additional factors affecting academic performance and to validate these findings with a more extensive and diverse sample.

Keywords: senior high school academic strand, college academic performance, BSEd mathematics students, K-12 curriculum

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1. Introduction

The Philippine Educational System has undergone significant development and transformation over the years. One of the critical challenges faced by the Department of Education has been the increasing dropout rates among students. In response to these challenges, the department introduced the K+12 Curriculum in 2011. This curriculum aimed to address these issues by providing students with a decongested 12-year program, allowing them to acquire essential skills and competencies. Within the K+12 Curriculum, students have the option to select from three different tracks. Among these, the Academic Strand (SHS-AS) is designed to prepare students for higher education by offering a comprehensive foundation in academic subjects. The SHS-AS serves as a bridge between high school and college, equipping students with a broad understanding of various academic disciplines and the necessary skills and knowledge for future success (Canque et al., 2021).

The Senior High School Academic Strand (SHS-AS) plays a pivotal role in shaping students' educational journeys, especially those planning to pursue college degrees. It includes specialized subjects that provide students with the skills, competencies, and global knowledge required for successful careers in the future. This emphasis on academic preparation is crucial for students with aspirations for higher education at the college level. The Academic Track, which encompasses the SHS-AS, is tailored to help students discover their strengths, interests, and talents.

The 2011 introduction of the K-12 curriculum prompted higher education institutions (HEIs), including state universities and colleges (SUCs), to align their admission criteria with senior high school strands. Consequently, STEM graduates are prioritized for science and mathematics courses, ABM graduates for finance and business-related programs, and HUMSS graduates for courses in education, philosophy, arts, and other related fields. While students who complete the General Academic Strand (GAS) and Technical-Vocational-Livelihood (TVL) strands can enroll in college, some HEIs require them to undertake bridging programs before pursuing specialized courses like engineering, physics, or mathematics. The policy of linking senior high school strands to college admissions has generated mixed responses. Some argue that it's crucial to ensure students are adequately prepared for the demands of college curricula, while others see it as potentially unfair to those who may not have chosen the "right" senior high school strand or who wish to change their path in college.

Research findings, such as those in the study titled "Senior High School Background and GPA of Education Students in a State University in the Philippines" (Canque et al., 2021), emphasize the significant relationship between senior high school academic achievement and college GPA, indicating that a strong high school background is a reliable predictor of college success. However, the study also revealed a negative association between the GPA of education students majoring in mathematics and their senior high school strand, highlighting the complexity of these relationships. The findings of the study suggest that the K to 12 curriculum has had a mixed impact on engineering students. On the one hand, most students believe that the K to 12 subjects they took were aligned with their college courses. On the other hand, most students also believe that spiral progression did not help them master the content of science and math in senior high school (Camara, 2020).

The study found that students' senior high school strand or track significantly influenced their academic self-regulated learning and academic performance in nursing school. Students who graduated from the academic STEM strand were more prepared for the nursing course, better able to cope with the demands of the course, and were more likely to excel in nursing school (Malaga & Oducado, 2021). The relationship between senior high school academic strand and college academic performance of BSEd mathematics major students has not been adequately explored in the Philippines. While, the study by Canque et al. (2021) found a negative association between the GPA of education students majoring in mathematics and their senior high school strand. This finding is inconsistent

with the findings of other studies on the relationship between senior high school academic strand and college academic performance. More research is needed to understand this discrepancy.

Also, the study by Malaguial et al. (2023) found that personal interests and academic performance are significant factors influencing students' choices of senior high school strands. However, the study did not explore how these factors may influence the relationship between senior high school academic strand and college academic performance of BSEd mathematics major students. To bridge this gap, our study aims to investigate the relationship between the Senior High School Academic Strand and the college academic performance of Bachelor of Secondary Education (BSEd) mathematics major students. By examining how choices made during senior high school impact success in higher education, especially in mathematics-related fields, our research contributes to a deeper understanding of the role senior high school education plays in shaping students' academic paths and future prospects.

Statement of the Problem - Despite the increasing emphasis on Senior High School (SHS) education and its potential impact on college preparedness, there remains a gap in understanding the correlation between the chosen SHS Academic Strand and the subsequent academic performance of Bachelor of Secondary Education (BSEd) majoring in Mathematics students in college. Therefore, the present study seeks to address the following key questions:

- What is the academic performance of Bachelor of Secondary Education major in Mathematics students in college, and how does it vary based on their chosen Senior High School Academic Strand?
- How do different Senior High School Academic Strands influence the college academic performance of Bachelor of Secondary Education major in Mathematics students?
- Are there significant correlations or patterns between specific Senior High School Academic Strands and college academic performance in mathematics-related subjects among Bachelor of Secondary Education major in Mathematics students?
- To what extent does the curriculum content of the Senior High School Academic Strand align with the knowledge and skills required for successful college performance in mathematics-related subjects for Bachelor of Secondary Education major in Mathematics students?

2. Methodology

Research Design - The study employed a descriptive-correlational method of research. It is correlational in nature as it seeks to determine the relationship between the Senior High School Academic Strand and the college academic performance of the respondents. This type of research aims to ascertain the influence of one variable on another. Analysis and review of the college academic performance were conducted by the researcher and related to the Senior High School Academic Strand of the respondents.

Population and Locale of the Study - The study investigated the relationship between the Senior High School Academic Strand and the college academic performance of the respondents. The Senior High School Academic Strand of the respondents was determined and reviewed by the researcher for its potential impact on their college academic performance. Criteria regarding the potential influence of the Senior High School Academic Strand on their college studies, as well as other respondent profiles such as age, gender, and high school graduated from, were determined using a questionnaire. Academic performance data of the respondents, including grades in mathematics and non-mathematics subjects, were requested and retrieved from the Registrar's office of Ilocos Sur Polytechnic State College's main campus. The College Admission Test (CAT), Teaching Aptitude Test (TAT), and the Licensure Examination for Teachers (LET) results were obtained from the Student Affairs Services office. The questionnaire underwent validation by four Mathematics instructors in the tertiary level and a college student who underwent a Senior High School Academic Strand. The validation result yielded a numerical value of 4.64, with a

descriptive equivalent of “very highly valid.” Additionally, the questionnaire underwent pre-testing, yielding a reliability index (Cronbach’s Alpha) of 0.851, indicating reliability.

Research Instrument - The study utilized the following approaches in data collection: The researcher administered a questionnaire to determine the level of influence of the Senior High School Academic Strand on respondents’ college academic performance and their demographic profiles, including age, gender, and high school graduated from. A letter of request, approved by the OIC-President of the institution, was submitted to retrieve grades in mathematics and non-mathematics subjects from the college registrar’s office. The College Admission Test, Teaching Aptitude Test, and Licensure Examination for Teachers’ results were requested from the Student Affairs Services office.

Data Gathering Procedure - The flowchart depicts the processes and procedures undertaken in the study. The researcher conducted a proposal defense to present the study to the research ethics committee. Subsequently, the questionnaire was constructed and used for data collection. The reliability and validity tests of the questionnaire were performed. Following approval for data collection, the researcher requested necessary documents and data from the registrar’s office and the Student Affairs Services office. After collecting the data, statistical treatments were applied, and the finalization of the output will follow.

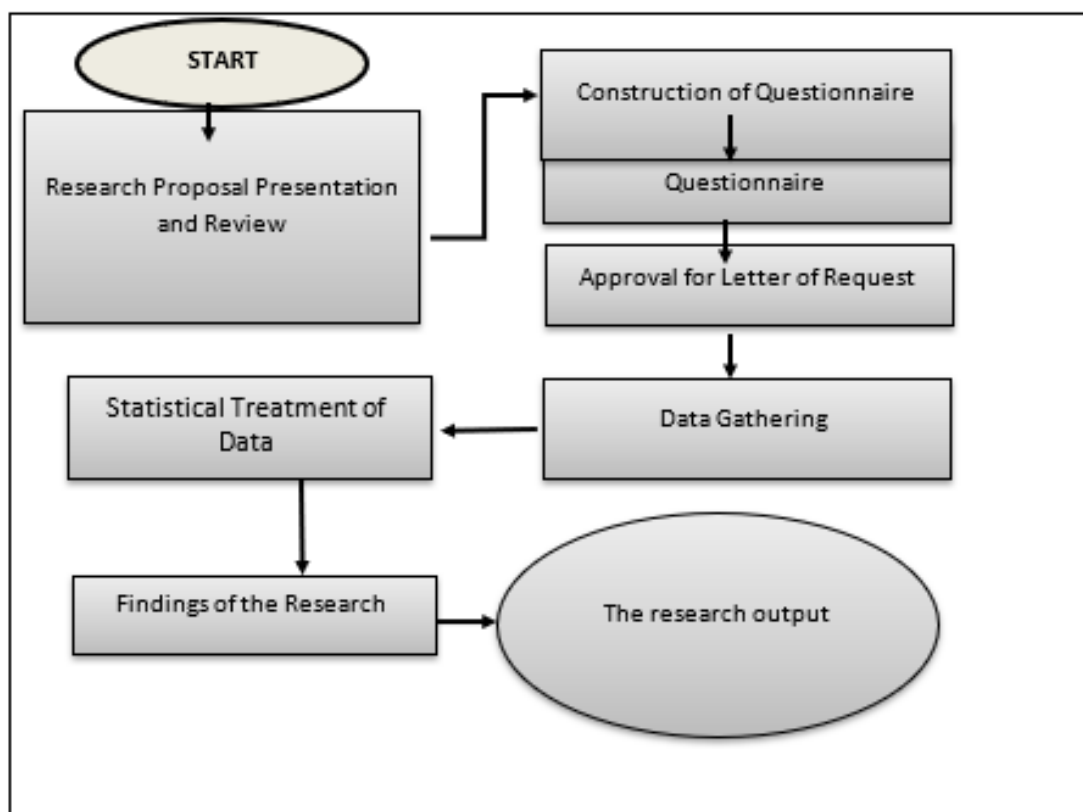


Figure 1: Flowchart in Data Gathering

Statistical Treatment of Data - The following were used in the treatment of data gathered:

- Frequency count and percentages. This was used to determine the profile and the number of respondents per Academic strand.
- Mean. This was used to determine the level of perception in the impact of SHSAS in the alignment with their chosen course in college. It also used for the computation of the grades in Math and Non-math subjects, and their total weighted average grade.

- Pearson's correlation of coefficients (r_{xy}). This was used to determine the correlation between the SHSAS and the college performance of the respondents.

Data Categorization - The researcher utilized the following Likert Scales to quantify the answers of the respondents. For the perceived impact of Senior High School Academic Strand in their College Course the following were used: 5 = 4.21-5.00 or Strongly Agree (SA), 4 = 3.41-4.20 or Agree (A), 3 = 2.61-3.40 or Neutral (N), 2 = 1.81-2.60 or Disagree (DA), and 1 = 1.00-1.80 or Strongly Disagree (SDA). While, for the validation of the questionnaire, the following interval was utilized: 5 = 4.21-5.00 or Very High Validity (VHV), 4 = 3.41-4.20 or High Validity (HV), 3 = 2.61-3.40 or Moderate Validity (MV), 2 = 1.81-2.60 or Disagree (DA), and 1 = 1.00-1.80 or.

Ethical Considerations - As the study will require the participation of human respondents, certain ethical issues will be addressed. The researcher will consider these ethical issues which are necessary for ensuring the privacy and safety of the respondents. To secure the consent of the respondents the researcher discussed all important details of the study, including its aim and purpose. By explaining these important details, the respondents understand the importance of their role in the completion of the research. The confidentiality of the respondents were also assured by not disclosing their names in the research. Only relevant details that will help the researcher in answering the research questions was included. The researcher gave the respondent enough time to complete their responses and not put pressure on them to accomplish it properly. All data gathered were kept and only the researcher has access to it. The data gathered and the material used will be disposed and data saved in electronic devices will be erased permanently three years after the data gathering.

3. Results and Discussion

This section presents the findings of the study on the Senior High School Academic Strand and Its Relationship to the College Academic Performance of BSEd Mathematics Major Students. The conclusions and recommendations of the study are also highlighted. This study investigates the influence of the senior high school academic strands on the college academic performance of BSE major in Mathematics students. The result of this study will help determine the strand that best prepares students who plan to take BSE major in Mathematics program. The study collected data from 45 students and graduates of BSE Major in Mathematics. The results collated from the questionnaires enable the researcher to tabulate the demographic profile of students, the perceived Senior High School Academic Strand in the impact to their college course, and compute the average grades of the respondents to assess and analyze the academic performance of BSE Major in Mathematics students from the different senior high school strands.

Table 1
Academic Strand of the Respondents

Academic Strand	Frequency	Percentage
STEM	13	28.9
ABM	9	20.0
GAS	10	22.2
HUMSS	12	26.7
TVL	1	2.2
Total	45	100.0

Table 1 shows the number of respondents per strand. There are 13 or 28.9 percent of the respondents that came from the STEM strand. In addition, there are 12 or 26.7 percent from HUMSS, 10 or 22.2 percent from GAS, and 9 or 20 percent came from ABM. Only 1 (2.2) respondent is from the TVL strand. While, **Table 2** shows the age category of the respondents. The respondents are mostly 20-22 years of age, taking more than 20% of each of the overall respondents. This is followed by ages 19, 23, 24, and 25 with 11.1%, 8.9%, 8.9%, and 2.2% respectively. On the other hand, **Table 3** shows that most of the respondents are female (34 or 75.6 percent) compared to males with 11 respondents or 24.4 percent.

Table 2*Age of the Respondents*

Age	Frequency	Percentage
19	5	11.1
20	11	24.4
21	10	22.2
22	10	22.2
23	4	8.9
24	4	8.9
25	1	2.2
Total	45	100.0

Table 3*Gender of Respondents*

Gender	Frequency	Percentage
Female	34	75.6
Male	11	24.4
Total	45	100.0

Table 4*Correlation on Demographic Profile and Grades*

DEMOGRAPHIC PROFILE	GRADES		
	Non-Math	Math	TWAG
Age	-.264	.114	-.071
Gender	.060	.216	.149

Table 4, on the other hand, displays the correlation between the demographics of students and their grades. From the age row, it shows no correlation with the college performance of the students, which implies that the grades of the students are not influenced by their age. This result is comparable to the study of Wambugu and Emeke (2019), which stated that there is no significant relationship between age group and students' academic performance on ODL and on-campus mode of learning. The study of Rabgay (2018) further affirms the result, showing in their correlation analysis that there was a weak positive correlation between age and academic performance. However, the study of Tadese et al. (2022) contradicts the result of this study in their findings, which state that younger students are less likely to score good academic performance compared to older students. This result favors older students in terms of their academic performance compared to younger students. However, the said study specifically indicated that the younger students were those aged between 20 and 24 years, while the older students were those aged between 25 and 29. Hence, we can still consider the result of an insignificant correlation between age and grades in this study since the majority of the respondents are below 24 years of age in comparison to the study of Tadese et al. (2022), wherein respondents' ages ranged higher, from 20-29 years old. The result of this study then shows that being younger or older does not imply a higher or lower academic performance as a BSE student major in Mathematics.

The next row in **Table 4** shows the correlation between the student's gender and academic performance, indicating no correlation. The result of the study is similar to the result of the study of Rubas (2023) and Orji et al. (2021), with both a result indicating that no significant difference exists between gender and students' academic performance. This result differs from the findings of Rowe (2018), who stated that females have a clearly higher mean GPA than their male counterparts. Rowe (2018), however, has a more distributed male and female respondents as compared to this study and student, which may have also influenced the findings and interpretation of the study. Since the study also considered the ethnicity of the of the students influenced by their different culture, the no significant correlation in gender in this study may have been due to the observed equality of education for both men and women in the Philippines (Global Gender Gap Report 2023).

The perception of the respondents whether their SHS strand also has an impact on their college performance as BSE major in Mathematics was also evaluated. The table above illustrates the perceived impact of SHSAS to the college performance of the respondents. Across various Senior High School (SHS) strands have a mean level of perception of 4.07, indicating an 'Agree' in their perception of the alignment of their SHS strand and their college

course. Pearson's coefficient value further supports this, demonstrating a significant relationship between the SHS strands and respondents' views on how their strand influences their college academic performance. **Table 5** shows that respondents perceive their SHS strand remains well-aligned with their college program. Supporting this observation, the study by Bautista et al. (2021) found similar results, highlighting that students from both STEM and non-STEM strand felt adequately prepared in their understanding of mathematical processes and concepts relevant to their BSE Mathematics courses. This suggests that students perceive minimal misalignment between their SHS strand and their college course/program. Additionally, Gorospe and Joaquin (2022) found that students from the College of Teacher Education did not view their SHS strand as a critical factor in selecting their college program. These findings collectively underscore the notion that students from the BSE major in Mathematics generally perceive their SHS strands as aligned with their college program, which is also reflected in their academic performance.

Table 5

Perception of Respondents to the Alignment of their Senior High School Strand and College Program

VARIABLES	MEAN	INTERPRETATION	PEARSON'S VALUE	COEFFICIENT
Perception of Alignment and SHS Strand	4.07	Agree	-.583**	

Legend: 4.21-5.00 - Strongly Agree, 3.41-4.20 – Agree, 2.61-3.40 – Neutral, 1.81-2.60 – Disagree, and 1.00-1.80 - Strongly Disagree

Table 6

Average Grade of the Respondents from Different Senior High School Strand

SHS STRAND	GRADES		TWAG
	Non-Math	Math	
STEM	90.01	91.34	90.68
ABM	89.94	90.31	90.13
GAS	89.97	89.82	89.89
HUMSS	89.58	89.34	89.46
TVL	85.78	83.29	84.53

The respondents' perception of the influence of their SHS strand to their college program cannot be further verified without delving into their actual academic performance. Hence, a primary variable of the study includes the grades of the BSE major in Mathematics students in order to assess their college performance. As can be seen from **Table 6**, it shows the average grade of respondents from the different SHS strands in Non-Math and Math subjects together with their total weight average grade (TWAG). The table shows that respondents who graduated from the STEM track have the highest grades in Non-Math, Math subjects, and TWAG. The pattern of this result is correlated with the findings of Mamolo (2019), who stated that among senior high school students, STEM students show exemplary performance and knowledge in the area of Mathematics compared to other strands. Hence, in relation to their college performance, the result generated in this study is reasonably expected as the advisable strand for students planning to take BSE majoring in Mathematics should preferably be from the STEM strand for it prepares and aligns the students with the right foundations for the said program (Morados, 2020; Malaga & Oducado, 2021). The same result was reported by Canque et al. (2021), stating that the college GPA of Mathematics major students is significantly affected by their senior high school strand and that those who graduated from the STEM strand are likely to perform better and achieve a higher college GPA.

For the other SHS strand, students from the ABM strand ranked second in Math subjects and TWAG. On the other hand, those from the GAS track come second in Non-Math subjects. HUMSS ranked fourth in all of the average grades, while the TVL strand has the lowest average grade among the respondents. These results matched with the findings observed in the study of Lim (2023) and Alipio (2020), which showed that BSE and health sciences college students from the ABM strand have the second highest academic performance, while those from the HUMSS and GAS strand comes after STEM and ABM. Furthermore, the same study is also similar in the findings of this study that students from academic tracks have a better college performance than those from the TVL track. An explanation for these results can be due to the fact that the ABM strand also offers various subjects that enable the students to understand analyzation and mathematical application in their various subject that focus on accountancy, finances, and business math. Even though the strand merely focuses on basic arithmetic for their

mathematics-related subjects based on their curriculum, it cannot be denied that the students' ability is still honed to tackle the other branches of mathematics studied in BSE major in Mathematics. This is supported by the study of Almerino et al. (2020), wherein the result of the Scholastic Abilities Test for Adults (SATA) revealed that students from the ABM strand scored above average in Mathematical Capacity and Mathematical Applications and further outperformed those from STEM in Mathematical Applications.

With regards to the result from the GAS strand, this may be explained by the fact that their curriculum does not require them to have more advanced Mathematics subjects (Academic Track | Department of Education, n.d.). Even though the strand is known to take up subjects that are a mixture of those from ABM, STEM, and HUMSS, the result of this study can be a basis for students planning to take the GAS strand that they can consider taking Mathematics subjects from STEM to be their elective subjects to better prepare for tertiary education if they are planning to study BSE major in Mathematics. Furthermore, the HUMSS strand also performed less compared to GAS. The HUMSS strand is correlated to the program because the strand offers a great start for those planning to take BSE, but not specifically for those majoring in Mathematics. The result of this study may be related to the fact that students from this strand are only exposed to Math-related subjects during their 11th grade as they take General Mathematics (*List of Specialized Subjects in HUMSS Strand*, n.d.). However, results from this study do not imply low performance in college, but only that choosing the STEM or ABM strand can offer leverage towards performing better in college if one is studying for a bachelor's degree in secondary education majoring in Mathematics.

Table 7
Correlation Between the Senior High School Strand and Grades

	GRADES		TWAG
	Non-Math	Math	
SHS STRAND	-.133	-.392**	-.280

If we now turn to the discussion of the correlation of strand and college performance, **Table 7** shows that there is no significant correlation between the senior high school strand (STEM, ABM, HUMSS, GAS, TVL) of the respondents to their Non-Math and their TWAG. For the result of this study, it is contradicted by the findings of Manugas et al. (2022) and Alipio (2020), who reported that there is a significant difference in the Senior High School Strand and the college students' Grade Point Average. The contrast in the results may be explained by the fact that the respondents of the study of Manugas et al. (2022) include a variety of college students from different programs and not solely students from BSE major in Mathematics. On the other hand, the study of Alipio (2020) focused on health science programs, which would evidently favor the result for the STEM strand as its curriculum is attributable to the health science programs. In contrast to the findings of Manugas et al. (2022), only the results from the study of Lim (2023) stated that there is no significant difference between the SHS strand of the students and their grades. The similarity of results from Lim (2023) and the result of this study is much associated with the fact that Lim's study and this study focused on BSE students and only differed in the major of the students.

However, the result of this study also reveals that there is a significant correlation between the SHS strand and their Math grades. This result infers that the SHS strand of the students have an impact on their college performance, specifically for their Math grades alone. In addition, taking into consideration the results of the average grades from the different SHS strands, it was shown that STEM students have the highest grades in Math subjects, Non-Math, and TWAG. Hence, the correlation of the SHS strand and Math grades can be deduced that the STEM strand has the highest impact towards a better performance in BSE major in Mathematics. Similarly, the result of the study of Bautista et al. (2021) reveals the same finding wherein it shows that there is a statistical significance between the academic performance of BSE major in Mathematics students and their SHS strand. Moreover, their study assessed academic performance in relation to grades in Math subjects (Calculus and Advance Algebra), further stating that those who graduated from the STEM strand had a higher academic performance in these subjects than non-STEM graduates.

Although the result of this study showed no correlational findings between SHS strand and grades in Non-

Math and TWAG, it can be attested that there is a minimal difference in the college performance of the students from the different strands considering the overall grades. However, the correlation in Math grades also implies that there is an advantage for the STEM strand. Based from the average grades result, the STEM strand achieved a higher grade in Math than the other strands which can imply that students planning to take BSE major in Mathematics can consider the STEM strand as their preparatory for BSE Major in Mathematics to offer an easier transition for the Math-related subjects of the program. Though, the different SHS strands can still be taken into account as there will only be minimal difference in their college performance overall if Non-Math and TWAG will be considered, but still the STEM strand has the higher leverage. In addition, based on the perception of the respondents, it revealed that whether from STEM, ABM, GAS, HUMSS, or TVL, they still perceive that their SHS strand is aligned with their college program indicating that the students from different strand can easily cope and adapt to the program specifically for BSE Major in Mathematics.

The result of this study is set out to determine if several variables affect the college performance of BSE majors in mathematics students by including and assessing the correlation of their age, gender, perception and, most importantly, the SHS strand of the students. The result of this study explored the average grades of students from the different SHS strands and revealed that the STEM strand achieved a higher average grade than the other strands. However, as the result of this study also showed that there is no correlation between the Non-Math, TWAG and their SHS strand, it can still be stated that there is only minimal differences in college performance across strands, indicating that students from various academic backgrounds can succeed in BSE Mathematics, though those from STEM may have a slight advantage based on the significant correlation on Math grade and the assessment of their average grades. Future studies could explore additional factors influencing academic success and consider a larger sample size with heterogeneous respondents to validate these findings further.

4. Conclusions

This paper assessed the relationship between the SHS strand of BSE major in Mathematics students and graduates. Through the questionnaires to collect the demographic profiles of the students and collate the students' academic grades, the researcher was able to analyze the correlation between the different variables of respondents from each SHS strand and their college performance. This study's findings showed no significant correlation between the age and gender of the respondents and their college performance. This result indicates that, young or old, male or female, the college academic performance of the respondents is not affected by these factors. In addition, based on the respondents' perception regarding the impact of their SHS strand on their college program, a description of 'Agree' was given, indicating that the respondents see the alignment of their SHS strand on their college course.

To further validate the impact of their SHS strand, the students' average grades were computed, and it revealed that those from the STEM strand had the highest grades in Non-Math, Math, and TWAG. The ABM strand ranked second in Math and TWAG and third in Non-Math grades, while the GAS strand ranked second in Non-Math grades. HUMSS strand was 4th in the ranking of average grades, while those from the TVL strand ranked 5th from all of the average grades. The result shows that the curriculum taken by the students in their SHS significantly impacted how they performed in their tertiary education. For instance, the STEM strand studied more advanced Mathematics, which gave them the advantage of easily adapting to their courses in college. However, the correlation result also shows no significant correlation between the SHS strand and the college performance of the students for their Non-Math and TWAG. Still, a significant correlation was found between the SHS strand and their Math grades. Despite the difference in the average grades of the respondents from the different SHS strands, the correlational result also implies that there is no significant impact of the strand of the students on their overall grades, which can be explained by the fact that their average grades computed only show minimal differences. However, the results from their average grades and the correlation between Math grades and the SHS strand also infer that those from the STEM strand have higher academic performance in Math subjects. From this, it can be implied that students from the different strands can still adapt well to their course regardless of their SHS background, but the STEM strand offers better preparation for Math-related subjects. Future studies could further

focus on the qualitative understanding of the impact of the SHS strand of students on their college academic performance. The results of this study could advance the understanding of the importance and influence of the SHS strands of students in the transition to their college program.

Recommendations - Based on the findings of this study, several recommendations are proposed to enhance future research. Firstly, future studies should aim to include a more extensive and diverse sample of respondents, ensuring an equal distribution of students across different SHS strands, ages, and genders. This will improve the representativeness of the data and provide a more comprehensive understanding of how SHS strands influence college performance. Additionally, expanding the research to explore the impact of SHS strands on students enrolled in various college programs beyond the BSED Mathematics major can offer valuable insights into the broader implications of SHS preparation. Complementing quantitative data with qualitative research methods, such as interviews or focus groups, is also recommended to gain deeper insights into students' experiences and perceptions regarding their SHS strand's impact on their college performance. Furthermore, incorporating results from the College Admission Test (CAT), Teacher Aptitude Test (TAT), and Licensure Examination for Teachers (LET) of the respondents into future studies can help correlate these assessments with SHS strands, providing a more comprehensive view of how different educational backgrounds affect performance on standardized tests and professional qualifications. Implementing these recommendations will contribute to a more robust analysis of the relationship between SHS strands and college success, leading to more effective educational strategies and support systems.

Implications for Teachers

- **Differentiated Instruction in Mathematics:** Since a significant correlation was found between SHS strand and college Math grades (with STEM students outperforming others), teachers should anticipate varying foundational competencies. Implement diagnostic assessments early in the semester and provide scaffolded, differentiated instruction to bridge gaps without penalizing students from non-STEM backgrounds.
- **Leverage Perceived Alignment:** Students across all strands reported perceiving their SHS curriculum as aligned with their college program (Mean = 4.07). Teachers can use this confidence to foster engagement while explicitly mapping SHS competencies to college-level expectations, helping students recognize how their prior learning applies to tertiary coursework.
- **Foster Self-Regulated Learning:** The study aligns with prior research showing that SHS strand influences academic self-regulation. Instructors should explicitly teach time management, metacognitive strategies, and academic coping skills, particularly for students from strands with less intensive mathematics exposure (e.g., HUMSS, GAS, TVL).

Implications for Students

- **Strategic Strand Selection & Preparation:** While success is possible from any strand, students aiming for BSED Mathematics should recognize that STEM or ABM strands provide a stronger mathematical foundation. Those from GAS, HUMSS, or TVL are encouraged to take elective mathematics/science courses during SHS or pursue self-directed review to ease the transition to college-level math.
- **Proactive Academic Support-Seeking:** Given the minimal overall differences in TWAG but clear advantages in Math grades among STEM graduates, students from other strands should actively utilize tutoring centers, faculty mentoring, and peer study groups to compensate for foundational gaps and sustain academic performance.
- **Growth Mindset Over Demographic Assumptions:** The findings confirm that age and gender are not predictors of college success. Students should focus on consistent effort, academic resilience, and strategic learning habits rather than demographic factors or perceived "strand disadvantage."

AI Declaration Statement - This manuscript was developed with the assistance of AI for language and structure check (language refinement purposes). All research data, analytical interpretations, conclusions, and recommendations presented herein are the author's original work. No AI-generated content was used to fabricate data, conduct statistical analysis, or replace scholarly judgment. The author has thoroughly reviewed, verified, and edited all sections to ensure academic integrity, accuracy, and alignment with scholarly standards. The final content reflects the author's independent research, critical analysis, and responsibility for all claims and implications presented.

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