A Model for Improving the Capabilities of Talented Students: A Phenomenological Study

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Abstract

Background: Higher education institutions have maintained a longstanding commitment to the education and development of academically talented students, consistently seeking to identify, attract, empower, and support this population.

Objectives: The current research has developed a holistic framework intended to mitigate the available obstacles for academically talented students' success and facilitate favorable outcomes.

Methods: This phenomenological study explored the experiences of 50 talented students, specifically examining the challenges they encountered. Through in-depth interviews, focus groups with experts, and a comprehensive literature review, a practical guide was developed, grounded in Keller's motivational model, to identify and manage challenges and empower gifted learners.

Results: The research identified a central theme, "the narrow alley of talented students," and six sub-themes. Through the information and concepts extracted from interviews, expert focus group discussions, and a comprehensive literature review, the study developed a conceptual model comprising four key categories: Attention, relevance, confidence, and satisfaction. This model effectively transformed abstract explanatory concepts into practical guidelines and actionable solutions.

Conclusion: The proposed strategies within this study offer remarkably beneficial. Overlooking the unique needs of these individuals can culminate in decreased motivation and misallocation of financial resources. The findings of this research can be leveraged by students, professors, and educational administrators to empower these invaluable assets to the academic system.

Keywords: Students; Motivation; Education; Qualitative Research; Universities; Health Professions

Background

The identification, recruitment, development, and support of talented students have long been a central focus for numerous higher education institutions (1). The concept of 'talent' encompasses a multifaceted construct, encompassing not only high cognitive abilities but also academic excellence, creativity, and motivation (2). To be recognized as a talented student, individuals typically exhibit a confluence of intellectual capacity, intrinsic motivation, strong self-confidence, and creativity (3). Renzulli (2012) proposes that, as outlined in the three-ring model, a comprehensive identification of talent should encompass not only cognitive ability but also creativity and motivation (4).

A growing body of research has focused on the experiences of talented students in recent years (2). While universities actively seek to enroll talented students, empirical evidence regarding their successful transition to higher education across diverse academic settings remains limited (5). Notably, talented students encounter a range of challenges and obstacles beyond their intellectual capabilities. The successful adaptation

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and academic achievement of these students within the higher education system are significantly influenced by the support provided by the university, family, and societal structures (5).

While possessing inherent talent is a prerequisite, it does not invariably translate into superior academic performance among talented students (2), and a significant proportion of such students fail to realize their entire potential (6). A critical factor impacting academic achievement in this population is a deficiency in motivation (7), a concern that has long preoccupied educators, parents, and researchers. It impedes both academic progress and the overall self-actualization of these students (8). Fostering and sustaining motivation is paramount for nurturing talent and maximizing academic performance in this population (7). Empirical research has consistently demonstrated a mediating role motivation in the relationship between for conscientiousness and openness to experience and subsequent academic success (6). Establishing a conducive socio-emotional environment exerts a profound influence on various aspects of student self-esteem, motivation, self-perception, academic performance, and successful social integration (2).

Instructional design constitutes a cornerstone of appropriate learning approaches, specifying determining learner needs, developing relevant instructional materials, and facilitating the acquisition of new knowledge and skills. Despite the constructivist learning approach, it is imperative for students to engage in the learning process in an effective and active manner. Motivation serves as a critical catalyst for active student engagement in the learning process (9). Its influence extends beyond mere participation, significantly impacting the overall learning process and its ultimate outcomes (10). Keller's motivational model, renowned for its adaptability, has proven effective in enhancing learning motivation and improving outcomes across diverse domains (11). Keller conceptualizes motivation as an individual's "expectations, choices, and commitments," emphasizing the core question of "why we do what we do" (9). Empirical evidence from previous research supports the efficacy of Keller's model in sustaining and augmenting student motivation (12-15). Dincer's (2020) metaanalysis revealed that the type of educational materials employed has a more pronounced effect on younger learners, with prolonged exposure to these materials correlating positively with increased student motivation (16). A significant disparity between students' needs and

the provision of university programs can culminate in diminished student motivation (17). Additionally, developmental perspectives underscore the dynamic nature of talents, suggesting that they evolve over time rather than remaining static (7). When educational systems fail to nurture students' potential, it results in diminished motivation among learners (17). The holistic development of talented students necessitates an interdisciplinary approach, which in turn demands adequate human and material resources within educational institutions to foster both academic and social growth (2). While theories have consistently emphasized the pivotal role of motivation, most research has been primarily concerned with identifying motivational characteristics and their influence on student growth. Consequently, our understanding of the educational implications and outcomes for highly motivated students remains relatively limited (18).

To facilitate meaningful improvements, university stakeholders must conduct a comprehensive analysis of the current state of affairs and students' experiences with existing services. By identifying both the strengths and weaknesses of these services, university officials can implement targeted strategies to optimize student support and maximize their potential.

Objectives

This research aims to explore the obstacles encountered by talented students and to develop a framework designed to optimize their potential.

Methods

Type of the Study: This research employed a phenomenological approach to investigate the students' lived experiences, specifically focusing on the challenges they encountered. Phenomenology, as a research methodology, centers on understanding human experiences through in-depth interviews, narratives, and observational accounts, emphasizing participants' conscious experiences, including their judgments, perceptions, and emotional responses (7). Furthermore, phenomenology delves into the unique significance of these experiences, examining how events manifest themselves to us. It also seeks to uncover the origins of their understanding and insights into their lived experiences (8). Employing the framework of hermeneutic phenomenology, this study investigated the lived experiences of talented medical science students to develop a model for optimizing their potential. Hermeneutic methodology posits that comprehending human experiences necessitates a

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holistic consideration of their contextual milieu, encompassing historical, environmental, and textual background. This approach underscores the temporal continuity of events, from the past to the present. Moreover, researchers are urged to prioritize an understanding of the underlying intentions and motivations that drive these social phenomena, rather than solely focusing on the subjects' observable behaviors (19).

Part 1

Participants: A purposive sampling approach was employed to select 50 participants for this study. The participants were drawn from the Talents Committee at Mashhad University of Medical Sciences. A list of eligible students, including their names and contact information, was obtained from the university's talent unit. To ensure a diverse sample, selection criteria included factors such as field of study, academic semester, living arrangements, marital status, gender, and age. The demographic characteristics of the participants are summarized in Table 1.

Table 1. The	demographic	characteristics	of the	participan	ts
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School					
Male	Female	Age (mean (SD))	GPA		
	School of Medicine				
12	6	21.11 (0.87)	16.97 (1.22)		
School of Health					
3	3	22.17 (1.95)	17.34 (1.02)		
School of Dentistry					
3	4	21.2 (2.04)	17.18 (1.02)		
School of Nursing and Midwifery					
4	11	23.27 (3.13)	18.30 (0.44)		
School of Para-medicine					
2	2	21.75 (2.16)	16.62 (0.49)		
Total					
24	26	21.1 (2.35)	17.51 (1.09)		

GPA: Grade point average

Data Collection: Data collection was facilitated through semi-structured individual interviews. An open-ended interview guide served as a framework for inquiry. The key areas of exploration during interview included:

- 1. How did you feel when you were selected as a talented student?
- 2. Tell your story about the challenges you encountered in this field.
- 3. What challenges have you experienced in this field?
- 4. Explain your feelings and perceptions from joining the talent team.

- 5. What do you compare being a talent to?
- 6. What items are important to you? What are your requirements and challenges?
- 7. What are your experiences and perceptions about family, academic, and social factors associated with you?
- 8. If there are any additional problems, please state them. Could you provide instances to help me understand your meaning better? If you want to discuss anything else, feel free to let me know.

Prior to commencing the interviews, participants were provided with a detailed explanation of the study's objectives and its potential applications. Following this, informed consent was obtained from all participants through verbal agreement. Participants were explicitly informed of their right to withdraw from the study at any time. To ensure confidentiality, participant names were replaced with letters in all research reports. No incentives were offered to participants for their involvement. Interviews were conducted remotely via the WhatsApp and Telegram platforms, with a mean duration of 40-60 minutes. Participants were guided through a structured interview protocol, responding to sequentially presented questions via voice messages. Moreover, probing questions were asked in a timely manner as necessary throughout the interview process. Participants provided informed consent for future additional inquiries, and data collection continued until theoretical saturation was reached (20).

Data Analysis: This study employed a qualitative data analysis approach based on Collaizzi's seven-step method:

- 1. The researchers conducted a thorough immersion into the collected data, meticulously examining the participants' descriptions and findings.
- Key sentences, terminology, and assertions pertaining to the phenomenon were meticulously selected and extracted.
- 3. The researchers derived meaningful interpretations directly from substantial statements extracted from the data, exercising meticulous care to minimize the influence of prior assumptions.
- 4. The derived meanings were subsequently organized into thematic categories. Researchers crossreferenced these categories with the original data to eliminate any inconsistencies.
- 5. The researcher synthesized the identified themes to create a comprehensive account.

- 6. The researchers distilled their explanation down to a single, concise statement, highlighting only the most crucial structural components of the phenomena.
- 7. The participants conducted a critical evaluation of the analytical findings to ascertain their validity (21).

Data Validity: To uphold principles of reflexivity and bracketing (Epoche), the research team diligently strove for self-awareness regarding their inherent biases, pre-existing assumptions, and individual viewpoints. This involved a systematic process of documenting and critically examining identified biases. The researchers dynamically adjusted their understanding in light of their ongoing engagement with the data. Furthermore, they actively shared their perspectives with one another, facilitating the identification of any latent biases. Throughout the data analysis and interpretation phases, a conscious acknowledgement of personal biases was maintained.

Part 2

Building upon the findings and challenges elucidated in the initial phase of our research, we developed a preliminary model grounded in Keller's Motivational Theory. This model offers a pragmatic framework for the identification, management, and empowerment of talented students.

Keller's model posits that an individual's motivation is a dynamic interplay of personal traits, environmental stimuli, and learning materials. This model is characterized by four key elements: Attention, relevance, confidence, and satisfaction. In the context of educational design, educators should prioritize strategies that ignite and sustain student attention and curiosity. Moreover, learning materials ought to be meticulously designed to resonate with the students' unique requirements and goals, thereby fostering a sense of self-efficacy and ultimately culminating in a sense of accomplishment and positive learning outcomes (22).

The primary objective at this stage was to formulate a practical guidelines for identifying and managing challenges, as well as empowering talented students. To this end, the abstract and theoretical knowledge gleaned from the preceding phase was translated into practical solutions. In fact, the previously generated knowledge serves as the bedrock upon which this model is constructed. This model comprises a framework that delineates the necessary steps for effective student empowerment. To address any knowledge gaps, interviews with expert focus groups and a comprehensive literature review were undertaken. *Participants:* The study cohort in this part of the study comprised 14 experts, consisting of professors, faculty members, educational administrators, and medical education specialists.

Data Collection: Two distinct expert focus groups were convened. The first group consisted of six experts, while the second group comprised eight experts. Both groups participated in two separate two-hour sessions.

To guarantee the comprehensiveness of the developed model, a comprehensive literature review was undertaken. This review, conducted in an unsystematic manner, encompassed various sources pertaining to the talented students' motivation, including relevant articles and books, pertinent regulations, etc.

Data Analysis: Qualitative data were analyzed using a guided content analysis approach aligned with the framework of Keller's motivational model. Guided content analysis is a systematic methodology for examining and interpreting textual or visual data without introducing researcher bias. This approach is particularly valuable for adapting and applying existing theories to new contexts or for further refining the understanding of previously theorized phenomena (23). Given the well-defined structure and clarity of Keller's four-component motivational model, guided content analysis provided a suitable framework for categorizing the identified principles and practical actions.

Results

Participants were recruited from various medical fields, including medicine (n = 18), nursing and midwifery (n = 15), health (n = 6), allied health (n = 4), and dentistry (n = 7). The sample consisted of 24 males and 26 females, with a mean age of 21.1 ± 2.35 years and a mean grade point average (GPA) of 17.51 ± 1.09 .

In the first part of the study, 1175 initial codes and subsequently 185 sub-themes were identified. Through a process of conceptualization and synthesis, these subthemes were further condensed into 81. Subsequent thematic analysis resulted in the identification of six main themes, forming the study's central concept: "The Narrow Alley of Talents." This main theme encompasses six distinct sub-categories. Table 2 provides a comprehensive overview of the identified main themes and their respective sub-themes. Talented students frequently experience a gradual erosion of their perceived distinctiveness, culminating in a sense of diminished differentiation between themselves and their peers. Building upon the findings of the initial study, the second part of the study involved the development of a model, inspired by Keller's motivational theory, to mitigate the identified challenges and optimize the potential of talented students.

Table 3 presents the proposed model. The 'Theme' column delineates the key components of Keller's motivational model, while the 'Solution' column outlines the corresponding strategies and solutions. Strategies categorized under 'Attention' are specifically designed to sustain student motivation. These strategies are derived from the challenges that commonly lead to a decline in interest among talented students. Additionally, the 'Relevance' category underlines the crucial importance of connecting educational experiences to students' prior knowledge and experiences. These challenges stem from a perceived mismatch between the needs of talented students and the conventional teaching methods and resources offered by universities, culminating in a sense of disengagement and a questioning of the educational value proposition. Talented students frequently encounter barriers that impede their ability to fully express their abilities. A common complaint among these students is a lack of clear expectations, as their inability to effectively showcase their talents can significantly undermine their 'confidence'. The proposed 'satisfaction' strategies directly address these challenges by providing external rewards, opportunities for knowledge application, and fairness.

Discussion

A critical concern about talented students centers around the phenomenon of underachievement, where students with high potential fail to realize their full academic and personal potential (24). The success of talented students is intricately linked to a confluence of factors, including sustained motivation, an insatiable thirst for knowledge, and well-developed advanced learning skills (25). While a supportive educational environment is undeniably crucial (26), this study highlights the significant impact of inadequate university support and the presence of social challenges on the motivation of talented students. These factors can significantly impede their academic progress and overall well-being.

In this study, we developed a model aimed at enhancing the capabilities of talented students. The framework of this model is grounded in Keller's motivational model, which posits that student motivation is contingent upon a perceived sense of competence and an understanding of the value of the learning experience (27). Motivational design encompasses the allocation of resources and pedagogical approaches to influence and enhance student motivation (28). Keller's motivational model posits that student motivation can be effectively enhanced by fostering attention, relevance, confidence, and satisfaction (29, 30). Aligned with the objectives of this study, Clinkenbeard (2012) introduced the task, authority, recognition, grouping, evaluation, time (TARGET) model as a framework for structuring classroom environments to optimize the motivation of talented students. The primary objective of this model, consisting of six key variables (task, authority, recognition, grouping, evaluation, and time) is to foster students' development of mastery goals, thereby promoting sustained learning, heightened engagement with academic tasks, and a more integrated understanding across subject areas.

The TARGET model proposes that by offering tasks with desirable difficulty, and by fostering intrinsic motivation, educators can effectively support the learning of talented students. The model advocates for recognizing and rewarding student growth, learning, and mastery, and for adopting a criterion-based evaluation approach rather than a norm-based approach. Additionally, the model proposes tailoring time allotments and assignments to facilitate student achievement and mastery (24).

Subsequently, the proposed model is examined through the lens of Keller's motivational model. Each of the model's themes will be scrutinized individually: Attention

Our findings indicate that while talented students exhibit high initial motivation, this level of motivation tends to diminish over time. This observation is consistent with the findings of Kanapathy et al.'s (2022) research, which demonstrated that although talented students possess inherent learning interests, sustained motivation is crucial for achieving optimal outcomes (31). In the context of cultivating and maintaining student engagement, a critical question arises: How can we not only generate initial interest but also ensure its sustained persistence? (32). It is argued that sustaining student interest is paramount, surpassing the mere act of initial attraction. One effective strategy for capturing and sustaining student attention is to incorporate diversity into the learning experience (32).

According to the expectancy-value theory, student motivation can be significantly enhanced by affording them the autonomy to select tasks aligned with their interests and perceived value (24). To effectively cater to the diverse talents and preferences of talented students, the proposed model emphasizes the importance of offering a wide range of programs and access to diverse facilities. Furthermore, employing engaging pedagogical approaches, actively encouraging student participation (32), and cultivating a climate of intellectual curiosity are crucial for optimizing learning outcomes for talented students (33). Drawing upon the self-determination theory (SDT), Almukhambetova and Torrano (2020) emphasized the profound influence of the learning environment and key social relationships on the motivation of talented students. Specifically, the study underscored the critical role of parents, peers, and teachers in either fostering or inhibiting intrinsic motivation within these students. These factors, in turn, exert a significant impact on their decision-making processes, adjustment, and ultimately, their overall academic achievement (5). Building upon this foundation, our model emphasizes the crucial role of continuous and meaningful interaction among students, professors, and educational administrators in stimulating the intellectual curiosity of talented healthcare students. Key strategies for achieving this include actively involving students in decision-making processes, establishing student committees, and ensuring that student perspectives are duly considered within the framework of national regulations and standards. Empowering students through active participation and embracing innovative pedagogical approaches are considered pivotal in cultivating a dynamic and intellectually enriching learning setting for such learners.

Relevance

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To ensure relevance, the proposed model incorporates a multi-faceted approach that encompasses elucidating the benefits of talent membership, introducing students to the concept of talent, facilitating national networking events, and providing empowerment training for faculty members. Informed by interviews with talented students, these strategies align with the principle of relevance, which posits that education should connect to learners' prior knowledge and experiences. Previous research has identified a range of strategies for fostering connections, such as leveraging prior experiences, acknowledging present

value, projecting future applications, providing exemplars, and making deliberate choices (32). Furthermore, the current study incorporates a variety of strategies including regular student interviews to assess their expectations, the development of specialized personalized learning courses and workshops, approaches, and the implementation of a research-based and contemporary educational framework tailored to the unique needs of talented students. Moreover, the model has been adapted and localized to suit specific contexts. To foster relevance, the model proposed a curriculum that clearly outlines future academic and professional pathways, coupled with comprehensive career counseling services. Aziz et al. (2021) underscore the critical role of collaborative understanding between parents, educators, and healthcare professionals in fostering the academic success of talented students (34). While acknowledging the importance of this multistakeholder approach, our model further emphasizes the pivotal role of student motivation in achieving academic excellence. The strategies aimed at enhancing relevance are consistent with the comprehension, elucidation, and systematic support of the needs of talented students, which can have a beneficial effect on their academic performance.

Confidence

To enhance confidence within the model, we delineated student expectations, fostered self-assurance, aligned student expectations with financial considerations, and established evaluation criteria for self-assessment. Additionally, we focused on assessing talented students, empowering experts, enhancing the quality of information, and instituting a mentorship framework. These strategies may serve to augment existing research on pedagogical approaches for these students. Siegle (2018) highlighted that while some talented students may underachieve in certain settings, they often demonstrate exceptional abilities when provided with supportive relationships and nurturing environments. Effective interventions are crucial to facilitate the optimal development of these students and to help them reach their full potential (35). To foster student confidence, it is essential to assess whether learners have a clear comprehension of the instructor's expectations and the specific requirements of the lesson. Moreover, it is crucial to gauge students' perceived likelihood of success (32). Student self-efficacy, defined as "positive expectations for success" (29), fosters a sense of self-assurance that can enhance the competencies of health professions students. Ultimately, this contributes to improved healthcare quality (36). Clear goal setting and the provision of attainable examples foster the development of self-confidence. Attributing success to personal effort rather than external factors is crucial for boosting self-esteem (37). Talented students demonstrate a propensity for making positive causal attributions, often crediting their successes to abilities and diligent effort, while ascribing failures to external factors, such as misfortune. Equipping educators with the tools to foster such positive attributions can significantly enhance academic achievement and intrinsic motivation among these students (24). Additional strategies for enhancing confidence in the proposed model include evaluating the equilibrium between GPA requirements and students' abilities, aligning the complexity of educational content with students' levels of mastery, and providing advanced educational opportunities through extracurricular programs beyond the university setting. Optimal learning experiences necessitate a careful consideration of difficulty level. Educational challenges should be appropriately aligned with students' current skill levels to maintain engagement and motivation. Unrealistic or overly challenging tasks can lead to frustration and disengagement (29). Conversely, consistently providing students with more challenging problems fosters a sense of accomplishment and cultivates critical thinking and problem-solving skills. These skills have significant value beyond the academic domain (38). It is essential for students to recognize that their proficiency in various skills develops progressively over time in order to foster a sense of effectiveness. Talented students are likely to possess a strong academic self-concept and a high level of self-efficacy within their areas of talent (24). The proposed model incorporates a multifaceted approach, including peer-led learning, student research involvement, problem-solving skills, individual and group challenges, support for student initiatives, and collaborative learning environments. According to Lamanna, Vialle, and Wormald (2020), a combination of challenging yet appropriate curricula, tailored interventions, and strong teacher-student relationships are pivotal factors in fostering the academic success of talented students (39). It is essential to align the challenge level of tasks with the capabilities of students, as posited in the expectancy-value theory (24). The concepts of flow and mindset suggest that a student's intrinsic motivation is significantly affected by the

congruence between their abilities and the challenges presented by the tasks. Furthermore, the SDT theory highlights the importance of autonomy, competence, and the necessity for social connections (24).

Satisfaction

The strategies for enhancing student satisfaction outlined in our model encompass a variety of initiatives, including the provision of rewards, the organization of leisure activities, the promotion of awareness regarding talented students, the equitable distribution of opportunities across all academic disciplines, the implementation of student-generated ideas, the standardization of facilities across universities, the acknowledgment of student achievements, the enhancement of professors' awareness, the strengthening of connections between universities and students' families, the emphasis on the added value of being part of a talented cohort, and the enhancement of students' self-esteem. According to Keller (2000), student motivation is contingent upon their awareness, interest, and appropriate levels of challenge. Satisfaction is characterized by positive sentiments regarding academic achievements and learning experiences. Factors contributing to satisfaction include tangible external rewards, opportunities for the application of knowledge, and a sense of justice and fairness (37). Additionally, addressing the individual needs of significantly influences students their overall satisfaction (29). Shakir and Mohd Ali (2021) underscored the necessity of establishing optimal systems to support talented students (40). An examination of the needs of talented healthcare students is essential for fostering their motivation and enhancing their capabilities. We advocate for other universities within our nation to investigate the challenges faced by these students and to provide the necessary support for their development.

Implications

The results of this research underscore the diverse experiences of talented students. By recognizing and addressing the unique needs of these students, educators can optimize their potential and maximize the return on investment in education. The study emphasizes the importance of considering motivational factors in addition to academic achievement.

-Given the model's provision of entirely objective and practical strategies, healthcare educators and educational administrators can implement these approaches to sustain and augment the motivation of talented students.

-Furthermore, these strategies can serve as a foundation for establishing guidelines and policies specifically tailored to the needs of talented students.

-Moreover, these strategies can be employed to construct learning environments that are specifically designed to cater to the unique needs and abilities of talented students.

Limitations: A limitation of this study is its focus on undergraduate students, restricting the generalizability of the findings to other academic levels. Additionally, the sample may not be representative of talented students at other institutions.

Further Directions: This study, while employing purposive sampling and maximizing participant diversity among knowledgeable and experienced individuals, specifically focused on the experiences of Iranian students. To enhance the generalizability of these findings, future research should investigate the perspectives of talented students from diverse cultural backgrounds. Furthermore, future research should prioritize identifying and evaluating effective strategies for universities to enhance the motivation and academic success of talented healthcare students.

Conclusion

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The effective identification, introduction, and support of talented students necessitate a collaborative effort across the universities. Educational administrators, faculty members, and fellow students all play crucial roles in this endeavor. The successful implementation of the strategies outlined in this research offers significant advantages. Neglecting the needs of talented students can have detrimental consequences, including a decline in their motivation, misallocation of financial resources, and potentially, an exodus of talent from the country, thereby impacting the future of the education and service sectors. Insufficient university support and the presence of social challenges can confine talented individuals to a "narrow alley of talents," hindering their full potential. Providing tailored educational opportunities, specialized services, and access to comprehensive consulting and external support systems can significantly enhance the abilities of talented students. The findings of this research offer valuable insights for students, educators, and educational administrators in effectively supporting and nurturing the talents of these exceptional individuals.

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References

- Rinn AN, Plucker JA. High-ability college students and undergraduate honors programs: A systematic review. Journal for the Education of the Gifted. 2019;42(3):187-215. doi: 10.1177/0162353219855678.
- García-Martínez I, Gutiérrez Cáceres R, Luque de La Rosa A, León SP. Analysing educational interventions with gifted students. Systematic Review. Children (Basel). 2021 May 3;8(5):365. doi: 10.3390/children8050365. [PMID: 34063631] [PMCID: PMC8147618]
- Alexopoulou A, Batsou A, Drigas A. Resilience and Academic Underachievement in Gifted Students: Causes, Consequences and Strategic Methods of Prevention and Intervention. International Journal of Online & Biomedical Engineering. 2019;15(14): 79. doi: 10.3991/ijoe.v15i14.11251.
- Wiley KR. The social and emotional world of gifted students: Moving beyond the label. Psychology in the Schools. 2020;57(10):1528-41. doi: 10.1002/pits.22340.
- Almukhambetova A, Hernández-Torrano D. Gifted students' adjustment and underachievement in university: An exploration from the self-determination theory perspective. Gifted Child Quarterly. 2020;64(2):117-31. doi: 10.1177/0016986220905525.
- Mammadov S, Cross TL, Olszewski-Kubilius P. A look beyond aptitude: The relationship between personality traits, autonomous motivation, and academic achievement in gifted students. Roeper Review. 2021;43(3):161-72. doi: 10.1080/02783193.2021.1923595.
- Hornstra L, Bakx A, Mathijssen S, Denissen JJ. Motivating gifted and non-gifted students in regular primary schools: A self-determination perspective. Learning and Individual Differences. 2020;80:101871. doi: 10.1016/j.lindif.2020.101871.
- Desmet OA, Pereira N. The achievement motivation enhancement curriculum: Evaluating an affective intervention for gifted students. Journal of Advanced Academics. 2022;33(1):129-53. doi: 10.1177/1932202X211057424.
- Goksu I, Islam Bolat Y. Does the ARCS motivational model affect students' achievement and motivation? A meta-analysis. Review of Education. 2021;9(1):27-52. doi: 10.1002/rev3.3231.
- Zubaedi Z, Alfauzan A, Asiyah A, Suhirman S, Alimni A, Amaliyah A, et al. Learning style and motivation: gifted young students in meaningful learning. Journal for the Education of Gifted Young Scientists. 2021;9(1):57-66. doi: 10.17478/jegys.817277.

- Suherman S, Zaman AM, Farida F. Fostering of mathematical critical thinking ability using ARCS model and students' motivation. JTAM (Jurnal Teori Dan Aplikasi Matematika). 2021;5(1):134-43. doi: 10.31764/jtam.v5i1.3798.
- Afjar A, Syukri M. Attention, relevance, confidence, satisfaction (ARCS) model on students' motivation and learning outcomes in learning physics. J Phys: Conf Ser. 2020; 1460(1): 1-6. doi: 10.1088/1742-6596/1460/1/012119.
- Daugherty KK. ARCS motivation model application in a pharmacy elective. Curr Pharm Teach Learn. 2019 Dec;11(12):1274-1280. doi: 10.1016/j.cptl.2019.09.009. [PMID: 31836153]
- Ma L, Lee CS. Evaluating the effectiveness of blended learning using the ARCS model. Journal of computer assisted learning. 2021;37(5):1397-408. doi: 10.1111/jcal.12579.
- Ucar H, Kumtepe AT. Effects of the ARCS-V-based motivational strategies on online learners' academic performance, motivation, volition, and course interest. Journal of Computer Assisted Learning. 2020;36(3):335-49. doi: 10.1111/jcal.12404.
- Dinçer S. The effects of materials based on ARCS Model on motivation: A meta-analysis. Ilkogretim Online. 2020;19(2): 1016-42. doi: 10.17051/ilkonline.2020.695847.
- Wijsman LA, Saab N, Schuitema J, van Driel JH, Westenberg PM. Promoting performance and motivation through a combination of intrinsic motivation stimulation and an extrinsic incentive. Learning Environments Research. 2019; 22: 65-81. doi: 10.1007/s10984-018-9267-z.
- Burns EC, Martin AJ. Motivational Issues in Gifted Education: Understanding the Role of Students' Attribution and Control Beliefs, Self-Worth Protection and Growth Orientation. In: Smith SR. (eds) Handbook of Giftedness and Talent Development in the Asia-Pacific. Springer International Handbooks of Education. Singapore: Springer; 339-57. doi: 10.1007/978-981-13-3041-4_15.
- Keshavarz H. Hermeneutic phenomenology in supporting research and information services: contributions to information science. Journal of Information Science Theory and Practice. 2020;8(4):29-39.
- Ozanne JL. Book Review: Basics of Qualitative Research. Los Angeles, CA: Sage publications Sage CA; 1992: 382-4. doi: 10.1177/002224379202900312.
- Morrow R, Rodriguez A, King N. Colaizzi's descriptive phenomenological method. The psychologist. 2015;28(8):643-4.
- Keller JM. Development and use of the ARCS model of instructional design. Journal of instructional development. 1987;10(3):2-10. doi: 10.1007/BF02905780.
- Kibiswa NK. Directed Qualitative Content Analysis (DQICA): A Tool for Conflict Analysis. The Qualitative Report. 2019; 24(8): 2059-79. doi: 10.46743/2160-3715/2019.3778.
- Clinkenbeard PR. Motivation and gifted students: Implications of theory and research. Psychology in the Schools. 2012;49(7):622-30. doi: 10.1002/pits.21628.
- Alelyani SO. Special Educational Need of the Gifted and Talented Students in Saudi Arabia: A Review Paper. International Journal of Educational Research Review. 2021;6(2):124-33. doi: 10.24331/ijere.854926.

- Abbaspour H, Karimi Moonaghi H, Kareshki H, Esmaeili H. The consequences of hidden curriculum for nursing professionalism: A qualitative study. Journal of Qualitative Research in Health Sciences. 2023;12(2):100-6. doi: 10.34172/jqr.2023.15.
- Hodges CB. Designing to motivate: Motivational techniques to incorporate in e-learning experiences. The Journal of Interactive Online Learning. 2004;2(3):1-7.
- Fardanesh H, Ebrahimzade I, Sarmadi M, Rezaie M, Omrani S. A Comparative Study of Learning and Motivation in Continuing Medical Education Based on Integrated Instructional and Motivational Design Models. Iran J Med Educ. 2012; 12 (5): 364-76. [In Persian]
- Liao HC, Wang Y. Applying the ARCS motivation model in technological and vocational education. Contemporary Issues in Education Research. 2008;1(2):53-8.
- Karimi Moonaghi H, Zhianifard A. Instructional Design in Medical Sciences. 2nded. Mashhad: Mashhad University of Medical Sciences; 2021. [In Persian].
- Kanapathy S, Binti Hamuzan HA, Menon P, Woon YH. Gifted and Talented Students "Underachievement" and Intervention: A Case Study. European Journal of Education and Pedagogy. 2022; 3(5): 114-22. doi: 10.24018/ejedu.2022.3.5.453.
- Kanaani M, Eskandari A. Implementing Curriculum With Keller's motivational Educational pattern. Monthly Journal of Educational Technology (Growth). 2013;28(3): 12-4. [In Persian].
- 33. Soltani Arabshahi SK, Bigdeli Sh, Kouhpayezade J, Jafarpour A. Designing a Reliable and Valid Instrument to Determine the Effective Motivational Factors on Medical Students Learning Based on Keller's ARCS Model. Educ Strategy Med Sci. 2014; 6(4): 241-6. [In Persian]
- 34. Aziz ARA, Ab Razak NH, Sawai RP, Kasmani MF, Amat MI, Shafie AAH. Exploration of challenges among gifted and talented children. Malaysian Journal of Social Sciences and Humanities. 2021;6(4):242-51.
- Siegle D. Understanding Underachievement. In: Pfeiffer S. (eds) Handbook of Giftedness in Children. 2nd ed. Cham: Springer; 2022: 285-97. doi: 10.1007/978-3-319-77004-8_16.
- Abbaspour H, Karimi Moonaghi H, Kareshki H, Esmaeili H. Positive consequences of the hidden curriculum in undergraduate nursing education: An integrative review. Iran J Nurs Midwifery Res. 2022 May 23;27(3):169-80. doi: 10.4103/ijnmr.ijnmr_325_21. [PMID: 36237954] [PMCID: PMC9552589]
- Keller JM. How to integrate learner motivation planning into lesson planning: The ARCS model approach. Santiago, Cuba: VII Semanario; 2000: 13.
- Toussaint MJ, Brown V. Connecting the arcs motivational model to game design for mathematics learning. Transformations. 2018; 4(1): 19-28.
- Lamanna J, Vialle W, Wormald C. Reversing underachievement in students with twice-exceptionality: Findings from two case studies. TalentEd. 2020;32(1):1-22.
- Shakir SA, Ali MABM. Gifted education in Malaysia: A promising tomorrow. Vietnam Journal of Educational Sciences. 2021; 17(1): 75.

Table 2. Main theme, sub-themes, and examples

Main Theme	Sub-Themes	Examples
	Motivational slope	"At first, I was excited, but over time, it became a routine for me. I came to understand that being talented is not
		something special, that is, I was discouraged."
		"These facilities and benefits are not appropriate for talented students."
		"For instance, as I mentioned earlier, talented students can achieve double straight as with fewer conditions.
	Striving for improvement	In my opinion, to be straight, a student must score below 2.5%, and a talented student scoring below this threshold
-		should be recognized with double straight. The percentage requirement for talented students should be adjusted
		to 4% instead of 2.5%."
		"An important point to note is that there is limited information regarding the resources available to talented students at
	Uneven university path	the university, resulting in a lack of sufficient information for everyone."
		"Education should be of the highest quality. The books available to me, the resources provided by my professors, and the
		projects assigned to me should all align with my needs."
	Social lens	"From a social perspective, many people view talent as a valuable and positive attribute."
Narrow alley of talents		"Society hindered me from pursuing my desires instead of encouraging me to follow that path."
		- "Dissatisfaction with other classmates."
	Family umbrellas	"If the support from my family does not align with my motivation, and if they fail to provide constructive feedback, I
		may feel very depressed. This situation can significantly impact my academic performance and overall progress."
		"As a student, being away from my family has been challenging for me. Throughout my school years, I studied alongside
		my family in the comfort of my own room and at my personal study table. Transitioning to a crowded dormitory
		environment proved difficult, as I was accustomed to studying in a quieter setting. This change hindered my ability to
		focus and perform well academically. It took me a considerable amount of time to adjust to this new situation."
	The bright side of talents	"It generates a constructive form of stress that encourages you to work diligently and study well to maintain a high
		average. This represents a beneficial challenge."
		"Because of this, my situation was more favorable than that of others. During the first and second semesters, I
		experienced both competition and pride. In my group, almost no one else was direct, which proved to be a unique and
		advantageous quality for me."

Table 5. The m	odel for improving the capabilities of falented students based on Keller's motivational model
Theme	Solution
	To attract the attention of talented students, the following strategies are recommended:
	1. Offering resources and opportunities for talented students tailored to their individual preferences.
	2. Establishing continuous interaction among students, professors, and educational administrators.
	3 Engaging students in educational, research, and sociocultural decision-making
	4. Forming committees composed of outstanding students across various levels.
	5. Providing information to students both individually and in groups
	6. Providing rewards on special occasions
Attention	0. Providing rewards on special occasions.
	7. Considering the optimions of talented students regarding facilities and benefits.
	8. Engaging talented students in empowering others.
	9. Informing professors about talented students and providing feedback.
	10. Implementing a variety of programs to engage and attract students.
	11. Considering students' interests in conjunction with their field of study.
	12. Employing engaging methods such as educational technologies (e.g., games and mobile learning).
	13. Implementing an innovative and humanistic approach in education.
	To maintain its relevance and sustainability in attracting talented students, the following strategies are recommended:
	1. Recognizing the diminishing initial value and appeal of talent over time, and considering the significance of this
	from the students' perspective and their learning preferences.
	2. Conducting interviews and surveys to gain insights into students' expectations and experiences, while effectively
	communicating the benefits of being part of a talented community.
	3. Offering elective courses that align with the interests of talented students
	4 Offering specialized talent development workshops
	5. Orranizing netionwide synthetic shows tailouted students and
	5. Organizing nation wide events to showcase talented students and
	Cofficience entry and control of the store o
Relevance	6. Offering extracurricular courses in subjects outside the standard curriculum.
	7. Providing a comprehensive introduction to talented students,
	ensuring they are aware of all aspects of membership.
	8. Implementing research-based and contemporary educational approaches, and adapting appropriate educational
	models to meet their specific needs.
	9. Conducting empowerment courses for professors focused on nurturing talented students.
	10. Customizing education for talented students.
	11. Providing a clear vision for talented students and their future.
	12. Establishing a counseling system for educational and career guidance.
	13. Organizing and hosting nationwide events to promote student collaboration and facilitate the exchange of
	experiences.
	To enhance the confidence of talented students, the following strategies are recommended:
	1. Enhancing education by involving talented students in the teaching process.
	2. Teaching research skills and involving students in research topics.
	3 Balancing salary expectations while avoiding psychological and work-related pressure
	4 Balancing GPA requirements with students' academic levels
	4. Dataliening Of A requirements with students academic revers.
	6. Dominarly revisions resultions for talent based on available avidence
	7. Enhancing advaction through much long adving skills and in dividual/group shallon goo
	7. Ennancing education through problem-solving skills and individual/group challenges.
	8. Supporting the ideas and plans of talented students.
Confidence	9. Developing an evaluation system for talented students.
Somuenee	10. Providing evaluation criteria to assist students in assessing their likelihood of success.
	11. Offering courses in learning psychology to enhance self-confidence.
	12. Providing group study environments for talented students.
	13. Tailoring educational content to align with the mastery levels of talented
	students and gradually increasing complexity over time.
	14. Defining expectations and create learning opportunities for talented students.
	15. Teaching advanced content through external programs.
	16. Empowering staff members.
	17. Enhancing the quality and quantity of notifications.
	18. Creating visibility mechanisms for talented students.
	To enhance the satisfaction of talented students, the following strategies are recommended:
Satisfaction	1 Offering incentives to motivate students and prevent demotivation
Satisfaction	2. Dianning recreational activities to alloviete cognitive load
	2. Framming recreational activities to alleviate cognitive load.

Table 3. The model for improving the capabilities of talented students based on Keller's motivational model

3. Organizing events to raise awareness of talented individuals.
4. Ensuring equal opportunities for students across various majors.
5. Addressing the requests of talented students for facilities and benefits in accordance with national regulations and
standards.
6. Implementing students' knowledge and ideas beyond merely obtaining a degree.
7. Ensuring equal opportunities for talented students across all universities.
8. Acknowledging and supporting talented students.
9. Increasing professors' awareness of talented students.
10. Strengthening the connection between universities and the families of exceptional students.
11. Enhancing students' self-esteem.
12. Organizing various student competitions.
13. Recognizing the added value of being a talented student.