

Aptitude as a Predictor of Senior High School Academic Potential: A Hierarchical Regression Approach

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Abstract

Aim/Purpose: This study examined the relative contributions of emotional quotient, interest inventory, study habits, aptitude, and multiple intelligences in predicting the Senior High School (SHS) academic potential of Grade 10 students. Furthermore, it aimed to identify which of these domains offer the most reliable indicators of Senior High School Potential, thereby informing both school-based assessment practices and broader educational policies.

Introduction/Background: The transition from junior to senior high school in the Philippines is a pivotal phase in the K–12 system but continues to present challenges for learners. Many students enter with gaps in reading, writing, and mathematics, making it difficult to cope with the more specialized senior high school curriculum. Adjustment issues are further compounded by limited career guidance, leading some students to choose academic tracks based on external pressures rather than genuine aptitude or interest, often resulting in disengagement and underperformance. Thus, strengthening guidance programs and implementing early diagnostic assessments are critical for smoother transitions. Previous studies have suggested that readiness is multidimensional, shaped not only by cognitive aptitude and study habits but also by emotional intelligence, personality, and goal-setting behaviors. This study incorporated multiple intelligences to capture diverse learner strengths and aimed to identify the most reliable predictors of academic potential, providing evidence-based insights for curriculum, assessment, and policy.

Methodology: This quantitative study investigated the predictors of senior high school academic potential among Grade 10 students using hierarchical linear regression analysis to test theories, show control over variables, provide statistical and practical significance, and report R^2 changes and F -change tests, thereby making results more convincing and rigorous. From a population of 451 Grade 10 students, 104 male and 104 female students were selected using stratified random sampling. Five models were evaluated to determine which predictors such as Emotional Quotient (EQ), interest inventory, study habits, and aptitude measures might have a significant effect on the dependent variable.

It utilized standardized tests administered by a Philippine assessment corporation to evaluate the academic potential of students. The instruments included an aptitude test measuring verbal, quantitative, abstract, and spatial reasoning; an Emotional Quotient (EQ) assessment evaluating grit, growth mindset, self-management, self-awareness, self-efficacy, and social awareness; an Interest Inventory; and a Study Habits Inventory. Results were summarized in a Scaled Ability Score, which also served as the Senior High School Potential Score. All instruments demonstrated documented validity and reliability in the Philippine context, with a Cronbach's alpha of .88, and ethical clearance was obtained from relevant school authorities.

Findings: The regression analysis revealed varying levels of explanatory power across models. Model 0, with gender as the sole control, explained only 1.6% of variance. Models 1–3, which added EQ, interests, and study habits, showed limited improvement. Only Model 4, which introduced aptitude measures—verbal, abstract, quantitative, and spatial reasoning—substantially enhanced predictive power, accounting for 99.7% of the variance in academic potential ($R^2 = .997$, $p < .001$). Importantly, only aptitude scores made statistically significant contributions, while EQ, interests, and study habits did not. The unusually high R^2 suggested possible overfitting, though acceptable Variance Inflation Factor values and residual patterns mitigate this concern. Model stability was further supported through Adjusted R^2 , Root Mean Squared Error, and F Change statistics.

These findings highlighted the dominant role of cognitive aptitude in predicting academic readiness, positioning aptitude assessments as stronger tools for educational decision-making than socio-emotional or interest-based indicators. However, this raises equity concerns, as students from disadvantaged backgrounds may have fewer cognitively enriching opportunities, limiting their aptitude development and exacerbating achievement gaps. While aptitude emerged as the most robust predictor, socio-emotional and behavioral competencies remain vital for resilience, motivation, and long-term success. Thus, the implications pointed toward a balanced but strategically weighted approach: prioritizing aptitude in curriculum design and assessment frameworks, while integrating complementary interventions to strengthen affective and behavioral skills. This combined strategy can better support holistic learner development while addressing both cognitive foundations and broader equity challenges.

Contribution/Impact on Society: These results will benefit teachers, counselors, policymakers, and curriculum developers in the design of evidence-based interventions. For teachers and counselors, aptitude data guides students into suitable academic tracks, identifies those needing remedial or enrichment support, and complements socio-emotional profiles for personalized guidance. Policymakers and curriculum developers can use the findings to integrate aptitude diagnostics into placement policies and curriculum frameworks, ensuring that instruction is grounded in cognitive foundations while addressing equity gaps. The evidence also supports investments in early diagnostics, remedial programs, and socio-emotional learning. Overall, these results enable stakeholders to craft targeted strategies that enhance readiness, equity, and holistic learner development.

Recommendations: Schools may consider integrating more opportunities to develop cognitive aptitude, particularly in logical reasoning and quantitative skills, during junior high school. Aptitude assessments should continue to be used as part of Senior High School track placement processes but must also be interpreted alongside other holistic indicators. Policymakers might refine readiness criteria by prioritizing evidence-based cognitive metrics in transition programs.

Research Limitation: Findings may not generalize to public schools or other regions, as the study focused on students from a single private school in Northern Mindanao. There is a potential for overfitting due to the large number of predictors relative to the sample size.

Future Research: Future researchers are encouraged to incorporate longitudinal tracking to explore how predictors influence SHS performance and persistence over time, and to test the model across diverse populations to examine cultural and contextual factors.

Keywords: *Aptitude, emotional quotient, interests, high school potential*

Introduction

The transition from junior high school (JHS) to senior high school (SHS) remains a critical yet challenging phase in the Philippines K–12 educational system. Under the Department of Education’s (DepEd) K–12 educational reform, students must select academic tracks aligned with their abilities, interests, and long-

term career goals (Department of Education, 2015). While DepEd data show a high transition rate of 93.3% from Grade 10 to Grade 11 (Philippine Institute for Development Studies [PIDS], 2018), several issues continue to affect the quality of students' entry into SHS. Many learners encounter gaps in academic preparedness, particularly in reading, writing, and mathematics, which are essential for coping with the more specialized curriculum in SHS (PIDS, 2020). This transition requires not only academic readiness but also a comprehensive understanding of learners' diverse cognitive and personal profiles (Veraflor, 2017).

In addition, the lack of comprehensive career guidance further compounds the difficulty, as students may select strands or tracks based on availability or parental preference rather than genuine aptitude and interest, leading to mismatches between learners' profiles and their chosen academic or technical pathway (PIDS, 2018). Students also report experiencing a form of "culture shock" in adjusting to SHS, as the demands of independent learning, research-based tasks, and work immersion differ significantly from their experiences in JHS (PIDS, 2020). These challenges highlight the need for data-driven assessment tools that can identify academic and personal readiness early, alongside stronger career guidance programs and remedial interventions to ease the transition. Without such measures, the promise of SHS as a bridge toward college and career readiness risks being undermined by systemic gaps in preparation and support.

Various factors have been explored in previous studies as potential indicators of academic readiness, including emotional intelligence, interest alignment, study habits, and cognitive aptitude (Cogal et al., 2019). For instance, Delamide and Moran (2024) underscored the role of student interests and personality traits in determining academic track preferences. Carpio et al. (2023) found that time management, goal setting, and metacognitive strategies played a vital role in academic performance. Furthermore, Poropat (2014) emphasized the predictive value of conscientiousness and emotional stability in educational success. However, the question of which specific variables most reliably forecast academic potential remains open to debate. Some researchers argue that affective and personality-related traits, such as emotional intelligence, are central to academic achievement (Chamorro-Premuzic & Furnham, 2003; Romanelli et al., 2006), while others emphasize the primacy of cognitive aptitude (Laidra et al., 2007; Morosanova et al., 2015).

To broaden this perspective, this study also incorporated Howard Gardner's Theory of Multiple Intelligences (MI), which posits that intelligence is not a single, unitary construct but consists of distinct modalities such as linguistic, logical-mathematical, spatial, musical, kinesthetic, interpersonal, intrapersonal, and naturalistic intelligences (Gardner, 1983). Gardner's framework has influenced educational paradigms by advocating the recognition of diverse learning strengths beyond conventional IQ-based assessments (Morgan, 2021). Integrating MI into predictive models of SHS readiness may help uncover underutilized aspects of student potential and enrich the tools used for placement and curriculum design (Walela, 2024).

Thus, this study sought to: (a) examine the relative contributions of emotional quotient, study habits, interest inventory, aptitude, and multiple intelligences in predicting the SHS academic potential of Grade 10 students and (b) identify which of these domains offer the most reliable indicators of Senior High School Potential, thereby informing both school-based assessment practices and broader educational policies.

Review of Related Literature

Theoretical Framework

This study is grounded in multiple perspectives that explain predictors of SHS potential. Emotional intelligence theory highlights socio-emotional skills such as self-awareness and regulation that support academic resilience, though evidence suggests weaker effects compared to cognitive predictors (Goleman, 1995; Poropat, 2014). Self-regulated Learning theory emphasizes study habits (planning, monitoring, and time management) as key mediators between motivation and achievement (Zimmerman, 1989). Similarly, Holland's Realistic, Investigative, Artistic, Social, Enterprising, and Conventional theory (1997) stresses that students are more successful when their interests align with their academic track.

Cognitive perspectives further strengthen this framework. Psychometric theories of intelligence (Spearman, 1904; Thurstone, 1938) regarded aptitude, like verbal, quantitative, abstract, and spatial reasoning, as a robust predictor of achievement (Laidra et al., 2007). Finally, Gardner's theory of Multiple Intelligences (MI) (1983) expands the definition of ability by recognizing diverse strengths, including linguistic, logical-mathematical, spatial, and interpersonal intelligence (Gardner & Hatch, 1989). While MI has a modest direct effect on performance, it reinforces the importance of inclusive approaches to student assessment. Together, these perspectives provide a holistic foundation for examining EQ, study habits, interest, aptitude, and MI as predictors of SHS academic potential.

Senior High School Potential

Junior High School serves as a critical stage in preparing students for the demands of Senior High School (SHS) programs (Gonzaga et al., 2025). At this level, the school aims to equip learners with the necessary skills, habits, and competence to ensure readiness for higher education challenges. Academic potential, in context, refers to students' capacity to meet grade-level requirements and adapt to the rigors of the SHS curriculum (Asian Psychological Services and Assessment, 2025). According to Malaguial et al. (2022), academic potential emerged as the only factor with significant influence on students' preferred SHS strand. While their study primarily focused on assisting learners in making strand choices based on influencing factors, it also highlighted the need for further research on the determinants of SHS potential. Addressing this gap may provide valuable insights for designing intervention programs that enhance students' readiness for Senior High School.

Emotional Quotient (EQ) and Academic Potential

Emotional intelligence (EI) is the ability to understand and manage emotions, while Emotional Quotient (EQ) is its measurable score. EI has been extensively studied for its impact on academic achievement and personal development. Shengyao et al. (2024) found that EI was positively correlated with psychological well-being and academic performance; this relationship was mediated by positive psychological traits such as self-efficacy, motivation, and resilience. However, their findings were based on postgraduate students, highlighting the need to explore how these relationships manifest in younger cohorts such as SHS students. Similarly, Buzdar et al. (2016) noted that EI significantly affected students' readiness for online learning, suggesting its broader role in adaptability and academic preparedness across diverse learning modalities.

Study Habits and Academic Readiness

Study habits and attitudes are strongly correlated with academic performance. Etcuban et al. (2019) emphasized that consistent and positive study practices enhance academic readiness for higher education. Their research, focused on junior high school students, underscored the importance of fostering structured study habits to ensure a smooth transition to SHS and beyond. This finding is particularly relevant in guiding interventions aimed at improving academic readiness among SHS students.

Interest Inventory in Educational Planning

The use of interest inventories has gained traction in aligning students' preferences with academic tracks. Garay and Gonzales (2023) highlighted that misalignment between students' interests and their academic paths often results in reduced motivation and suboptimal academic performance. This underscores the value of integrating career interest assessments into SHS curriculum planning to promote both academic success and long-term career alignment.

Aptitude and Academic Success

Aptitude, encompassing abilities such as mathematical, verbal, and logical reasoning, is a significant predictor of academic performance. Tan and Balasico (2018) demonstrated that cognitive abilities play a

crucial role in success on standardized assessments, emphasizing the dual impact of innate and trained abilities. These findings suggest that incorporating aptitude assessments into SHS academic planning could identify students' strengths and provide targeted support for areas in need of improvement.

Integrative Perspective

Research by Kilag et al. (2023) posited that SHS academic potential is influenced by a combination of factors, including personal interests, parental guidance, and academic readiness. This aligns with the assertion of Tus (2020) that emotional quotient, aptitude, interest inventory, and study habits are key determinants of academic performance. Synthesizing these insights highlights the need for a multifaceted approach to enhancing SHS readiness, combining psychological, cognitive, and motivational interventions.

Methodology

Research Design

In this study, a quantitative predictive research design was employed using hierarchical linear regression analysis. Hierarchical regression allows for the sequential addition of predictor blocks to determine the incremental effect of each set of variables on the dependent variable—Senior High School Potential. This approach enables comparison between nested models to identify which predictors significantly enhance model accuracy (Fein et al., 2022).

Respondents and Sampling

The study utilized secondary data from Grade 10 students enrolled in a private junior high school in Northern Mindanao, Philippines. Out of a population of 451 students, a stratified random sample of 208 was selected—comprising 104 males and 104 females—to ensure proportional representation. Sampling was conducted using an online roulette system, with gender as the primary stratification variable.

Instruments and Data Collection

The study was conducted during the 2024–2025 school year during March, and the data were sourced from standardized tests administered by a reputable Philippine assessment corporation. This included aptitude, which assessed verbal, quantitative, abstract, and spatial reasoning and which was scored from 1 to 110; Emotional Quotient (EQ) which measured traits such as grit, growth mindset, self-management, self-awareness, self-efficacy, and social awareness and was scored from 1 to 10; and an Interest Inventory and Study Habits Inventory, which was scored on a 4-point scale from 1 (*Very Weak*) to 4 (*Very Strong*). Results were then presented in a Scaled Ability Score (SAS) section, where the SAS score is equivalent to the Senior High School Potential Score. The SAS ranged from 50 to 110, with a mean of 80 and a standard deviation of 10. The scores were grouped into four (4) categories, namely: Excellent/Highly Proficient (scores 90–110), Meets Standards/Proficient (scores 80–89), Progressing Towards Standards (scores 70–79), Does Not Meet Standards (scores 50–69).

All instruments had documented validity and reliability, nationally normed in the Philippine context, with an acceptable Cronbach's alpha of .88. Ethical clearance was secured through formal permissions from school administration: the principal, registrar, guidance office, and testing/scholarship office.

Common method bias may have influenced the study instruments since most measures (EQ, study habits, interest) relied on student self-reports. Such reliance on a single source can inflate correlations among variables, not necessarily because they are strongly related, but because they were assessed through the same method. In addition, students may have responded in ways that presented themselves more positively, leading to social desirability bias, or may have shown acquiescence bias, a tendency to agree with items regardless of their content. The consistent use of Likert-type scales across instruments may also have introduced artificial response patterns. At the same time, transient factors, such as students' mood or fatigue at the time of administration, could have influenced responses across all measures.

Data Analysis

Data were analyzed using JASP version 0.18.03, with a five-block hierarchical regression model:

- Model 0: Gender (control variable)
- Model 1: + Emotional Quotient (EQ)
- Model 2: + Interest Inventory
- Model 3: + Study Habits
- Model 4: + Aptitude (Verbal, Abstract, Quantitative, Spatial)

The model's goodness-of-fit, R^2 change, and statistical significance (p -values, t -statistics) were assessed. Diagnostics such as residual plots, Quantile—Quantile plots, and multicollinearity (VIF and tolerance) were examined to ensure the robustness of the regression models (please see Appendices).

Results and Discussion

This section presents the analysis used to evaluate the predictive power of emotional quotient, interest inventory, study habits, and aptitude on Senior High School (SHS) academic potential. Results are discussed in alignment with the study objectives.

Problem 1. Examine the relative contributions of emotional quotient, interest inventory, study habits, aptitude, and multiple intelligences in predicting the SHS academic potential of Grade 10 students.

Table 1 shows the progression of predictive models. Gender alone (Model 0) explained only 1.6% of the variance ($R^2 = .016$, $p = .065$). Incremental additions of emotional quotient (Model 1), interest inventory (Model 2), and study habits (Model 3) resulted in minimal increases in R^2 , none of which were statistically significant.

Table 1 Model Summary—Assessment for Senior High School Potential

Model	R	R^2	Adjusted R^2	RMSE	R^2 Change	F Change	$df1$	$df2$	p
M_0	.128	.016	.012	5.130	.016	3.429	1	206	.065
M_1	.184	.034	.000	5.159	.018	.609	6	200	.723
M_2	.292	.085	.009	5.137	.051	1.193	9	191	.302
M_3	.309	.095	-.001	5.163	.010	.517	4	187	.724
M_4	.999	.997	.997	.277	.902	16223.908	4	183	< .001

Note. M_0 includes gender. M_1 adds emotional intelligence factors. M_2 adds interest inventory. M_3 study habits. M_4 adds aptitude scores.

Table 1 shows the progression of predictive models. Gender alone (Model 0) explained only 1.6% of the variance ($R^2 = .016$, $p = .065$). Incremental additions of emotional quotient (Model 1), interest inventory (Model 2), and study habits (Model 3) resulted in minimal increases in R^2 , none of which were statistically significant.

By contrast, Model 4—which introduced aptitude scores (verbal, abstract, quantitative, spatial)—resulted in a dramatic increase in explanatory power ($R^2 = .997$, $p < .001$), indicating that aptitude alone accounted for nearly all the variance in SHS potential.

This finding was aligned with Qayyum (2024), who also found strong correlations between aptitude and academic performance in international university students. Consistent with the results, the study by Vera and Cortés (2021) showed the incremental effect of cognitive aptitude on academic performance in a sample of 796 Ecuadorian students, using dominance analyses, highlighting the dominant role of

cognitive aptitude in predicting academic potential, surpassing socio-emotional and behavioral factors. Tan and Balasico (2018) also found that cognitive abilities play a crucial role in success on standardized assessments, emphasizing the dual impact of innate and trained abilities.

These findings suggest that efforts to improve learning outcomes must be anchored in strengthening students' cognitive foundations. Schools and policymakers need to invest in diagnostic assessments that can reliably measure aptitude early on, ensuring that students are guided toward academic tracks aligned with their strengths and potential.

At the same time, the results highlight an urgent challenge for equity. If aptitude is such a powerful determinant of SHS potential, learners from resource-constrained environments, who may not have had sufficient exposure to cognitively stimulating activities, risk being left behind. Thus, educational systems must implement remedial and enrichment programs that deliberately cultivate these abilities, ensuring that aptitude does not simply mirror socioeconomic privilege. Moreover, while the results emphasize aptitude, educators must avoid devaluing socio-emotional and behavioral competencies.

These factors, though less predictive of academic performance in the statistical model, remain crucial for resilience, motivation, and long-term life outcomes. The implication, therefore, is a balanced yet strategically weighted approach: one that prioritizes aptitude development in curriculum design and assessment practices, while integrating supportive interventions that address affective and behavioral dimensions of learning. Ultimately, acknowledging the primacy of aptitude equips schools to design evidence-based, targeted interventions that can improve both readiness and equity in the SHS transition.

As shown in Table 2, ANOVA results confirm that only Model 4 yielded a statistically significant model fit ($F(24, 183) = 2990.007, p < .001$).

Table 2 ANOVA for Regression Models Predicting Senior High School Potential

Model		Sum of Squares	df	Mean Square	F	p
M ₀	Regression	90.236	1	90.236	3.429	.065
	Residual	5421.221	206	26.317		
	Total	5511.457	207			
M ₁	Regression	187.520	7	26.789	1.006	.428
	Residual	5323.937	200	26.620		
	Total	5511.457	207			
M ₂	Regression	470.784	16	29.424	1.115	.344
	Residual	5040.672	191	26.391		
	Total	5511.457	207			
M ₃	Regression	525.882	20	26.294	.986	.481
	Residual	4985.575	187	26.661		
	Total	5511.457	207			
M ₄	Regression	5497.437	24	229.060	2990.007	< .001
	Residual	14.019	183	.077		
	Total	5511.457	207			

Note. M₀ includes gender. M₁ adds emotional intelligence factors. M₂ adds interest inventory. M₃ study habits. M₄

Models 0 through 3 did not significantly improve prediction over chance (all p -values > .05). Therefore, Model 4 was identified as the most accurate and robust model. This is consistent with Laidra et al. (2007), who reported that cognitive intelligence was the strongest predictor of GPA in secondary education, suggesting that traditional aptitude measures continue to provide reliable insights into academic potential.

This finding suggests that education systems should prioritize the assessment and development of core cognitive abilities—verbal, abstract, quantitative, and spatial—when preparing students for secondary and higher education. For schools, this means integrating diagnostic aptitude testing into guidance and

placement processes to better align students with academic tracks or programs. It also highlights the need for targeted interventions that strengthen these foundational skills, especially for learners from disadvantaged backgrounds, to mitigate inequities in readiness. While socio-emotional and behavioral competencies remain valuable, the results indicate that educational policy and curriculum design should place greater weight on cultivating cognitive aptitude as the primary driver of academic achievement.

Problem 2. Identify which domains offer the most reliable indicators of Senior High School Potential.

As shown in Table 3, among all predictors, only the aptitude subtests (verbal, abstract, quantitative, and spatial reasoning) were statistically significant (all p -values < .001). These variables also had the highest standardized beta coefficients and t -values, underscoring their strong influence.

Table 3 Regression Coefficients for Final Model (M_4)

Model		Unstandardized	Standard Error	Standardized	t	p
M_4	(Intercept)	-.400	.399		-1.001	.318
	Gender	-.007	.045	-6.738×10^{-4}	-.156	.876
	Grit	.004	.013	.002	.317	.752
	Grow Mindset	.014	.010	.006	1.348	.179
	Self-Management	.004	.013	.002	.328	.744
	Social Awareness	-.009	.013	-.003	-.727	.468
	Self-Efficacy	-.024	.014	-.010	-1.766	.079
	Self-Awareness	-.006	.010	-.003	-.591	.555
	Visual Arts	-.104	.047	-.013	-2.223	.027
	Music	.045	.042	.005	1.068	.287
	Kinesthetic	-.010	.042	-.001	-.250	.803
	Interpersonal	-.026	.043	-.003	-.601	.548
	Intrapersonal	-.022	.045	-.003	-.501	.617
	Linguistics	.068	.043	.007	1.587	.114
	Logicality	-.056	.048	-.006	-1.172	.243
	Naturalist	-.007	.041	-8.128×10^{-4}	-.166	.868
	Existentialist	.030	.045	.003	.673	.502
	Processing Strategies	.049	.048	.006	1.020	.309
	Regulation Strategies	-.003	.046	-2.758×10^{-4}	-.056	.955
	Learning Strategies	.041	.034	.006	1.223	.223
Mental Modes	.054	.045	.007	1.207	.229	
Aptitude Verbal	.249	.004	.273	56.969	< .001	
Aptitude Abstract	.251	.004	.268	62.195	< .001	
Aptitude Quantitative	.251	.003	.419	87.024	< .001	
Aptitude Spatial	.254	.002	.458	108.608	< .001	

Surprisingly, Visual Arts from the interest inventory emerged as a statistically significant negative predictor ($\beta = -.013$, $p = .027$). While the effect size was small, this may suggest a potential mismatch between visual-spatial strengths and the nature of academic potential assessment, which is more aligned with traditional cognitive domains. Alternatively, it could reflect a diversion of effort toward creative endeavors at the expense of academic tasks.

All other predictors—gender, emotional quotient, study habits, and other interest types—were not statistically significant, reinforcing the conclusion that aptitude is the primary driver of SHS academic potential in this sample.

This finding resonated with Aydin's (2019) meta-analysis, which found only modest effects of multiple intelligences on academic success, and with Syafii et al. (2022), who noted that while multiple intelligence strategies may improve engagement, they offer only limited direct gains in academic outcomes.

The findings in Table 3 highlight that aptitude subtests were the strongest predictors of SHS academic potential, while gender, EQ, study habits, and most interests showed little impact. The small but significant negative effect of Visual Arts suggests that traditional assessments may undervalue creative strengths, pointing to a potential mismatch between test design and diverse learner abilities. This underscores the need to prioritize cognitive skill development while also creating more inclusive measures and pathways that recognize non-cognitive and creative competencies.

Interpretation of the Final Model

The near-perfect R^2 (.997) in Model 4 suggests possible overfitting given the high number of predictors relative to the sample size ($N=208$). Although Variance Inflation Factor (VIF) values indicate acceptable multicollinearity levels, caution is warranted (See Appendix B: Table B2). High R^2 may suggest overfitting, but the lack of multicollinearity and acceptable residual patterns reduces this concern (See Appendix A & B). Given the robustness of the statistical tool used, Adjusted R^2 , Root Mean Square Error, and F Change were utilized to verify models' stability (See Summary and Conclusion: Table 1 – Model Summary). Additionally, a follow-up study using a larger sample size or cross-validation methods is recommended to test the model's generalizability and mitigate overfitting risk.

Limitations

While the model in this study showed a near-perfect R^2 , several limitations should be acknowledged. First, as the study focused on students from a single private school in Northern Mindanao, findings may not be generalizable to public schools or other regions. Second is potential overfitting, as the high R^2 (.997) in the final model raises concerns of overfitting due to the large number of predictors relative to the sample size. Although VIF diagnostics were acceptable, a larger and more diverse sample is recommended. Lastly, the study's cross-sectional nature prevents conclusions about causality. Longitudinal studies are needed to assess predictive validity over time.

Conclusion

The findings revealed that only aptitude—comprising verbal, abstract, quantitative, and spatial reasoning—significantly predicted SHS potential. Socio-emotional traits, personal interests, and study habits made minimal, statistically non-significant contributions.

These results highlight the dominant role of cognitive aptitude in determining academic readiness, reaffirming the value of standardized aptitude assessments in guiding SHS placement decisions. While emotional intelligence, interests, and behavioral strategies are undoubtedly important for holistic development, they may not, on their own, predict academic potential within traditional assessment frameworks.

Recommendations for Applying Research Findings

The results of this study provide important insights that can be useful in academic settings. These suggestions are intended to inform future research and policymaking, as well as encourage continued investigation in the field.

Academic Recommendations

1. Curriculum Development: Schools may consider integrating more opportunities for cognitive aptitude development, particularly in logical reasoning and quantitative skills, during junior high school.
2. Student Placement: While educational institutions should continue to use aptitude assessments as part of SHS track placement processes, these must be interpreted alongside other holistic indicators, avoiding overreliance on aptitude tests.
3. Policy Consideration: Policymakers might explore the refinement of readiness criteria by prioritizing evidence-based cognitive metrics in transition programs.

Recommendations for Future Research

1. Incorporate longitudinal tracking: Future researchers are encouraged to incorporate longitudinal tracking to explore how predictors influence SHS performance and persistence over time.
2. Further testing the model: Future researchers are enjoined to test the model on diverse populations to examine cultural and contextual factors. Researchers may opt to conduct the same study in different regions or school types to test the consistency of study outcomes.

Author Contributions

Mark Jade L. Tactacon: Conceptualization, data curation, formal analysis, investigation, methodology, project administration, software, visualization, writing – original draft, writing – review & editing; **Adeva Jane Esparrago-Kalidas:** Formal analysis, investigation, supervision, validation, writing – review & editing.

References

- Asian Psychological Services and Assessment. (2025). *Reports*. <https://apsaweb.azurewebsites.net/reports.html>
- Aydin, H. (2019). The effect of multiple intelligence(s) on academic Success: A systematic review and meta-analysis. *Eurasia Journal of Mathematics, Science and Technology Education, 15*(12), 1–20. <https://doi.org/10.29333/ejmste/109008>
- Buzdar, M. A., Ali, A., & Tariq, R. U. H. (2016). Emotional intelligence as a determinant of readiness for online learning. *The International Review of Research in Open and Distributed Learning, 17*(1), 148–158. <https://doi.org/10.19173/irrodl.v17i1.2149>
- Carpio, B. S., Maglangque, A. R. M., Santiago, C. C., Villanueva, J. A. S., & Apostol, R. A. M. (2023). The impact of study habits on academic performance of senior high school students in practical research 2. *International Journal of Academic Multidisciplinary Research (IJAMR), 7*(6), 81–86. <http://ijeais.org/wp-content/uploads/2023/6/IJAMR230608.pdf>
- Chamorro-Premuzic, T., & Furnham, A. (2003). Personality traits and academic examination performance. *European Journal of Personality, 17*(3), 237–250. <https://doi.org/10.1002/per.473>
- Cogal, M. N., Diestro, C. D., Nacorda, S. H., Olila, J. N., & Paras, M. C. (2019). Effective implementation of the senior high school curriculum: A descriptive analysis. *International Journal of Engineering Research & Technology (IJERT), 8*(12), 142–145. <https://doi.org/10.17577/IJERTV8IS120084>
- Delamide, P. V., & Moran, M. B. (2024). *Influencing factors on senior high school students academic track and career choices* [Undergraduate thesis, Capiz State University Pilar Satellite College, Philippines]. CAPSU Institutional Repository. <https://repository.capsu.edu.ph/handle/123456789/752>
- Department of Education. (2015, October). *Guidelines on the implementation of the SHS program in existing public JHSs and ISS, establishment of stand-alone public SHSS, and conversion of existing public elementary and JHSS*

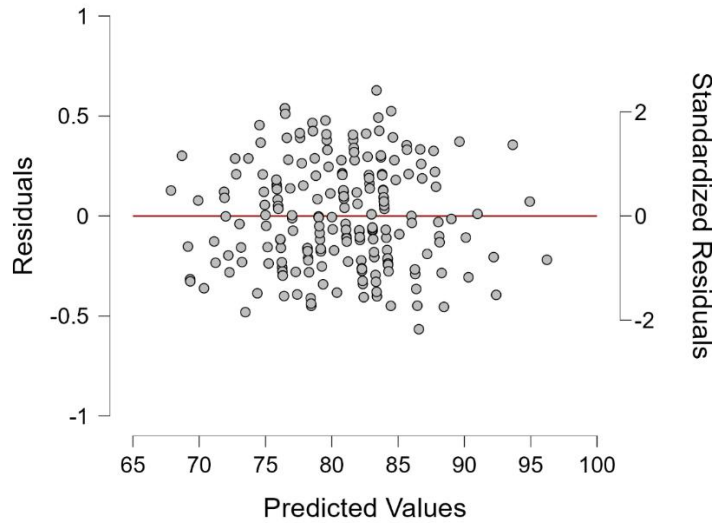
- into stand-alone SHSS [Press release]. https://www.deped.gov.ph/wp-content/uploads/2015/10/DO_s2015_51_0.pdf
- Etcuban, J. O., Capuno, R., Necesario, R., Espina, R., Padillo, G., & Manguilimotan, R. (2019). Attitudes, study habits, and academic performance of junior high school students in mathematics. *International Electronic Journal of Mathematics Education*, 14(3), 547–561. <https://doi.org/10.29333/iejme/5768>
- Fein, E. C., Gilmour, J., Machin, T., & Hendry, L. (2022). Section 5.3: Multiple regression explanation, assumptions, interpretation, and write-up. In E. C. Fein, J. Gilmour, T. Machin, & L. Hendry (Eds.), *Statistics for research students*. <https://usq.pressbooks.pub/statisticsforresearchstudents/chapter/multiple-regression-assumptions/>
- Garay, A. M. F., & Gonzales, V. A. M. (2023). Assessing the correlation between the study habits and study attitudes with the academic performance of senior high school students during the online classes in the University of the Philippines Rural High School. *Capstones*, 103. <https://www.ukdr.uplb.edu.ph/etd-capstone/103>
- Gardner, H. (1983). *Frames of mind: A theory of multiple intelligences*. Basic Books. <https://www.scirp.org/reference/referencespapers?referenceid=2633225>
- Gardner, H., & Hatch, T. (1989). Educational implications of the theory of multiple intelligences. *Educational Researcher*, 18(8), 4–10. <https://doi.org/10.3102/0013189X018008004>
- Goleman, D. (1995). *Emotional intelligence: Why it can matter more than IQ*. Bantam Books.
- Gonzaga, K. A., Dominese, N. L., & Zipporah Abegail C. Duyag. (2025). The four exits of senior high school: A tracer study in Ozamiz City. *International Journal of Research and Innovation in Social Science*, VIII(XII), 3833–3844. <https://doi.org/10.47772/ijriss.2024.8120320>
- Holland, J. L. (1997). *Making vocational choices: A theory of vocational personalities and work environments* (3rd ed.). Psychological Assessment Resources.
- Kilag, O. K. T., Dejino, J. A., Arcillo, M. T., Borong, M. L., Manligoy, R. G., & Combista, L. I. (2023). Exploring the determinants of senior high school track preference among Grade 10 students: A comprehensive study. *Web of Semantic: Universal Journal on Innovative Education*, 2(6), 31–42. <https://files.eric.ed.gov/fulltext/ED628620.pdf>
- Laidra, K., Pullmann, H., & Allik, J. (2007). Personality and intelligence as predictors of academic achievement: A cross-sectional study from elementary to secondary school. *Personality and Individual Differences*, 42(3), 441–451. <https://doi.org/10.1016/j.paid.2006.08.001>
- Malaguial, P., Gacoscog, G., Martinez, E., Abusama, H., & Valdez, A. (2022). Senior high school strands: Factors affecting the students' preference. *ASEAN Journal of Educational Research and Technology*, 2(1), 57–66. <https://ejournal.bumipublikasinusantara.id/index.php/ajert/article/view/135/131>
- Morgan, H. (2021). Howard Gardner's multiple intelligences theory and his ideas on promoting creativity. In F. Reisman (Ed.), *Celebrating giants and trailblazers: A–Z of who's who in creativity research and related fields* (pp. 124–141). KIE Publications. <https://files.eric.ed.gov/fulltext/ED618540.pdf>
- Morosanova, V. I., Fomina, T. G., & Bondarenko, I. N. (2015). Academic achievement: Intelligence, regulatory, and cognitive predictors. *Psychology in Russia: State of the Art*, 8(3), 136–156. <https://doi.org/10.11621/pir.2015.0311>
- Philippine Institute for Development Studies (PIDS). (2018). *Senior high school program transitions: Initial findings on implementation*. Policy Notes, No. 2018-10. <https://pids.gov.ph/publications/6768>
- Philippine Institute for Development Studies. (2020, February 20). *Some SHS students face challenges with English writing*. <https://pids.gov.ph/details/some-shs-students-face-challenges-with-english-writing>
- Philippine Institute for Development Studies. (2023, August 23). *SHS program continues to lack qualified personnel, range of strand offerings—PIDS*. <https://pids.gov.ph/details/news/in-the-news/shs-program-continues-to-lack-qualified-personnel-range-of-strand-offerings-pids>
- Poropat, A. E. (2014, December 22). For success at school, personality may beat brains. *Time Magazine*. <https://time.com/3640300/for-success-at-school-personality-may-beat-brains/>
- Qayyum, F. (2024). The impact of student aptitude on academic success in international higher education. *International Journal of Social Science Archives (IJSSA)*, 7(3), 88–95. <https://ijssa.com/index.php/ijssa/article/view/408?>
- Romanelli, F., Cain, J., & Smith, K. M. (2006). Emotional intelligence as a predictor of academic and/or professional success. *American Journal of Pharmaceutical Education*, 70(3), 69. <https://doi.org/10.5688/aj700369>
- Shengyao, Y., Xuefen, L., Jenatabadi, H. S., Samsudin, N., Chunchun, K., & Ishak, Z. (2024). Emotional intelligence impact on academic achievement and psychological well-being among university students: The mediating role

- of positive psychological characteristics. *BMC Psychology*, 12(1), 1–17. <https://doi.org/10.1186/s40359-024-01886-4>
- Spearman, C. (1904). “General intelligence” objectively determined and measured. In J. J. Jenkins & D. G. Paterson (Eds.), *Studies in individual differences: The search for intelligence* (pp. 59–73). Appleton-Century-Crofts. <https://doi.org/10.1037/11491-006>
- Syafii, A., Machali, I., Putro, N. H. P. S., Nur, Retnawati, H., & Aziz, H. (2022). The effects of multiple intelligences theory on learning success: A meta-analysis in social science. *International Journal of Evaluation and Research in Education (IJERE)*, 11(2), 736–743. <https://doi.org/10.11591/ijere.v11i2.22223>
- Tan, D. A., & Balasico, C. L. (2018). Students’ academic performance, aptitude and occupational interest in the national career assessment examination. *PUPIL: International Journal of Teaching, Education and Learning*, 2(3), 01–21. <https://doi.org/10.20319/pijtel.2018.23.0121>
- Thurstone, L. L. (1938). *Primary mental abilities*. University of Chicago Press.
- Tus, J. (2020). The influence of study attitudes and study habits on the academic performance of the students. *International Journal of All Research Writings*, 2(4), 11–32. <https://doi.org/10.6084/m9.figshare.13093391.v1>
- Vera, M., & Cortés, J. A. (2021). Emotional and cognitive aptitudes and successful academic performance: Using the ECCT. *International Journal of Environmental Research and Public Health*, 18(24), 13184. <https://doi.org/10.3390/ijerph182413184>
- Veraflor, N. (2017, June 30). *From Senior High School (SHS) curriculum to the new College General Education (GEC) curriculum* [Research paper, University of the Philippines System]. https://www.researchgate.net/publication/322823861_From_Senior_High_School_SHS_Curriculum_to_the_New_College_General_Education_GEC_Curriculum
- Walela, A. (2024). Multiple intelligences in the teaching and learning process: A study of Howard Gardner’s thought, challenges and opportunities. *International Journal of Education, Language, Literature, Arts, Culture, and Social Humanities*, 2(4), 133–155. <https://doi.org/10.59024/ijellacush.v2i4.1006>
- Zimmerman, B. J. (1989). A social cognitive view of self-regulated academic learning. *Journal of Educational Psychology*, 81(3), 329–339. <https://doi.org/10.1037/0022-0663.81.3.329>

APPENDICES

Appendix A: Data Plots for Hierarchical Regression

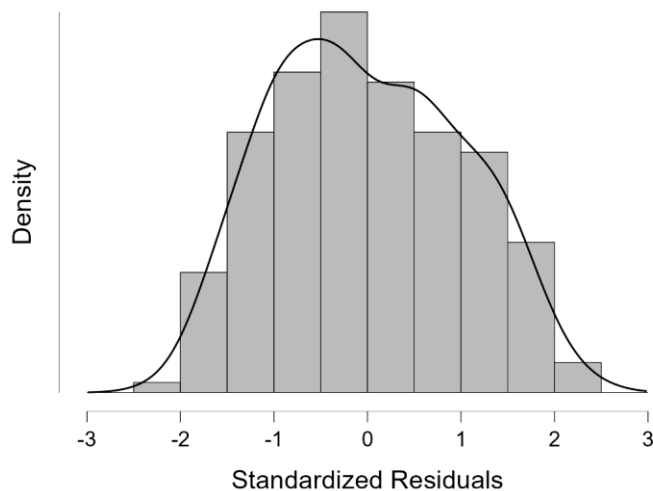
Image Plot A1: Scatter Plots - Residuals vs. Predicted



What This Plot Suggests

1. Linearity: The linear relationship between the predictors and the outcome variable appears valid.
2. Homoscedasticity: The variance of the residuals appears constant across the range of predicted values.
3. No Systematic Bias: There does not seem to be any pattern in the residuals that would suggest missing predictors or non-linear effects.

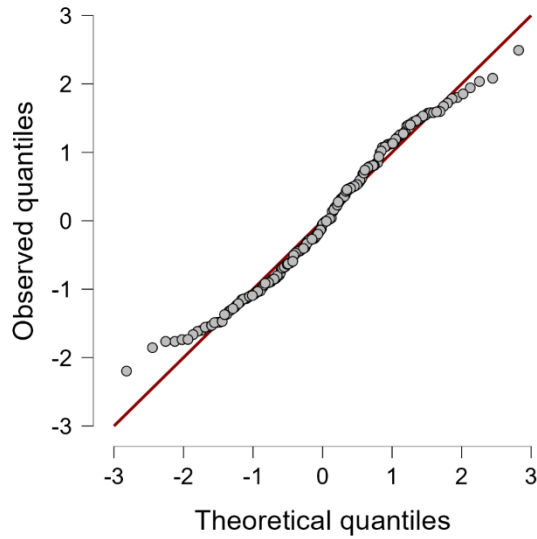
Image Plot A2: Standardized Residuals Histogram



What This Plot Suggests

1. Normality of Residuals: The residuals follow a roughly normal distribution, which supports the assumption of normality required for linear regression.
2. No Outliers: There are no extreme residuals that could significantly influence the regression results.

Image Plot A3: Quantile-Quantile Plot Standardized Residuals



What This Plot Suggests

Residuals appear approximately normally distributed, which means:

1. The model likely satisfies the normality assumption.
2. We can trust the regression estimates and significance tests more confidently.

Appendix B: Residual Table for Hierarchical Regression

Table B1: Residuals Statistics

	Minimum	Maximum	Mean	SD	N
Predicted Value	67.873	96.219	80.611	5.153	208
Residual	-0.566	0.628	1.773×10^{-18}	0.260	208
Std. Predicted Value	-2.472	3.029	-8.959×10^{-17}	1.000	208
Std. Residual	-2.197	2.492	-0.002	1.003	208

What This Table Suggests

1. The model's predictions are centered and accurate, with low residual error.
2. No major violations of normality or homoscedasticity (equal variance) assumptions.
3. No influential outliers based on standardized residuals.

Table B2: Model M₄ VIF & Tolerance Highlights

Predictor Variable	Tolerance	VIF
Gender	0.743	1.346
EQ – Grit	0.539	1.854
EQ – Growth Mindset	0.767	1.304
EQ – Self-Management	0.525	1.906
EQ – Social Awareness	0.603	1.658
EQ – Self-Efficacy	0.470	2.126
EQ – Self-Awareness	0.728	1.373
Interest – Visual Arts	0.414	2.418
Interest – Musicality	0.568	1.761
Interest – Kinesthetic	0.578	1.729
Interest – Interpersonal	0.530	1.887
Interest – Intrapersonal	0.466	2.145
Interest – Linguistic	0.623	1.605
Interest – Logicality	0.460	2.174
Interest – Naturalist	0.580	1.725
Interest – Existentialist	0.624	1.604
Study Habits – Processing	0.437	2.286
Study Habits – Regulation	0.571	1.753
Study Habits – Learning	0.543	1.842
Study Habits – Mental	0.479	2.088
Aptitude – Verbal	0.603	1.657
Aptitude – Abstract	0.747	1.338
Aptitude – Quantitative	0.601	1.665
Aptitude – Spatial	0.781	1.280

What This Table Suggests

1. Tolerance values < 0.1 or VIF > 10 may indicate serious multicollinearity concerns.
2. All values in Model M₄ were within acceptable thresholds, suggesting no critical multicollinearity issues.