A Comparative Study of Student Personality Traits in Higher Education: Global, Resilient, Innovative, Trustworthy, and Talent

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ABSTRACT

Developing well-rounded, adaptable, and globally competitive graduates remains a strategic priority for higher education institutions. Beyond disciplinary knowledge, universities are increasingly expected to cultivate personal attributes that enable students to thrive in a rapidly globalising and competitive world.

This study examined the personality profiles of final-year students enrolled in a technical and vocational education programme in Malaysia, comparing learners from two academic pathways, Education and Technology, across six bachelor's degree programs. Using a survey-comparative design, quantitative data were gathered from 259 students through a structured instrument measuring the five GRITT dimensions: Global, Resilient, Innovative, Trustworthy, and Talent. Descriptive statistics and independent samples t-tests were used to assess the differences between groups. Overall, both cohorts demonstrated moderate levels across all GRITT traits. Statistically significant differences were identified for the Innovative, Trustworthy, and Talent constructs, favouring students in the Technology pathway, whereas no significant differences emerged for the Global and Resilience dimensions. The findings highlight significant variations in personality development across academic pathways and reinforce the need for intentional strategies to enhance holistic student development, particularly within vocational education contexts aiming to produce future-ready graduates.

INTRODUCTION

The global education agenda has increasingly recognised the importance of character development through policy reforms and curriculum transformation. For instance, UNESCO's Education 2030 framework, aligned with the Sustainable Development Goals (SDGs, 2015), emphasises the need to foster attitudes and values alongside knowledge and skills. This objective is shaped by complex local and global challenges, including rapid globalisation, technological advancements, and evolving societal structures. Consequently, educational outcomes are now directed toward cultivating individuals and communities capable of living and working professionally, ethically, and collaboratively in diverse and dynamic environments.

In Malaysia, the Malaysian Education Blueprint (PPPM) 2013–2025 represents a comprehensive initiative by the Ministry of Education aimed at transforming the national education system. The forthcoming PPPM 2026–2030 continues this trajectory, focusing on the development of holistic, balanced, and globally competitive human capital, guided by the values and aspirations of Malaysia's National Educational Philosophy concept. In response to this national vision, Universiti Tun Hussein Onn Malaysia (UTHM), a technical university, has introduced the GRITT Module, a specially designed educational framework aimed at cultivating five core personality traits among students: Global, Resilient, Innovative, Trustworthy, and Talent. The GRITT module is designed to promote a balanced integration of personal and professional development, ensuring that graduates possess not only technical competencies but also strong character traits essential for success in a globalised world. However, implementing this module presents several challenges. One major obstacle is the intense academic pressure prevalent in Malaysian universities, often driven by high expectations from parents and educators, as well as the competitive academic environment. Such pressure can lead to increased anxiety,

potentially limiting students' ability to internalise and apply GRITT values.

Another challenge lies in the limited emphasis on nurturing individual talents within existing curricula. Many programs fail to accommodate the diverse capabilities of students, resulting in disengagement and reduced motivation. The final year of university is particularly critical as students prepare to enter the workforce. Research indicates that higher education institutions must actively engage students through experiential learning opportunities, such as internships, to enhance their readiness for real-world challenges. Moreover, integrating industry perspectives into academic programs is crucial to ensure that graduates acquire skills relevant to market demands.

Collaborative initiatives between academia and industry can provide students with early exposure to professional environments and highlight the importance of soft skills. While technical and employability skills are often prioritised in Technical and Vocational Education and Training (TVET), personality development remains underemphasized, despite its critical role in student success. In addition, prior studies suggest that fostering personality traits can significantly enhance students' motivation and interest, particularly in technical fields.

Therefore, this study was conducted to compare the GRITT profiles of final-year students at UTHM across two distinct academic backgrounds: vocational education (teacher training programs) and technology (industry-driven programs). While teacher education programs emphasise character and value development, technology programs focus primarily on the development of technical skills and professional competencies. Thus, it will be interesting to determine how the GRIT profile of these students differs, if at all. Findings of this study provide one of the earliest empirical evaluations of the GRITT framework within a Malaysian TVET context, offering new insights into how distinct academic pathways shape personality traits essential for Industry 4.0 employability.

Theoretical Background

The core values in the GRITT profile (i.e., Global, Resilient, Innovative, Trustworthy, and Talent) not only serve to improve students' holistic personal development but can also be viewed from the cognitive, affective, and conative aspects of behaviours as highlighted in the Theory of Reasoned Action (Fishbein & Ajzen, 1975). The Cognitive aspect is a knowledge domain and refers to students' ability to understand and process information. Meanwhile, the affective domain is related to students' emotions and attitudes, while the conative domain involves the intention to act and behave in order to achieve learning goals. The ultimate goal of this character development is for graduates to develop not only a better understanding of themselves but also positive attitudes and engage in constructive learning behaviour towards achieving specific learning goals.

Global Trait

The importance of a global mindset, as intended in the GRITT profile, is to prepare students for a multiracial and multicultural society that shares the same values, inspires others with high respect, tolerance, and integrity. By developing such traits, graduates can serve and function more effectively in a multicultural environment, contributing positively to society. In understanding the rapidly developing world, fostering a global perspective in education is important for individuals. According to Mehta et al. (2023), a global profile is needed in education to foster students' awareness of global challenges, including understanding diverse cultures, global issues, economic development, and international perspectives. The Malaysian Education Blueprint emphasises the importance of global competence, aiming to equip students with both academic skills and appropriate soft skills, such as being able to easily interact and collaborate in a group, maintain good relationships, and be willing to help and do good to others (Abdullah et al., 2019).

Resilience Trait

Resilience is another core component of the GRITT profile, which aims to foster students' ability to adapt and thrive in the face of challenges and life obstacles. According to Janssen and Van Atteveldt (2023) and Mosanya (2021), resilience is crucial for academic success and personal well-being, especially during crises such as the

COVID-19 pandemic and the online learning process, where students must pace their own learning direction, maintain self-discipline and motivation, and avoid procrastination. The absence of a physical classroom creates challenges such as a less structured learning environment, lack of learning resources and limited communications (Hanaysha et al., 2023). A study by Abramovskih et al. (2019) demonstrated that resilience can be fostered through a clear goal direction and inner motivation in addition to external support from faculty, family and friend.

Innovative Trait

Innovation involves the creative thinking and problem-solving skills of students. By engaging in project-based learning and collaborative tasks, students are empowered to think critically and explore new ideas (Liebenberg et al., 2016). According to Bouranta and Psomas (2024) and Yang (2020), educational frameworks that promote creative thinking and problem-solving help students develop the ability to generate new ideas and approaches. The GRITT module also encourages creative thinking and problem-solving skills, enabling students to develop innovative solutions to problems and challenges they will face in the real world.

Trustworthy Trait

Trustworthiness in the GRITT profile encompasses individuals who adhere to ethics, dare to uphold the truth, and are autonomous in their decision-making. Education has highlighted the criticality of developing a good character or personality among individuals (Yang et al., 2021) by instilling the values of integrity and accountability in students (Urbancová & Vnoučková, 2015). According to Hogan et al. (2022), individuals with higher values of trust and ethics are more likely to succeed in collaborative environments by fostering a culture of respect and cooperation within the group.

Talent Trait

Talent reflects a student's ability to adapt to various situations and their determination to achieve goals and targets. The development of talent is important in identifying and nurturing individual strengths and interests among students (Mullakhmetov et al., 2019). By providing appropriate educational experiences and skill support, these profiles contribute to the holistic growth of students while preparing them for successful careers (Whitfield et al., 2021).

METHODOLOGY

The study employs a survey research design, utilizing a questionnaire to collect quantitative data for descriptive and comparative analyses. The rationale for using the survey design is that it improves the dependability and accuracy of the findings by minimizing subjectivity and bias using standard procedures and measurable measurements. As a result, research findings are more reliable because they can be replicated and verified by independent researchers (Creswell & Creswell, 2018).

Population and Sample

This study involved 259 final-year undergraduate students from a technical university in Malaysia (UTHM), selected from the 2024/2025 academic cohort (the first batch of GRITT initiative implementation at UTHM). The samples were composing of 68.7 percents male and 31.3 percents female students who enrolled in six Bachelor's degree programs: General Machining, Building Construction, Catering, Welding and Metal Fabrication, Electrical and Electronics, and, Refrigeration and Air Conditioning. These programs are offered under two broader academic pathways: the Bachelor of Vocational Education (N = 86) and the Bachelor of Technology (N = 173). The distribution of sample size for each program is as shown in Table 1. The personality traits of graduates of these programs are expected to be different based on skills and outcome orientations. Education programs (B.Edu) is highly emphasized on the development of soft skills (e.g., communication skills and emotional intelligence) whereas Technology programs (B.Tech) emphasized hard technical skills. A convenience sampling strategy was adopted to recruit participants, ensuring that eligible students from both pathways had the opportunity to participate. The sample size is considered adequate to enable comparative analysis between the two groups (Hair et. al, 2018).

Table 1 Number of final-year students based on the field of study, B.Edu and B.Tech Students

Field of study	B.Edu	B.Tech	Total
Machining Operation	32	18	50
Building Construction	27	22	49
Catering/Food Technology	42	17	59
Welding and Metal Fabrication	13	8	21
Electrical and Electronics	28	12	40
Refrigeration and Air Conditioning	31	9	40
Total	173	86	259

Research Instrument

The instrument chosen and used by the researcher is a structured questionnaire. This is because, according Osman et al. (2017), the use of questionnaires as a data collection tool is a precise method for obtaining the necessary data and information. The researcher converted the questionnaire into an online Google Forms form as a platform for data collection. The structure of the questionnaire was adapted and constructed based on previous studies conducted by Paimin and Alias (2013). Each construct from the GRITT instrument was drawn from the cognitive (thinking and strategy), affective (attitude and emotion), and conative (intention) aspects of behaviour. Modifications were made to adapt to the study's background and the student's situation, aiming to achieve the study's objectives. The questionnaire comprises six sections, each reflecting the GRITT framework. The distribution of items across the constructs is as follows: Global – 20 items, Resilience – 20 items, Innovative – 19 items, Trustworthy – 15 items, and Talent – 11 items. A five-point Likert scale was used, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). To assess the reliability of the instrument, Cronbach's alpha coefficients were calculated using responses from 30 final-year students from the previous cohort. The Cronbach's alpha values obtained for each construct were: Global ($\alpha = 0.85$), Resilience ($\alpha = 0.90$), Innovative ($\alpha = 0.92$), Trustworthy ($\alpha = 0.84$), and Talent ($\alpha = 0.94$). All values exceed the 0.80 threshold, indicating strong internal consistency across the GRITT constructs. (DeVellis, 2004).

Analysis Data

Descriptive statistics were performed to summarize the data and obtained information about the characteristics of a data set including the average score (mean) and assess the score variability (standard deviation) (Pallant, 2020). Meanwhile, inferential analysis was applied to observe the relationship or difference between two or more groups in a population (Kothari, 2004). In this study, inferential analysis was used to compare the mean GRITT (Global, Resilience, Innovative, Trustworthy, & Talent) profile of the final-year students. The data findings were analyzed using the independent sample t-test. According to Pallant (2020), a significance level (alpha) of 0.05 is commonly adopted in social science research. The p-value is used to determine whether observed differences between groups are statistically significant. When the p-value is less than 0.05, the result is considered statistically significant. Conversely, if the p-value is greater than 0.05, the difference is not statistically significant, and the null hypothesis is retained (Ostertagová et al., 2014).

RESULT AND DISCUSSION

The findings indicate that the students' overall assessments on the Global, Resilience, Innovative, Trustworthy, and Talent profiles are at a moderate level, as shown in Table 2.

Table 2 Descriptive analysis for Global, Resilience, Innovative, Trustworthy, and Talent Profile of Students.

Part	Profiles	Mean (M)	Standard Deviation (SD)	Level
B	Global profile	3.16	0.41	Moderate
C	Resilience profile	3.17	0.40	Moderate
D	Innovative profile	3.28	0.44	Moderate
E	Trustworthy profile	3.19	0.44	Moderate
F	Talent profile	3.35	0.62	Moderate

Note: N=259, Level: Weak = 1.00 – 1.99, Low = 2.00 – 2.99, Moderate = 3.00 –3.99, High = 4.00 – 5.00

There are two items that show interpretation at a low level and are below the average mean score, namely Item G2 (*I like to speak in public*) and Item G4 (*I like to start conversations with people I don't know*) for Global traits with mean score 2.99 (*S.D.*=0.81) and 2.97 (*S.D.*=0.87) respectively. The traits reflect low communication skills which provide a sign that speaking proficiency of Malaysian students remains a challenge even though learning process highly emphasise on comprehensive communication training especially for the teacher training program (education program). According to Ostertagová et al. (2014), activities involving pair or group work can help reduce speaking anxiety and improve communication skills whereas students who do not have a strong motivation and desire to speak in front of people or talk to others may feel unmotivated to learn, which can lead to anxiety. Therefore, a more interactive and collaborative learning approach can help students feel more comfortable and confident in speaking in front of others.

There are also three Resilience items that score below the average mean score, namely the statement for Item R1 (I prefer to be a leader rather than a follower), Item R3 (I like to act as a leader in group activities) and Item R7 (I like to make important decisions alone without expecting help from others) with score mean M_{R1}=2.94 (S.D.=0.81), M_{R3}=2.95 (S.D.=0.83) and, M_{R7}=2.97 (S.D=0.82) respectively. These items represent leadership traits which indicate that nurturing leadership characters among students should be made a priority if universities are serious about shaping a generation that can serve as role models for others. Leadership is a critical trait of resilience particularly in times of uncertainty where leaders should stay focused and remain calm to make well-reasoned decisions, both of which a sign of a stable and high emotional intelligence (Yan & Nie, 2025). Overall, the results indicate that the GRITT profile scores for both groups fall within a moderate range across the five constructs

A comparative analysis between the two fields of study (education and technology programs) revealed another interesting finding, as shown in Table 3.

Table 3 Mean Differences in GRITT Dimensions between B. Edu and B. Tech Students

Study Field	Profile	Mean (M)	Standard Dev. (SD)	t-value (Sig)
B. Edu	Global	3.14	0.42	-1.13 (0.26)
B.Tech		3.20	0.39	
B. Edu	Resilience	3.13	0.39	-2.40 (0.02)
B.Tech		3.26	0.42	
B. Edu	Innovative	3.21	0.41	-3.36 (0.00)
B.Tech		3.41	0.47	

B. Edu	Trustworthy	3.13	0.44	-3.15 (0.00)
B.Tech		3.31	0.43	
B. Edu	Talent	3.20	0.55	-5.33 (0.00)
B.Tech		3.64	0.66	

Note: NB_{Edu}=173, N_{BTech}=86 ; p<0.05 (two-tailed)

An independent samples t-test revealed no significant difference in the Global profile between B.Edu and B.Tech students, $t(181.46) = -1.13$, $p = .26$. However, significant differences were found for Resilience, Innovative, Trustworthy, and Talent profiles ($p < .05$). Negative t-values indicate higher mean scores for the final year B.Tech compared to B.Edu across all profiles. The strongest difference between study fields appears in the Talent profile, with a $t(145.26) = -5.33$, p<0.05. B.Tech students undergo 1-year industrial attachment (work-based learning) in industry while B.Edu students undergo a 4-months teaching practicum in secondary school and 2-months industrial attachment in industry. The longer time spent in industry might influence the higher GRITT levels among B.Tech students and significant character development by exposing the students to real-world work scenario.

The level of Global profile among final-year students did not show a significant difference based on B.Edu. and B.Tech programs. This finding implies that the type of academic program (education vs. technology) does not meaningfully influence students' Global profile and exposure to global perspectives may be embedded across curricula in both programs. According to Hannan et al. (2020), strong social support can improve students' emotional well-being while encouraging them to take social responsibility for their peers. Students who have positive social relationships with their friends tend to show more attention and support, which facilitates an effective learning process. This is expected to enable students to develop strong cognitive abilities and even enhance their global value in communication skills.

The Resilience profile of final-year students demonstrated that almost all items were scored at a moderate level. The level of resilience among final-year students shows a significant difference between the B. Edu and B.Tech programs, with a t(159.04) = −2.40, p<0.05. According to Luo et al. (2022) and Mat and Maat (2020), students who are involved in activities that interest them and give them meaning are more likely to exhibit a resilient attitude, as well as commitment, in their efforts to complete their study program. The desire to achieve goals also affects the level of students' resilience. Students with clear and meaningful goals also tend to take necessary risks to achieve them. They are also more than willing to face difficulties and continue to strive despite any obstacles. Emotions and motivation also play a crucial role in shaping an individual's leadership style. According to Barasa et al. (2018), students who have strong social support from peers and mentors tend to be more courageous in taking risks and persevering in their efforts. Additionally, students with a solid understanding of resilience and leadership concepts tend to be more willing to face challenges and risks. Studies show that students who have a growth mindset are believed to have the abilities and intelligence (Jia Chzin & Surat, 2021) and are more likely to face challenges and take risks (Minh & Long, 2023).

The study's results identified the Innovative profile of final-year students at UTHM, showing that almost all items scored at a moderate level. Final-year B.Tech students showed a higher level of Innovative profile than B.Edu students, with $t(150.81) = -3.36$, $p < 0.05$. Problem-solving skills require students to take the initiative and strive to find solutions. Nuraida (2017) outlined that creative teaching techniques can improve students' ability to solve problems creatively, which shows that active involvement in the learning process is important. This indicates that students need to be encouraged to take the initiative and strive in the problem-solving process, which is a crucial element in their Innovative profile. From the lens of cognitivism, students who lack good problem-solving skills may face difficulties in analysing and understanding the problems they encounter. According to Septiana and Ibrahim (2020), students are often unable to identify the steps needed to solve problems, causing them to take longer to find solutions. In addition, Ismail. et al. (2020) emphasised that the application of critical and problem-solving skills in the higher education curriculum is important for developing students who can adapt to changes and challenges. Students who have a positive attitude and high motivation are more likely to think creatively and find innovative solutions to the problems they face. Furthermore, Abdul

Hamid and Ismail (2020) stated that student involvement in teamwork activities can improve their creative thinking skills, which in turn helps in the problem-solving process. In TVET, the integration of complex conceptual understanding and technical skills has been shown to foster critical thinking and analytical skills that are essential for effective communication in professional settings (Sulaiman et al., 2024).

Final-year B.Tech students demonstrated higher Trustworthiness levels than those from B.Ed programs, with a $t(173.31) = -3.15$; $p < 0.05$. The means analysis demonstrated that almost all items showed moderate levels. Yulia Budiarti et al. (2015) stated that individuals with low self-confidence tend to experience poor mental health and integrity issues. Research has shown that students with integrity issues have higher motivation to learn and interact positively with their peers (Zainuddin & Mydin Kutty, 2022). In addition, Md. Dazali and Awang (2017) study suggested that self-confidence has a significant and positive relationship with academic achievement. When students lack confidence in their abilities, they may be hesitant to take risks in decision-making, as well as struggle to make ethical decisions. Therefore, students must develop self-confidence and autonomy (Trustworthiness) in making decisions to maintain psychological well-being in the learning process. Students who feel less autonomous may not dare to take the initiative in situations that require ethical decisions. On the other hand, students who dare to report problems and speak the truth show initiative and responsibility in their actions. According to Rahmi (2019), self-efficacy in decision-making is important for building individual confidence in facing challenging situations. Furthermore, when students do not feel they have the right (autonomy) to make decisions, they may rely on others to determine their actions, thus reducing their sense of responsibility for the decisions made.

CONCLUSION

This study revealed that final-year students exhibited moderate development across all five GRITT dimensions, suggesting that character formation is present but not yet optimal within the current academic ecosystem. Significant differences identified in the Innovative, Trustworthy, and Talent constructs indicate that extended industrial exposure in the Technology programs contributes meaningfully to higher levels of workplace-relevant traits, including problem-solving autonomy, ethical decision-making, and adaptability. Meanwhile, the absence of differences in Global and Resilience traits suggests that these attributes may be shaped more by shared institutional culture, peer interaction, and general learning climate rather than pathway-specific training.

As one of the first empirical studies examining the implementation of the GRITT framework in a Malaysian TVET university, the findings contribute important early evidence for evaluating and refining character-based competency development. The results highlight the need to strengthen GRITT attributes through intentional curriculum design, structured industry partnerships, reflective learning strategies, and co-curricular programs that emphasise communication, leadership, and global engagement. Future research should expand across multiple institutions, incorporate longitudinal approaches, and integrate qualitative perspectives to better understand how GRITT traits evolve over time and across learning environments.

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