

Short Paper

Grit of Mathematically Aligned Students: An Inventory

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Abstract

There is an undeniable substantial impact of non-cognitive elements, such as drive, grit, and beliefs, on students' academic achievement, specifically in mathematics. A favorable correlation between grit and undergraduate grade averages was emphasized and established in the previous investigations. Grit predicts good performance in different situations. This study is a descriptive correlational investigation that attempts to evaluate and document the levels of grit among students who are currently enrolled in the BSE – Mathematics program at a State University in the Philippines. The study includes a total of 143 participants. The results demonstrate a gradual increase in perseverance and passion for long-term goals over the school years. First-year Mathematics major students generally have low levels of perseverance and passion, while second-year students demonstrate high levels of perseverance and passion. By the third year, kids exhibit exceptionally high levels of perseverance and passion. Regardless of these variations, all students constantly demonstrate a lack of interest constancy and an average level of endurance in their efforts. These findings indicate that the College and University should implement specific interventions to improve students' levels of perseverance and passion for long-term goals. Creating holistic programs and strategies



to cultivate these non-cognitive skills might enable students to fully actualize their potential in their academic pursuits and future professional endeavors. By cultivating a greater level of perseverance and resilience, educational institutions can have a substantial influence on students' long-term achievements and academic outcomes.

Keywords – Grit, Mathematically Aligned Students, Performance, Problem Solving skills

INTRODUCTION

The presence of grit, which is defined as the combination of tenacity and commitment towards achieving long-term objectives, significantly contributes to the improvement of pupils' mathematical ability. Duckworth and Eskreis-Winkler (2013) underscore the significance of grit in relation to academic achievement, specifically emphasizing its ability to maintain perseverance and surmount obstacles, particularly in rigorous courses such as mathematics. According to Duckworth et al. (2015), students who possess greater levels of grit are more inclined to persevere in tackling intricate mathematics tasks, even in the face of obstacles or challenges.

Furthermore, grit has a role in fostering increased involvement and drive in the process of studying mathematics. Research conducted by Eskreis-Winkler et al. (2014) has demonstrated that children who possess the trait of grit are more likely to utilize effective study techniques and actively seek opportunities to practice mathematics. As a result, these students experience enhanced performance and improvement over a period of time. Gritty pupils, who possess a resolute determination and unwavering commitment to their mathematical objectives, are more adept at overcoming the inherent difficulties of the topic and persisting until they attain mastery (Vainio & Daukantaite, 2020).

Moreover, grit functions as a determinant of resilience when confronted with mathematics setbacks and failures. Datu et al. (2018) conducted research that suggests students with high levels of grit are more capable of dealing with frustration and failure. These students see mathematics challenges as chances for personal development rather than impossible hurdles. As mentioned by Alvarez & Galman (2023a), students' resilience allows them to recover quickly from arithmetic setbacks and stay focused on their long-term mathematical goals.

Significantly, the impact of grit goes beyond an individual's academic achievement to include broader outcomes such as mathematical self-efficacy and confidence. Resilient pupils are more inclined to have faith in their capacity to excel in mathematics, resulting in a beneficial cycle where heightened confidence drives higher exertion and perseverance (Duckworth & Quinn, 2009).

Undoubtedly, grit has a crucial role in improving students' success in mathematics, impacting their involvement, drive, ability to bounce back, and belief in their own capabilities. According to Alvarez & Galman (2024), by cultivating perseverance and passion in educational environments, educators may encourage students to surmount mathematical obstacles and reach their maximum capabilities. As cited by Angeles & Alvarez (2023), suggests that grit, as compared to cognitive capacity, is a more robust predictor of academic achievement. The study monitored over 4,000 pairs of twins and discovered that youngsters with higher levels of grit perform better academically, particularly in challenging subjects like mathematics and other demanding fields. Therefore, the presence of grit is crucial for enhancing children's mathematical proficiency as it enables them to persevere and maintain enthusiasm for their endeavors in the long term, thereby facilitating success in challenging academic disciplines.

This article aims to provide a concise overview of the current knowledge and data about the perseverance and determination of kids who excel in mathematics. The goal is to establish a clear grasp of the scope, background, and significance of the research topic under investigation. The objective of this study is to conduct a comprehensive evaluation of the level of perseverance and passion for long-term goals among children who excel in mathematics and to demonstrate its correlation with academic success. This study aims to investigate the correlation between grit and performance, contributing to the existing knowledge base and offering valuable insights for policymakers and educational institutions. The findings of this study will pave the way for the development of targeted intervention programs aimed at enhancing students' grit, sustained interest, persistence, and ambition.

LITERATURE REVIEW

The notion of "grit," which refers to the combination of tenacity and passion toward achieving long-term objectives, has attracted considerable interest in the realms of education, employment, and psychology research. Several studies have investigated the correlation between demographic variables including age and sex, as well as the influence it has on academic and professional achievements.

Age and Perseverance

Multiple studies have shown that age is a notable factor in predicting grit. Fernández-Martín, García-Martínez, & Pérez-García (2020) discovered that older students demonstrate elevated levels of endurance and passion in comparison to their younger peers, indicating that grit may be cultivated with the passage of time and accumulated experience. Black et al. (2011) found that the age at which individuals begin school has lasting positive effects on the mental well-being and educational accomplishment of men. However, they observed a smaller impact on women's educational achievements.

Sex and Grit

The correlation between sex and grit has been thoroughly examined, yielding inconsistent results. Fernández-Martín, García-Martínez, & Pérez-García (2020) found that women exhibit greater levels of grit in comparison to men. These results are consistent with the findings of Usher, Li, Butz, & Rojas (2018), which indicate that girls exhibit a greater level of perseverance and passion compared to boys. In contrast, Stoffel and Cain (2018) discovered no substantial association between grit and gender among health professionals. This implies that the connection between these two factors may differ among various populations and situations.

Academic and Career Achievement

Extensive research regularly demonstrates that grit is a robust indicator of both academic and career achievements. Bowman (2019) highlighted the significance of grit in driving human accomplishments and its essential role in constructing an enduring academic heritage. Cosgrove et al. (2018) provided evidence to support this claim by showing that adolescents with higher levels of grit exhibit superior academic achievement and school attendance. In a similar vein, Hodge et al. (2017) discovered a significant link between grit, demographic variables, and academic engagement, suggesting that grit has a noteworthy influence on students' academic achievements.

Grit and Psychological factors

Kannangara, Allen, and Waugh (2018) conducted a series of experiments that elucidated the correlation between grit and diverse psychological characteristics. Their study revealed a positive correlation between grit and resilience, mental well-being, and self-control. Additionally, grit was demonstrated to be a consistent predictor of academic accomplishment. Moreover, Lechner, Danner, and Rammstedt (2019) found that grit is connected to an individual's mindset towards academic endeavors and is impacted by socio-demographic characteristics, with women demonstrating greater resilience than men.

In general, the idea of grit is closely connected to age, gender, and academic achievement, and it plays a crucial role in multiple areas of life. The varied results from these studies emphasize the complex nature of grit and its ability to improve individual outcomes in various situations.

Statement of the Problem

This study generally aims to assess the level of grit of the students under study. Specifically, this study aims to answer the following:

1. How may the following components of respondents' grit be described?
 - 1.1 Consistency of Interest;
 - 1.2 Perseverance of Effort;
 - 1.3 Ambition; and
 - 1.4 Over-all Grit
2. How may the performance of the respondents be described in terms of the General weighted average (GWA)?
3. Is there a significant relationship between the performance and level of grit of the respondents?
4. What intervention activities may be proposed to uplift students'
 - 4.1 Consistency of Interest;
 - 4.2 Perseverance of Effort;
 - 4.3 Ambition; and
 - 4.4 Overall Grit?

METHODOLOGY

Research Design

For this study, a mixed-methods research design was used through an explanatory sequential research design. Quantitative methods utilized surveys or questionnaires to assess respondents' levels of grit and academic performance indicators. Statistical analyses such as correlation analysis were used to examine the relationship between grit components and performance metrics.

Additionally, according to Alvarez (2023), qualitative methods such as interviews or focus groups can provide deeper insights into respondents' experiences, perceptions, and potential factors influencing their grit and academic performance. Combining quantitative and qualitative data allows for a comprehensive understanding of the relationship between grit and performance, as well as the identification of potential intervention strategies to uplift students' grit and academic success.

Sampling Technique and Subjects of the Study

This study used a total population sampling technique in identifying the students who served as the respondents of the study. The respondents of this study are the one hundred twenty-eight Bachelor of Secondary Education major in Mathematics students of a particular State University in the Philippines.

The Research Instruments & Validation

For the instrument in this study, a comprehensive approach incorporating validated measures of grit and academic performance would be ideal. To assess

respondents' levels of grit, the Short Grit Scale (Grit-S) developed by Duckworth and Quinn (2009) provides a concise yet reliable measure. The Grit-S consists of two subscales: perseverance of effort and consistency of interest, capturing key components of grit. Additionally, to gauge respondents' ambition, the Ambition Scale developed by Von Culin et al. (2014) offers a suitable measure, assessing individuals' desire for achievement and aspiration towards challenging goals. These instruments have been widely used and validated in previous research, ensuring their reliability and validity for measuring grit components.

For evaluating academic performance, objective measures such as the General Weighted Average (GWA) were utilized. These metrics provide tangible indicators of respondents' academic challenges and achievements. Moreover, the Open-Ended Survey on Students' Needs Related to Grit was incorporated through qualitative data collection methods such as interviews or focus groups can complement quantitative measures, offering insights into respondents' experiences perceptions, and needs related to grit and academic performance. By combining quantitative and qualitative approaches, a more comprehensive understanding of the relationship between grit and academic performance can be achieved, allowing for nuanced insights and the identification of potential intervention strategies.

These instruments, combined with qualitative data collection methods, offer a robust approach to assessing the relationship between grit and academic performance. By utilizing validated measures and incorporating multiple data sources, this study can provide valuable insights into the factors influencing students' academic success and inform the development of effective intervention strategies.

Data Analysis

For data analysis in this study, a combination of quantitative and qualitative techniques would provide a comprehensive understanding of the relationship between grit and academic performance. Quantitative analysis would involve statistical techniques to examine the associations between respondents' levels of grit (measured using the Grit-S and Ambition Scale) and their academic performance indicator, the General Weighted Average [GWA]). Correlation analysis was employed to determine the strength and direction of the relationship between grit components and academic performance metrics. Additionally, regression analysis can assess the predictive power of grit on academic performance outcomes, controlling for relevant demographic variables. These statistical techniques allow for a rigorous examination of the associations between grit and academic performance, providing empirical evidence to support the study's hypotheses.

Furthermore, qualitative data analysis techniques such as thematic analysis can be applied to analyze insights gathered from interviews or focus groups. Thematic analysis involves identifying patterns and themes within qualitative data, allowing for a deeper

understanding of respondents' experiences, perceptions, and potential factors influencing their grit and academic performance. By triangulating quantitative and qualitative findings, a richer understanding of the complexities underlying the relationship between grit and academic success can be achieved, facilitating the identification of nuanced intervention strategies.

RESULTS & DISCUSSION

Components of Respondents' Grit

Respondents' Grit Profile Considering Consistency of Interest

Based on the results obtained, it was revealed that most of the first-year and second-year students taking Bachelor of Secondary Education major in Mathematics obtained from low to high level of consistency of interest. Among the second-year respondents, there are five (5) or 7.14% of the students were assessed to have a very high level of consistency of interest. Meanwhile, considering the third-year respondents, the majority of them were assessed to have a high to very high level of consistency of interest. Only three (3) or 14.28% of students under this year level were assessed to have a low level of consistency of interest.

In general, most of the students under the Bachelor of Secondary Education major in Mathematics were assessed to have a low to high level of consistency of interest covering 104 students or 72.72% of the total population under study. Table 1 shows the profile of the respondents based on their level of consistency of interest.

Table 1. Respondents' Grit Profile Considering Consistency of Interest

Level of Consistency of Interest	1st Year	%	2nd Year	%	3rd Year	%	Total	%
Very High	0	0.00	5	7.14	8	38.10	13	9.10
High	20	38.47	23	32.86	10	47.62	53	37.06
Low	21	40.38	27	38.57	3	14.28	51	35.66
Very Low	11	21.15	15	21.43	0	0.00	26	18.18
Total	52	100%	70	100%	21	100%	143	100%

Respondents' Grit Profile Considering Perseverance of Effort

The findings reveal that a majority of first-year and second-year students enrolled in the Bachelor of Secondary Education majoring in Mathematics exhibit varying levels of perseverance, ranging from low to high. Specifically, 45 first-year students (86.54%) and 60 second-year students (85.71%) were classified within this range. Among first-year students, a small percentage, comprising two individuals (3.85%), demonstrated a very high level of perseverance, while five students (9.62%) exhibited a very low level of perseverance. Conversely, among the second-year cohort, ten students (14.29%) displayed a very high level of perseverance.

Examining the third-year respondents, the data indicates that the majority, encompassing fifteen out of twenty-one students (71.43%), exhibited a very high level of perseverance. Notably, only one student (4.76%) in this year's group demonstrated a low level of perseverance.

Overall, the analysis reveals that a substantial portion of students enrolled in the Bachelor of Secondary Education majoring in Mathematics displayed varying degrees of perseverance, with 111 students (77.62% of the total population) falling within the low to high range. Table 2 provides an overview of the respondents' profiles based on their level of perseverance of effort.

Table 2. Respondents' Grit Profile Considering Perseverance of Effort

Level of Perseverance of Effort	1st Year	%	2nd Year	%	3rd Year	%	Total	%
Very High	2	3.85	10	14.29	15	71.43	27	18.88
High	22	42.31	28	40.00	5	23.81	55	38.46
Low	23	44.23	32	45.71	1	4.76	56	39.16
Very Low	5	9.62	0	0.00	0	0.00	5	3.50
Total	52	100%	70	100%	21	100%	143	100%

Respondents' Grit Profile Considering ambition

The analysis reveals that a majority of first-year and second-year students enrolled in the Bachelor of Secondary Education majoring in Mathematics exhibit varying levels of

ambition, ranging from low to high. Specifically, 42 first-year students (80.77%) and 50 second-year students (70.43%) were classified within this range. Among first-year students, a small percentage, comprising one individual (1.92%), demonstrated a very high level of ambition, while nine students (17.31%) exhibited a very low level of ambition. Similarly, among the second-year cohort, five students (7.14%) displayed a very high level of ambition.

Examining the third-year respondents, the data indicates that the majority, encompassing sixteen out of twenty-one students (76.19%), exhibited a low to high level of ambition. Notably, only two students (9.52%) in this year's group demonstrated a very low level of ambition. Overall, the analysis reveals that a significant portion of students enrolled in the Bachelor of Secondary Education majoring in Mathematics displayed varying degrees of ambition, with 108 students (75.52% of the total population) falling within the low to high range. Table 3 provides an overview of the respondents' profiles based on their level of ambition.

Table 3. Respondents' Grit Profile Considering Ambition

Level of Ambition	1st Year	%	2nd Year	%	3rd Year	%	Total	%
Very High	1	1.92	5	7.14	3	14.29	9	6.29
High	20	38.46	23	32.86	9	42.86	52	36.36
Low	22	42.31	27	38.57	7	33.33	56	39.16
Very Low	9	17.31	15	21.43	2	9.52	26	18.18
Total	52	100%	70	100%	21	100%	143	100%

Respondents' Grit Profile Considering overall Grit

The analysis indicates that a significant portion of first-year students, comprising 35 out of 52 individuals (67.31%), demonstrated a low level of overall grit. Conversely, among second-year students enrolled in the Bachelor of Secondary Education majoring in Mathematics, a majority, totaling 33 students (47.14%), exhibited a high level of overall grit.

Examining the third-year respondents, the data highlights that the majority, encompassing sixteen out of twenty-one students (76.19%), demonstrated a very high level of overall grit.

The analysis suggests that a considerable proportion of students with a Bachelor of Secondary Education majoring in Mathematics displayed a high level of overall grit, constituting 53 students (37.06% of the total population). Table 4 provides insights into the respondents' profiles based on their level of overall grit.

Table 4. Respondents' Grit Profile Considering overall Grit

Level of Overall Grit	1st Year	%	2nd Year	%	3rd Year	%	Total	%
Very High	5	9.62	12	17.14	16	76.19	33	23.08
High	10	19.23	33	47.14	5	23.81	53	37.06
Low	35	67.31	15	21.43	0	0.00	45	31.47
Very Low	2	3.85	10	14.29	0	0.00	12	8.39
Total	52	100%	70	100%	21	100%	143	100%

Respondents' Academic Performance

The analysis indicates that the majority of first-year students, comprising 21 out of 52 individuals (40.38%), achieved GWAs ranging from 1.51 to 2.00. Among second-year students enrolled in the Bachelor of Secondary Education majoring in Mathematics, the most common GWA range was 2.01 to 2.50, with 25 students (35.71%) falling within this category.

Furthermore, among the third-year respondents, the predominant GWA range was 2.51 to 3.00, with ten out of twenty-one students (47.62%) falling into this bracket. In summary, the analysis suggests that a significant portion of students with a Bachelor of Secondary Education majoring in Mathematics obtained GWAs ranging from 1.51 to 2.00, encompassing 50 students (34.97% of the total population). These findings shed light on the distribution of academic performance among students in the program and provide valuable insights for academic planning and support initiatives. Table 5 presents an overview of the respondents' profiles based on their level of performance, as reflected by their General Weighted Average (GWA).

Table 5. Respondents' Profile according to their General Weighted Average (GWA)

GWA	1st Year	%	2nd Year	%	3rd Year	%	Total	%
1.0 - 1.50	8	15.38	2	2.86	0	0.00	10	6.99
1.51 - 2.00	21	40.38	23	32.86	6	28.57	50	34.97
2.01 - 2.50	11	21.15	25	35.71	5	23.81	41	28.67
2.51 - 3.00	12	23.08	20	28.57	10	47.62	42	29.37
Total	52	100%	70	100%	21	100%	143	100%

3. Test for a Significant Relationship between the Performance and Grit of the respondents

Notably, at a 95% level of confidence, Consistency of Interest (0.892), Ambition (0.820), and Overall Grit (0.803) exhibited a very strong positive relationship with students' performance, as measured by their General Weighted Average (GWA). Additionally, Perseverance of Effort demonstrated a strong positive correlation with a correlation coefficient of 0.713. These findings suggest that all Grit indicators significantly relate to students' academic performance, indicating that the performance of mathematically inclined students may be influenced by their levels of grit.

Table 6. Result of the Test of the Relationship between Grit indicators and the General Weighted Average of the respondents

	Consistency of Interest	Perseverance of Effort	Ambition	Overall Grit
General Weighted Average	0.892*	0.713*	0.820*	0.803*

* significant at 95% level of confidence

Table 6 presents the outcomes of the relationship tests conducted between the Grit indicators and the academic performances of the respondents.

These results underscore the importance of cultivating grit among students, particularly those pursuing mathematical studies, as it appears to play a pivotal role in their academic achievements.

Proposed Activities to Uplift Students' Grit

The data from the open-ended survey responses were analyzed using thematic analysis as a basis for intervention activities to uplift students' consistency of interest, perseverance of effort, ambition, and overall grit. Positive reinforcement can help reinforce desired behaviors, while self-reflection activities can encourage students to assess their progress and set goals for improvement. Discussions about growth mindset can help students develop resilience and perseverance in the face of challenges. Previously conducted studies highlighted the importance of these activities.

A study conducted by Cameron et al. (2015) as cited by Alvarez & Galman (2023b), investigated the effects of positive reinforcement on student behavior in the classroom. The researchers found that consistent positive reinforcement increased the likelihood of students exhibiting desired behaviors, such as completing assignments on time and participating actively in class discussions, thus exhibiting a positive effect on students' academic performance. Table 7 shows the comprehensive intervention activities in fostering the grit of mathematically-aligned students.

Table 7. Proposed Activities in Uplifting Students' Grit

Grit Indicator	Proposed Activities	Description	Time Frame
Consistency of Interest	Integration of Positive Reinforcement in the Classroom	By providing incentives or praise when desirable actions are exhibited, positive reinforcement is a strategy for encouraging desired behavior. Most of the respondents stated that through positive reinforcement such as recognition or positive feedback from their instructors, they felt motivated and encouraged to continue putting in effort and striving for success.	Daily
	Self-Reflection Activity	Many respondents have mentioned the importance of reflecting in keeping their interests ablaze. Urge students to keep a journal in which they can reflect on their ideas, observations, and experiences pertaining to their hobbies. Writing about their passion on a regular basis can assist in clarifying what they love most about it and strengthen it.	Daily

Table 7. Proposed Activities in Uplifting Students' Grit (cont.)

Grit Indicator	Proposed Activities	Description	Time Frame
Perseverance of Effort	Growth Mindset Discussions	Encourage conversation in the classroom on the value of adopting a growth mindset and the notion that aptitude and intelligence can be acquired with hard work and perseverance. Talk about well-known people who overcame adversity by being resilient and persistent, and inspire children to view obstacles positively.	Weekly
Ambition	Peer Mentoring	Create a peer mentoring program wherein senior students serve as mentors to junior ones, offering advice, encouragement, and support as they pursue their goals. Students are paired according to common interests, objectives, or aspirations.	Weekly
	Integration of Motivational Videos in Lesson	Empower students to take action based on the inspiration they gained from the video. Encourage them to apply the lessons learned to their academic work, extracurricular activities, or personal pursuits. Provide support and encouragement as they work towards achieving their ambitions.	Daily
Over-all Grit	Mindfulness and Stress Management Seminars	In this activity, the students will be taught about mindfulness and stress management techniques to help them cope with challenges and setbacks.	Once every semester
	Sharing of Experiences	Turn failure into a learning opportunity by conducting a "sharing of experiences" event in the classroom. Have students share stories of failures or setbacks they've experienced in the past and the lessons they learned from them. Encourage a positive and supportive atmosphere where failure is celebrated as a necessary step on the path to success.	Once a week

DISCUSSIONS

Findings align with the conclusions drawn by Patron and Lopez (2011), who assert a positive correlation between consistency, perseverance of effort, and proficiency in Mathematics. Their research suggests that students who exhibit high levels of consistency and perseverance tend to excel in Mathematics subjects. Findings are consistent with the study conducted by Anthony et al. (2015), which underscores the relationship between ambition and performance in Mathematics. Their research emphasizes the concept of ambitious mathematics, further elucidating the interconnectedness of these variables.

Findings underscore the importance of overall grit in academic pursuits and align with research highlighting its significance in predicting academic success (Duckworth et al., 2007). The significant relationship aligns with the conclusions drawn in the study by Vainio and Daukantaite (2020), where they underscored the positive and direct association of grit with students' academic performance, emphasizing grit as a crucial determinant of students' success in school.

Peer mentoring programs can provide students with support and guidance from their peers who have already developed grit. Motivational videos can inspire students and remind them of the importance of perseverance and determination. Mindfulness and stress management seminars can equip students with tools to manage setbacks and stay focused on their goals. A study by Hsieh et al. (2017) examined the impact of peer mentoring programs on student grit in a university setting. The researchers found that students who participated in peer mentoring programs reported higher levels of grit compared to those who did not.

Additionally, qualitative analysis revealed that peer mentors played a crucial role in providing support, guidance, and encouragement to mentees, thereby helping them develop resilience and perseverance. Research by Deniz et al. (2015) investigated the effects of motivational videos on student motivation and academic performance. The study found that exposure to motivational videos led to increased motivation levels among students, as well as improved academic outcomes. In a meta-analysis by Klingbeil et al. (2017), researchers examined the effectiveness of mindfulness-based interventions in reducing stress and enhancing well-being in students. The analysis revealed significant improvements in stress reduction and psychological well-being among students who participated in mindfulness and stress management seminars compared to control groups.

CONCLUSIONS AND RECOMMENDATIONS

Based on the comprehensive analysis of students' grit profiles and their academic performance, two key findings emerge. First, the study reveals a significant positive relationship between these grit indicators and students' academic performance, as

reflected in their General Weighted Average (GWA). Specifically, Consistency of Interest, Ambition, and Overall Grit exhibit very strong positive correlations, while Perseverance of Effort shows a strong positive correlation. This indicates that students with higher levels of grit tend to perform better academically.

Second, there are variations in grit profiles across different academic years. For instance, third-year students generally exhibit higher levels of Consistency of Interest, Perseverance of Effort, Ambition, and Overall Grit compared to first-year and second-year students. This suggests a potential developmental aspect of grit, with students likely building upon their grit levels as they progress through their academic journey.

The study proposes several intervention activities aimed at enhancing students' grit, including integration of positive reinforcement, self-reflection activities, growth mindset discussions, peer mentoring programs, integration of motivational videos, mindfulness and stress management seminars, and sharing of experiences. These activities target different aspects of grit and aim to foster a supportive and growth-oriented environment conducive to grit development.

IMPLICATIONS

The findings of this study have important repercussions for the educational practices being implemented at the State University as well as the efforts being made to aid students. Indicators of grit, such as Consistency of Interest, Ambition, and Overall Grit, have been found to have a strong link with students' academic performance, as assessed by their General Weighted Average (GWA). This correlation underlines the significant influence that non-cognitive elements have on academic success. Consequently, this shows that nurturing these attributes could directly improve the academic achievements of children with disabilities.

Furthermore, the differences in grit profiles that were discovered throughout the various academic years offer evidence that grit may gradually develop as individuals progress through their academic journeys. According to the data, kids in their third year demonstrate higher levels of consistency of interest, perseverance of effort, ambition, and overall grit when compared to their classmates in their first and second years of schooling. Grit is a trait that may be developed and improved over time, as evidenced by the fact that it can be cultivated. Given the significance of this developmental aspect of grit, it is imperative that therapies be administered in a timely manner and on an ongoing basis.

Furthermore, the intervention measures that have been suggested, which include the utilization of positive reinforcement, the encouragement of self-reflection, the facilitation of growth mindset discussions, the provision of peer mentoring, the provision of motivational videos, the promotion of mindfulness, and the organization of stress management seminars, highlight concrete actions that the College and University can

take to improve the perseverance and determination of students. The purpose of these activities is to create an environment that is hospitable and progressive, which is essential for the development of students' resiliency and passion in the direction of accomplishing long-term goals.

Based on the findings of this study, it is suggested that educational institutions should prioritize the development of perseverance and resilience through the implementation of targeted interventions. Through the implementation of this strategy, educational institutions can improve the academic achievements of students and provide them with the skills they need to overcome future challenges, thereby fostering a student population that is more resilient and proficient.

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DECLARATION

Conflict of Interest

The authors assert that they do not possess any identifiable conflicting financial interests or personal relationships that could have potentially influenced the findings presented in this study.

Informed Consent

All individual subjects included in the study provided informed consent. Participants received detailed information about the research's objectives, the methods involved, potential risks and benefits, and their right to withdraw at any moment without facing any negative consequences. Prior to their participation in the study, all participants completed and submitted written consent forms.

Ethics Approval

Due to the absence of human or animal subjects, clinical trials, or the acquisition of personal or sensitive data, this study was exempt from ethics approval. The research was carried out utilizing publicly accessible datasets, literature reviews, or theoretical approaches that are not subject to assessment by an ethics board.

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