

Exploring Academic Performance Among Gifted and Talented Students: A Comprehensive Review

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Abstract

This study presents a Systematic Literature Review (SLR) conducted in accordance with established guidelines, employing PRISMA 2020 to scrutinize 16 carefully chosen research journals based on relevant keywords. The research scope focused on understanding the intricate factors contributing to sub-excellence among gifted students. The selected journal publications span the years 2016 to 2022, ensuring an up-to-date overview of the scholarly landscape. Our meticulous analysis encompassed methodology design, research focus, and experimental findings. The systematic review analysis reveals that several key factors significantly influence academic excellence in gifted students, prominently including motivation, emotional well-being, and students' perspectives on their educational experiences. Moreover, individual factors emerge as pivotal elements in enhancing excellence among this cohort, comprising self-regulation, goal assessment, academic self-perception, academic self-concept, learning goal orientation, resilience, self-efficacy, task meaningfulness, negative self-concept, learning motivation, personal identity, and psychomotor skills. The outcomes of this study provide comprehensive insights that offer new dimensions, particularly in the context of teaching and learning for gifted students in Malaysia.

Keywords: Sub-Excellence, Gifted Students, Systematic Literature Review (SLR)

Introduction

Gifted and talented students in the education system often have unique needs and abilities that require specialized educational approaches. Recognizing the existence of gifted and talented students within our education system is not only a testament to the richness of human potential but also a responsibility. It is our duty to nurture, challenge, and empower

these young minds to reach their full intellectual and creative capacities (Worrell & Erwin, 2011).

The education system, with its commitment to providing equitable learning opportunities for all students, has embarked on a journey to better understand and address the specific needs of gifted and talented learners (Lockhart et al., 2022). In this pursuit, educators, administrators, and policymakers seek to create environments where these students can thrive, explore their interests, and push the boundaries of knowledge and creativity. However, is not without its challenges. Identifying gifted and talented students, developing appropriate curricula, and ensuring that their social and emotional needs are met are all crucial aspects of this endeavor (Shearer, 2020).

Throughout history, numerous gifted and exceptionally talented individuals have emerged, their ideas transcending their own lifetimes and leaving an enduring mark on a wide array of human endeavors, encompassing fields such as science, economics, fine arts, healthcare, spirituality, and global security (Ishak & Bakar, 2017). A classic example is Albert Einstein, who is still associated with the word "Gifted" to this day. To begin this study, it is important to define what is meant by "intelligence" and "sub-excellence". Intelligence can be described as exceptional innate ability (Lamanna et al., 2019) that generally places talented individuals in the top 10% among students, while sub-excellence can be described as a consistent and significant discrepancy between potential and performance (White, Graham, & Blaas, 2018). Sub-excellence is different from low achievement, where sub-excellence is characterized by a difference between a student's achievement and the ability or potential that the student could or should achieve (Kanapathy et al., 2022).

Furthermore, research on gifted and talented students is increasingly gaining attention in the world of education research to strengthen a more holistic education system. Typically, gifted and talented students are perceived as excelling in all their endeavors, owing to their exceptional academic performance and multifaceted potential in areas such as academics, creativity, leadership, visual arts, performance, and more, especially when compared to their peers of the same age (Aziz et al., 2021). According to Hately and Townend (2020), the expectation that gifted students will always achieve high performance is one of the most sensational myths.

There are many different causes that contribute to underachievement among gifted students, such as bullying problems, socio-emotional factors, unmet academic needs, and boredom (Cornejo-Araya et al., 2021). Regrettably, there is a dearth of conclusive evidence regarding the extent of underachievement or low performance within the gifted student population. However, numerous studies have been undertaken to explore this matter. These investigations have probed various aspects, including the challenges associated with defining and identifying giftedness, and the potential pitfalls of placing gifted students in classrooms with peers of different needs, which could lead to misunderstandings and misjudgments by their fellow students" (Bishop & Rinn, 2019). Misdiagnosis and misunderstanding have the potential to contribute to decreasing underachievement among gifted students (Worrell, Subotnik, Kubilius & Dixson, 2019). Therefore, the purpose of this systematic review paper is to highlight the specific factors that influence underachievement among gifted and talented students.

Methodology

This literature review adheres to the rigorous and impartial screening process recommended by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses

(PRISMA) guidelines, as outlined by Page et al. in 2021. Figure 1, the PRISMA flowchart, provides a visual representation of the distinct stages in this systematic literature review, encompassing the identification and inclusion of records as well as the reasons for exclusion.

This study delved into two primary research questions. The initial question pertained to the factors that lead to underachievement among gifted students, while the second query sought to uncover the origins of academic underperformance within this same cohort. To address these questions comprehensively, the researchers relied on the literature as their principal source, drawing upon Tranfield, Denyer, and Smart's (2003) suggested analytical approach to structure the ensuing report, as outlined in Section 3.0 below.

Findings and Screening

The study on underachievement among gifted students was included in a database search. Scopus, Cambridge Journals Online, Index to Theses, Oxford University Press (journals), Science Direct, ERIC (Education Resources Information Center), Emerald, Taylor and Francis Group, and IEEE were used to search for potentially relevant articles. Interest in studies related to underachievement among gifted students has increased over the past decade, driven by several factors, including changes in the global economic landscape and rapid advances in technology, which have led to significant changes in the types and availability of studies in most developed countries (White et al., 2018). However, for this study, research conducted between 2016 and 2022 was selected. Researchers used different combinations of keywords when conducting searches, such as "low achievement among gifted students," "gifted students and underachievement," "talented students and underachievement," "smart students and low achievement," "smart students and underachievement," "underachievement and factors involved," and others. These articles were then downloaded and prepared for further scanning and collection. Specific inclusion criteria were used to eliminate research that was not relevant to the review scope. The following are the study's inclusion criteria

- i. It is based on empirical research.
- ii. Collaborative identification related to underachievement in gifted students.
- iii. Focusing on one or more collaborative tasks.
- iv. Including both school and university students in the process.

A total of 235 journal articles were initially gathered and subjected to a rigorous screening process across the specified databases. Ultimately, only 172 journal articles satisfied all the designated criteria and proceeded to the subsequent search phase. Articles that either did not incorporate or appropriately address the identification of giftedness among students were excluded from the initial pool of 172, leading to the identification of 66 promising publications (refer to Fig. 1). Subsequently, three experts were chosen to evaluate the quality and rigor of these 66 studies, as detailed in the forthcoming section.

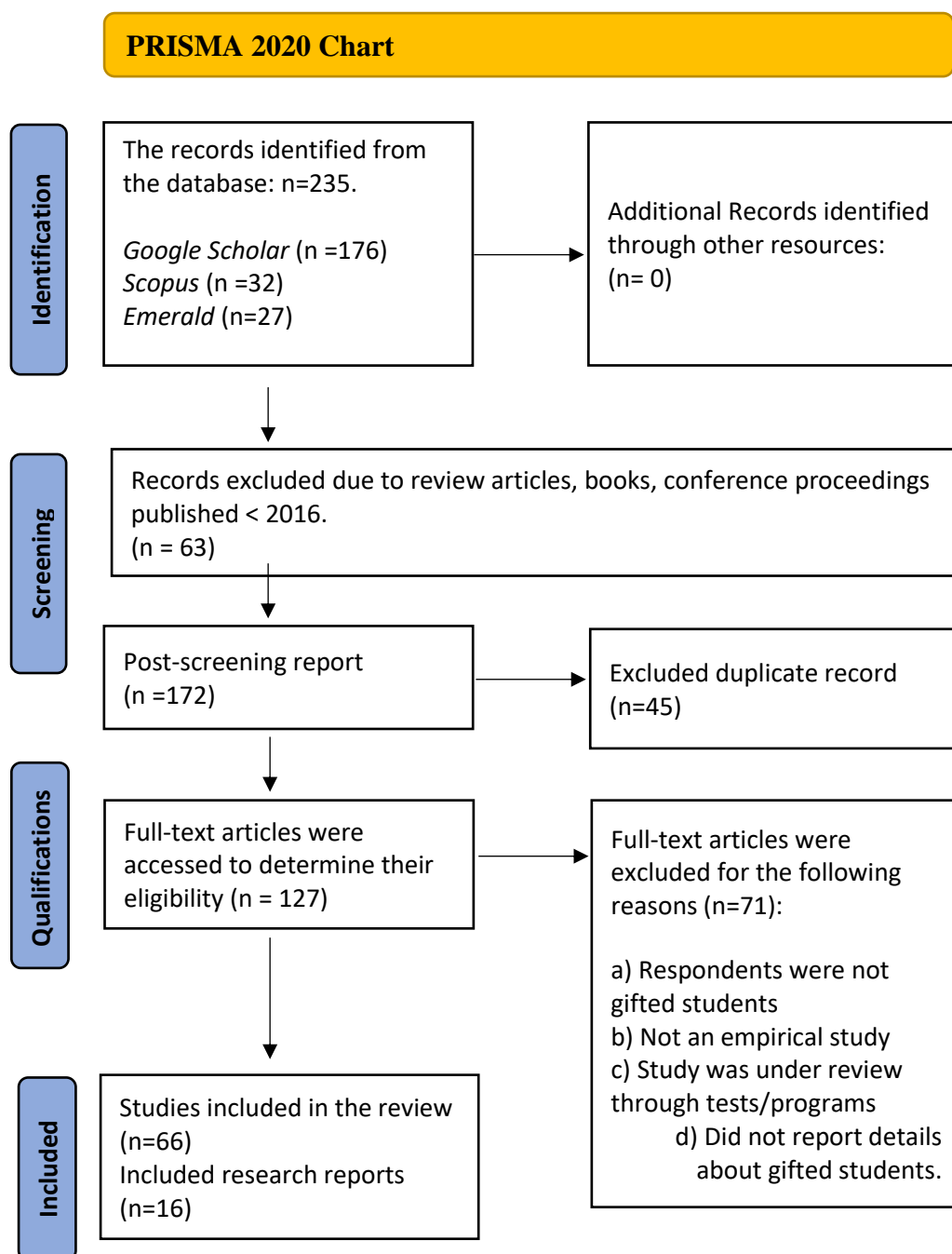


Fig. 1 Research flowchart

Source: Adapted from Page et al (2021)

Quality Assurance

Three experts in the relevant field provided scores of 1 to 3 if the following criteria were met

1. To what extent is the explanation of the study relevant to the application of sub-eminent among gifted students?
2. Is the activity stated in-depth in the journal article?
3. To what extent are the tools and analysis appropriate?
4. To what extent is the emphasis of the article (including scope and sample) on the research conducted?

5. Will the expected results include answers to the questions?
6. To what extent can the results be generalized to the target population?

The weighting of each article is determined by summing up the scores for each of the six dimensions provided by the three experts and based on the available evidence (18 points). The researcher rated articles as low quality (1) if they received six or fewer points, moderate quality (2) if they received seven to thirteen points, and high quality (3) if they received more than thirteen points. The content of the journal articles was determined by a quality audit, which revealed that 10 articles were classified as high quality, 6 as moderate quality, and 50 as low quality. Although the details contained in the excluded articles emphasize the aspect of sub-eminent among gifted students, only articles with high and moderate scores were used in this study, which were 16 articles. The information about the selected articles is shown in Table 1.

Table 1
Selected Summary of Literature

Num.	Articles	Research Objectives	Research Findings
1.	Almukhambetova and Torrano (2020)	his study is qualitative in nature and aims to explore the adjustment of gifted students to university and the issues they face in the process.	Using SDT as a lens, this study identified that the learning environment, both in school and university, as well as the influence of important people in students' lives (parents, peers, teachers), play a crucial role in facilitating or hindering the self-determination of gifted students in their decision-making, adjustment, and achievement.
2	Aziz et al. (2021)	This study aims to investigate the characteristics of gifted and talented students, as well as the challenges they face and the counseling approach needed to address all related issues in order to facilitate their learning and development.	There may be issues related to the characteristics of gifted and talented students. These include a lack of understanding by parents, educators, and health professionals combined with interpersonal difficulties that are then mislabeled and lead to underachievement among students.
3.	Bakar and Brody (2021)	In this study, the explanation and discussion of the framework and guiding principles of counselling initiatives for gifted and	The development of a counseling framework strategy that evolved from the collaboration between PERMATA Pintar, Universiti Kebangsaan Malaysia, and John Hopkins Centre for Talented

		talented students in the Malaysian context, particularly at PERMATA College, are presented.	Youth (CTY) is concrete evidence that Malaysia is serious about ensuring the well-being of the future generation of the country.
4.	Barbier, Donche, and Verschueren (2019)	This study aims to enhance understanding of the factors that hinder and facilitate academic achievement of gifted students in the first and second grades of secondary education.	This qualitative research provides benefits for theory and practice. The components and processes of the Achievement Orientation Model (AOM) seem to be applicable in this special education context. Allowing students to speak for themselves is a source of information that cannot be underestimated. Genius students from the first and second years of secondary education do not have any problem expressing their experiences, disappointments, and needs effectively.
5.	Bennett-Rappell and Northcote (2016)	This research is aimed at utilizing established theoretical knowledge to determine practical strategies for reversing and remedying underachievement among gifted students. The study utilizes a specifically designed Creative Writing Program and employs a quasi-experimental design to explore the effects of teaching strategies on reversing underachievement among two gifted students.	The Creative Writing Program was found to have an effect on students' negative emotions, underachievement behavior, and social awareness. Additionally, several teaching strategies have been identified as successful in facilitating the achievement potential of gifted students who have low academic achievement through one-on-one teaching, positive teacher introductions, and differentiation.
6.	Desmet and Pereira (2022)	This study investigates the effectiveness of affective curriculum interventions in addressing	"The results of both studies on the AME model are amazing because they show initial support for the effectiveness of the AME model in addressing academic

		underachievement issues among gifted students.	underachievement issues among gifted students. Specifically, the results of these studies provide early evidence that focusing on achievement motivation through positive self-perceptions, goal-setting, and self-monitoring can enhance achievement and behavioral engagement for some students."
7.	Ijak, Rahman, and Omar (2017)	This study aims to identify the relationship between learning environment and academic achievement and to identify perceptions of the learning environment among three groups of academically gifted students.	As a result of this study, the components of the learning environment have a positive relationship with achievement. Although the relationship is relatively small, it indicates that a better learning environment is related to better achievement. Therefore, a positive and conducive learning environment is crucial for enhancing the development of students' natural abilities.
8.	Ishak and Bakar (2017)	This study aims to implement an identification program to uncover the talents and abilities of students who require access to early education programs for gifted students. The National Gifted Center of Malaysia, also known as PERMATApintar™, uses two standardized tests to measure ability groups: intellectual, creativity, socio-affective, and sensorimotor.	The sensorimotor abilities (strength, endurance, reflexes, and coordination) were detected through teachers' records of student learning behavior during a three-week school holiday program conducted at PERMATApintar™ Center, Universiti Kebangsaan Malaysia. The records were a subjective assessment carried out daily based on the observation of teachers during the teaching and learning process while the students were in the camp.
9.	Kamarudin, Kamarulzaman, and Ishak (2018)	This study highlights the attitude of students towards mathematics. Student attitude is one of the elements that require	Age and gender differences are common elements in assessments because they determine the subject's suitability for interacting with the

		discussion in providing appropriate education for gifted students. Specifically, students' attitude towards a particular subject contributes to their achievement in that subject.	situation and context. Different situations or contexts will generate different results for the age and gender factors of participants, which sometimes favor women over men or vice versa. In the case of the attitudes of gifted students towards mathematics, there is no significant difference between male and female gifted students. In addition, student interest in mathematics is not affected by increasing age.
10.	Kanapathy et al. (2022)	This study examines the weaknesses of gifted students in the subject of Chemistry. Both qualitative and quantitative studies were conducted in this study. The survey involved 63 gifted students from the GENIUS@Pintar Negara center.	The study findings show that gifted students are interested in learning Chemistry but require continuous motivation from peers and teachers to achieve success.
11.	Mofield and Parker Peters (2019)	This study compares the differences between fixed and growth mindset beliefs about genius, dimensions of perfectionism (concern over mistakes, doubt about actions, personal standards, organization), and achievement attitudes among sub-excellent (n=15) and gifted (n=169) students in Grades 6 to 8, and examines the relationship between mindset beliefs and dimensions of perfectionism.	The results of this study provide a clearer picture of the relationship between sub-excellence, perfectionism, implicit intelligence theory, and achievement attitudes, and provide guidance for affective interventions.
12.	Shakir and Mohd Ali (2021)	This study examines the history and current practices of education for	The conclusion shows that there is a lot of room for improvement in the education of gifted

		gifted students in Malaysia.	students in Malaysia, and there is a need to find the best system to meet the needs of gifted students in Malaysia.
13.	Siegle (2018)	In this study, the researchers examine the factors associated with underachievement and suggest strategies to address underachievement among gifted students.	Some students naturally exhibit underachievement during their high school years. However, these students can turn their underachievement into excellence when they encounter caring teachers or mentors. Others may turn their underachievement around when they are in a healthier environment. Therefore, appropriate strategies need to be employed to address the issue of underachievement among gifted students, particularly for positive development.
14.	Alexopoulou, Batsou, and Drigas (2019)	This study aims to investigate the unique personality traits of resilient gifted students. It aims to develop strategic prevention and intervention methods to enhance the resilience of students who are at risk of obtaining low academic outcomes.	The findings of the study indicate that improving resilience among gifted students is crucial in helping them to overcome difficulties in adapting to family, school, and social environments, leading to the establishment of good physical and mental health.
15.	Lamanna, Vialle, and Wormald (2020)	The low academic achievement among gifted students has the potential to cause emotional, social, and behavioral issues due to a mismatch between the learning needs of gifted students and what is offered in the curriculum. This highlights the importance of identifying factors contributing to	The study findings revealed that having a challenging and appropriate curriculum, suitable solutions, and positive teacher-student relationships contribute to reversing low academic achievement. These findings have the potential to be implemented in the classroom to help reverse such low achievement.

		poor academic achievement so that the issue can be addressed.
16.	Worrell et al. (2019)	This study is about recognizing several major debates in the field of education for gifted students and providing a summary of the main conceptual frameworks used for gifted education, then dividing them into three categories: ability-focused frameworks, talent development frameworks, and integrative frameworks.
		The models discussed in this study highlight the need for quality talent development across childhood and adolescence, which requires a greater communal investment. It is clear that without this commitment, there will be consequences such as a lack of gifted individuals in the future, which would lead to losses for both individuals and society.

Findings and Discussion

Main Characteristics of the Research

This section provides a brief overview of the study, such as the research process over time and the student groups (participant types) involved. The findings of this study indicate an interest in studying low achievement or underperformance among gifted students since the late 1950s. Over 60 years have provided evidence and reflection on the topic, but there is still a need for more research and investigation (Cornejo-Araya et al., 2021). According to White et al. (2018), interest in underachievement among gifted and talented students has increased in the last decade due to several converging influences. These include changes in the global economic nature and rapid advances in technology that have brought about significant changes in the types and availability of jobs in most developed countries. Over the past decade, research addressing the issue of underachievement in gifted students has gained widespread attention within academic circles. Notably, the volume of such studies has exhibited a steady rise since 2012, a phenomenon that can be attributed, in part, to the growing prevalence of internet technology (Shakir & Ali, 2021).

Simultaneously, recent research investigations have unveiled disconcerting findings, with the existing literature pointing to a range of potential factors contributing to underachievement among gifted students. These factors include initial circumstances, the burden of high expectations, inconsistencies and resistance, inappropriate classroom settings, challenges related to competition, perfectionism, and conflicts in values. Moreover, an examination of literature reviews focusing on the identification of gifted students reveals the existence of diverse programs and recognition initiatives in numerous countries, each employing distinct assessment tools and procedures (Ishak & Bakar, 2017). Indeed, life events have the capacity to reshape a student's academic trajectory, including shifts in family dynamics like the birth of a new sibling, parental divorce, remarriage, or transitioning to a new school. Parents and educators who remain cognizant of these potential challenges can proactively work to mitigate or prevent their impact (Siegle, 2018). Given that underachieving gifted students comprise a diverse and heterogeneous group, they display a wide range of

individual interests and abilities. Furthermore, multiple factors influence the occurrence of low achievement in this gifted and talented student population. In summary, it remains crucial to maintain a consistent level of motivation for gifted and talented students, enabling them to unlock their full potential, and simultaneously, the vital role of the environment in fostering a positive atmosphere for these exceptional students should not be underestimated.

Conclusion

The researcher conducted a literature review of 235 studies published from 2016 to 2022 using the Tranfield et al (2003) literature review approach to identify online the issue of underachievement among gifted students. Therefore, this review provides a systematic literature analysis that exposes the issue of low achievement or underachievement among gifted students. In summary, it is important for teachers, counsellors, and relevant parties to receive training in the care and education of gifted and talented students. This initiative will provide opportunities and space for gifted students to further develop their potential and talents in a professional manner. Furthermore, due to the negative effects that can arise from underachievement among gifted students, studies like this will enable stakeholders to better understand trends in this field of knowledge, as well as areas that require more attention for future research.

Furthermore, this research endeavors to compile and structure information that can serve as a valuable resource for future scholars engaging in investigations related to this subject matter. Given the intricate nature of academic underachievement, it becomes imperative to craft individualized intervention strategies aimed at enhancing the academic performance of gifted and talented students. In the grander scheme, recognizing these students as potential assets to any nation underscores the necessity to identify them and furnish them with tailored educational opportunities that stimulate the realization of their full potential, thereby allowing the country to harness the benefits of their presence.

Research Implications

Theoretical Implications

First and foremost is holistic models integration. The study underscores the need for a holistic understanding of factors influencing underachievement among gifted students. The identified elements such as motivation, emotional well-being, and self-regulation could be integrated into existing theoretical frameworks, fostering a more comprehensive approach to gifted education theories. Secondly is framework enhancement. The study categorizes existing frameworks into ability-focused, talent development, and integrative frameworks. These could be refined and enhanced by incorporating the nuanced factors revealed in the research. This refinement would contribute to the evolution of frameworks that better capture the complexities of gifted students' academic experiences.

In addition, lifespan development integration. By acknowledging the impact of life events on academic trajectories, the research offers an opportunity to integrate lifespan development perspectives into theoretical models. This could enrich theories on the long-term effects of life events on the academic journey of gifted individuals, providing a more holistic understanding.

Practical Implications

Primarily is revised educational approaches. The research challenges traditional perceptions of gifted students as uniformly excelling. Practical implications include a shift in educational approaches, recognizing that gifted individuals may face challenges leading to underachievement. This calls for tailored strategies to address the diverse needs of this population, emphasizing individualized interventions. In the second place is identification and intervention strategies. Practical applications involve the development of targeted identification methods for at-risk gifted students and the design of interventions tailored to their specific challenges. Educators and policymakers can implement these strategies to create more inclusive and supportive learning environments for gifted students.

Last but not least is dynamic educational trajectories. The study hints at the impact of life events on academic trajectories. Practical contributions involve recognizing the dynamic nature of academic development among gifted students. Educators can implement flexible and adaptable support systems that consider the evolving needs of gifted individuals over time.

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