

## Examining Talent Management with an Intellectual Capital Approach in Gifted Schools

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### ABSTRACT

**Purpose:** This study aimed to examine the role of intellectual capital in the management of talents among gifted secondary school students.

**Methods and Materials:** A mixed-methods approach was used, combining qualitative and quantitative data collection. The quantitative component involved a binomial test to assess teachers' perceptions of intellectual capital in their schools, with a sample of 108 teachers from gifted secondary schools. The qualitative component consisted of interviews with 16 teachers, principals, and experts to explore their views on the factors influencing talent management. The data were analyzed using MAXQDA software for coding and SPSS for statistical analysis.

**Findings:** The results showed that intellectual capital, particularly human capital, plays a significant role in the management of gifted student talents. Over 90% of the teachers rated intellectual capital and its components (human, structural, and relational) as being above average in their schools. The qualitative analysis identified four key factors influencing talent management: structural, school-related, individual and personality-related, and environmental factors. These findings highlight the importance of investing in intellectual capital to optimize talent management in educational institutions.

**Conclusion:** The study concludes that intellectual capital is a critical determinant of successful talent management in schools. Schools with high levels of human, structural, and relational capital are better equipped to identify and nurture gifted students. Strengthening intellectual capital through teacher training, organizational support, and community engagement is essential for enhancing the effectiveness of talent management strategies.

**Keywords:** Talent, Talent Management, Intellectual Capital, Human Capital, Structural Capital, Relational Capital.

## 1. Introduction

The management of talent in educational systems has become a critical focal point for fostering human capital, particularly in the context of gifted education (Hosseinpour Dallali Niya et al., 2020; Masoumi et al., 2022; Salman Al-Oda et al., 2024). Talent management strategies, when aligned with intellectual capital approaches, provide a comprehensive framework for maximizing the potential of gifted students, ensuring not only academic success but also the development of broader societal competencies (Asdolahzadeh et al., 2021; Mahvash et al., 2024). Human capital, as defined by Afridi (2016), is a pivotal component of national development, and investing in the education and talent management of gifted individuals represents a long-term strategy for economic growth and societal advancement (Afridi, 2016).

The identification and nurturing of gifted students are influenced by various systemic, environmental, and personal factors, all of which contribute to the intellectual capital of educational institutions. Intellectual capital, comprising human, structural, and relational capital, plays a fundamental role in shaping the quality of education and student outcomes (Zeynalli, 2021). The significance of human capital in the development of a competitive workforce is highlighted by Zeynalli (2021), particularly in the context of Industry 4.0, where innovation and advanced skills are critical (Zeynalli, 2021). This observation aligns with the findings of Lipovská and Fischer (2016), who noted that gifted students represent a critical resource for future human capital accumulation (Lipovská & Fischer, 2016). Moreover, Tsai et al. (2010) assert that human capital composition is a direct driver of economic growth, emphasizing the importance of developing educational systems that can effectively harness the talents of gifted individuals (Tsai et al., 2010).

Gifted education has evolved significantly over the past few decades, with various countries adopting different models to cater to the needs of high-ability students. As noted by Hernández-Torrano and Saranlı (2014), the adaptation and implementation of gifted education models are highly dependent on the cultural and social contexts of each country (Hernández-Torrano & Saranlı, 2014). The Schoolwide Enrichment Model, for instance, has been implemented differently across cultures, reflecting the diverse needs and expectations of gifted education programs. Similarly, in Iran, the micropolitics of schools play a significant role in shaping the professional interests of

teachers working in gifted institutions (Chahkandi et al., 2016). This cultural variation underscores the need for a flexible, adaptive approach to talent management that can accommodate the unique challenges and opportunities presented by different educational environments.

Research has consistently demonstrated that the quality of human capital in schools is directly linked to student achievement and overall educational success. According to Esa et al. (2019), developing critical thinking and problem-solving skills among students is essential for creating quality human capital (Esa et al., 2019). This is particularly true in the context of gifted education, where students are often expected to excel beyond the standard curriculum. Asgarabad et al. (2021) highlight the importance of managing academic stress among gifted students, noting that high expectations can sometimes lead to negative psychological outcomes if not properly managed (Asgarabad et al., 2021). Thus, effective talent management strategies must strike a balance between challenging students and providing the necessary support systems to ensure their well-being.

One of the key components of talent management in gifted education is the role of teachers. Teachers are not only responsible for delivering the curriculum but also for identifying and nurturing the unique talents of their students. As noted by Escobedo et al. (2020), teachers' knowledge about gifted students plays a crucial role in their ability to provide appropriate educational experiences (Escobedo et al., 2020). However, many teachers, especially those in under-resourced areas, lack the necessary training to effectively manage gifted students (Sajedifard & Shahgoli, 2020). This gap in professional development can hinder the effectiveness of gifted education programs, underscoring the need for ongoing teacher training and support (Johnsen, 2012).

In addition to the role of teachers, the curriculum itself plays a significant role in talent management. Complementary books and specialized curricula, as studied by Kalbasi et al. (2018), provide gifted students with the opportunity to engage with more challenging material, thereby enhancing their learning experiences (Kalbasi et al., 2018). The use of differentiated instructional strategies, as suggested by Kia-Ahmadi and Arabmofrad (2015), allows educators to tailor the curriculum to meet the diverse needs of gifted students, further supporting their academic and personal growth (Kia-Ahmadi & Arabmofrad, 2015).

The relationship between gifted education and human capital development is further explored through the lens of

cultural diversity and equity. Blumen (2020) highlights the challenges faced by Andean countries in providing equitable access to gifted education, noting that cultural biases and economic disparities often limit the opportunities available to gifted students from marginalized communities (Blumen, 2020). This observation is echoed by Yeung (2012), who argues that urban educational systems must address the unique needs of gifted students from diverse backgrounds to ensure that all students have the opportunity to reach their full potential (Yeung, 2012).

The importance of fostering a supportive learning environment for gifted students is also emphasized in the literature. For example, Milinga (2021) discusses the need to rethink gifted education in Tanzania, where a lack of resources and infrastructure has limited the development of specialized programs for high-ability students (Milinga, 2021). Similarly, in Iran, Ghahremani (2013) and Ghahremani et al. (2017) examine the conceptions of critical thinking pedagogy among science teachers in gifted schools, highlighting the need for a more structured approach to developing higher-order thinking skills. These studies suggest that talent management strategies must be context-specific, taking into account the unique cultural, social, and economic factors that influence the educational landscape.

The link between gifted education and motivation is another critical area of research. Kazemi and Sayyadi (2014) explore the impact of university entrance exams on the motivation of gifted high school students in Iran, finding that the pressure to perform well on these exams can sometimes undermine students' intrinsic motivation to learn (Kazemi & Sayyadi, 2014). Similarly, Motamedi et al. (2017) examine the relationship between achievement motivation and locus of control in gifted and non-gifted students, suggesting that a supportive educational environment can help foster a more positive attitude toward learning among gifted students (Motamedi et al., 2017).

In recent years, there has been growing interest in the role of intellectual capital in the development of gifted education programs. Intellectual capital, as defined by Neeliah and Seetanah (2016), refers to the collective knowledge, skills, and experiences that contribute to the overall success of an organization (Neeliah & Seetanah, 2016). In the context of gifted education, intellectual capital encompasses not only the knowledge and expertise of teachers and administrators but also the structural and relational capital that supports the functioning of the educational system (Lajuni & Samsu, 2022). Schools that invest in intellectual capital are more likely to achieve their organizational goals, as they are able

to leverage the talents and abilities of their staff and students (Rafiq et al., 2019).

The development of intellectual capital within schools is closely linked to the concept of learning organizations. As noted by Vialle and Stoeger (2018), schools that adopt a systemic approach to talent development are better equipped to support the learning needs of gifted students (Vialle & Stoeger, 2018). This approach is further elaborated by Ziegler et al. (2017), who propose the Actiotope Model of Giftedness, which emphasizes the importance of both endogenous and exogenous learning resources in the development of talent. By creating an environment that fosters continuous learning and adaptation, schools can ensure that gifted students are provided with the opportunities they need to thrive (Ziegler et al., 2017; Ziegler et al., 2019; Ziegler & Stoeger, 2017).

The integration of intellectual capital into talent management strategies also has implications for the broader educational system. As highlighted by Rayeji et al. (2020), an entrepreneurial approach to gifted education can help foster innovation and creativity, preparing students for success in a rapidly changing world (Rayeji et al., 2020). This approach is particularly relevant in today's knowledge-based economy, where the ability to innovate and adapt is critical to success (Muhardi et al., 2019).

In conclusion, the management of talent in gifted education requires a comprehensive approach that integrates intellectual capital, cultural diversity, teacher training, and curriculum development. By investing in the intellectual capital of schools, educational systems can create learning environments that support the unique needs of gifted students, fostering their academic success and personal development. As the literature suggests, a systemic approach to talent management is essential for ensuring that gifted students are able to reach their full potential, contributing to the overall development of human capital and societal progress. This study aimed to examine the role of intellectual capital in the management of talents among gifted secondary school students.

## 2. Methods and Materials

In general, the methods of data collection in research are carried out in two forms: quantitative and qualitative. In quantitative research, the collected data can be analyzed and interpreted through statistical language. However, in qualitative research, quantitative measures for data analysis are either insufficient or sometimes impossible. While four



types of measurement scales (nominal, ordinal, interval, and ratio) are commonly used to analyze data in quantitative research, qualitative research involves non-numerical data that represent concepts hidden within the collected data. Through certain scientific activities, these concepts are extracted and discovered from the data. The foundation of quantitative research is often based on a scientific theory, and research hypotheses or questions are developed and data is collected accordingly. In contrast, qualitative research is often devoid of a theory, and data analysis frequently leads to the development of a theory. Of course, it is rare to categorize any research exclusively as either quantitative or qualitative. Undoubtedly, each complements the other. Nevertheless, when the data is not primarily quantitative, the research is referred to as qualitative. Similarly, when the collected information is based on qualitative data, it is called qualitative research. Another approach combines both qualitative and quantitative methods, known as mixed-methods research. In mixed-methods research, quantitative data is usually collected and analyzed either before or after conducting qualitative research, or concurrently, to enhance the quality of analysis and the conclusions drawn from the qualitative research.

Considering that the outcome of any research always leads to new insights into the studied phenomena, understanding the nature of cognition and the nature of a phenomenon before delving into its methodology is of great importance. Given that the subject of this dissertation revolves around managerial issues and aims to study a part of human behavior, from a theoretical and philosophical standpoint, it cannot adhere strictly to one specific paradigm. Although, historically, most research has followed the positivist paradigm, which primarily supports quantitative research methods, human behavior is complex and cannot be fully studied using only quantitative methods. Therefore, much research in human subjects is based on the interpretivist paradigm.

This research is applied in terms of its objective and qualitative in terms of its approach. To determine the sample

for qualitative research, first, the statistics of secondary school students from Zanjan's Department of Education were obtained. Following this, through brief discussions with the principals of gifted schools, a total of 24 students were purposefully selected and invited to participate in an initial interview session.

In this research, member checking was used to ensure the validity of the study. For this purpose, the researcher provided a portion of the findings to the participants for their review to answer whether the researcher correctly interpreted their statements and whether the analysis seemed logical to them. Additionally, the researcher asked some participants to review the report of the first stage of analysis or the resulting categories and express their opinions about them.

For calculating the reliability of the coding, the test-retest reliability method was employed. Three interviews were selected as samples from the conducted interviews, and each of them was repeated by the researcher within a short, specified time interval. Then, the codes identified during the two time intervals for each interview were compared. The test-retest method is used to evaluate the consistency of the researcher's coding. In each interview, the codes that were similar in both time intervals were considered agreements, while the differing codes were identified as disagreements.

### 3. Findings and Results

How is the design of an appropriate model for managing the talents of secondary school students based on the intellectual capital approach?

This research question has been studied using a mixed-method approach. Initially, through a purposeful and semi-structured interview, the process of managing student talents and the factors affecting it were examined by 16 teachers, principals, and experts. After collecting data from each interview, it was immediately analyzed using MAXQDA 2018 software through coding. The results of this analysis are presented in Table 1.

**Table 1**

*Coding of Factors Influencing the Management of Student Talents from the Perspective of Teachers, Principals, and Experts*

Open Codes (Concepts)	Axial Codes (Categories)	Selective Codes
Extracted Codes: 125 Concepts	Academic Talent Tests (55); Academic Track Selection Process (Educational Guidance) (70)	Structural and Organizational Factors
Extracted Codes: 547 Concepts	Human Resources in School (250); Educational Skills (32); Textbooks (77); Educational Equipment and Facilities (143); Educational Quality (45)	School-related Factors

Extracted Codes: 71 Concepts	Students' Attitudes (51); Students' Cultural Background (20)	Individual and Personality Factors
Extracted Codes: 54 Concepts	Family (25); Peers (10); Social Institutions (17)	Environmental Factors

The results from Table 1 show that, based on the analyzed codes, from the perspective of teachers and experts, the factors influencing the management of student talents can be categorized into four main factors.

#### **Factor One: Structural and Organizational Factors.**

This factor has two sub-criteria. The first sub-criterion refers to academic talent tests or the entrance exams for gifted schools, which are designed within the organizational structure and are administered annually nationwide. The top performers in these exams are admitted to gifted schools. The second sub-criterion of this factor refers to academic guidance for students, which occurs at the end of the first secondary education cycle (grade nine). Students are guided based on their grades in grades seven, eight, and nine, their performance on psychological tests such as the interest test and ability test, and behavioral reports from teachers, counselors, and parents. The students' own preferences are also considered. This academic guidance essentially serves as a way of identifying and managing student talents.

#### **Factor Two: School-related Factors.**

This factor consists of five sub-criteria:

1. Human Resources in School
2. Educational Skills
3. Textbook Content
4. Educational Equipment, Technology, and Facilities
5. Educational Quality

This factor is particularly significant from the perspective of teachers and experts, as 257 codes are related to it, indicating its multi-dimensional nature. Teachers and experts believe that the school environment and what happens within the educational process have the greatest impact on identifying and managing students' talents. Among the five identified sub-criteria, human resources hold the greatest importance, with 250 codes assigned to this sub-criterion, showing a considerable gap in code frequency compared to other sub-criteria. Human resources in the school include teachers, principals, administrative staff, counselors, and others. Teachers are deemed the most important and prioritized group among these. The second sub-criterion emphasizes educational skills, which are often implemented as extracurricular activities on various topics, with counselors and mentors playing a crucial role in changing students' perspectives on life and addressing individual and social needs. The third sub-criterion relates to

textbook content. Teachers and experts believe that textbook content significantly affects the identification and management of student talents. Students' attitudes toward textbook content and the importance they place on learning indicate their talents. Essentially, the attention given to textbook content by both students and teachers highlights the importance of grades in academic guidance. The fourth sub-criterion, educational equipment and facilities, is the second most frequently coded sub-criterion after human resources. Although important from the perspective of teachers and experts, this sub-criterion is not directly addressed within the structural and organizational factor, meaning that educational equipment and facilities do not play a significant role in academic guidance. The fifth sub-criterion, which impacts the management of student talents, is educational quality.

#### **Factor Three: Individual and Personality Factors.**

This factor includes two sub-criteria. The first sub-criterion is students' attitudes. Teachers view students' attitudes toward their personal talents and the development of these talents as important. The second sub-criterion is the impact of students' cultural backgrounds on their individual personalities. Teachers believe that both students' attitudes toward their personal abilities and the influence of cultural backgrounds on these abilities, as well as the formation of personality types, are important in managing student talents. Although individual attitudes and personality types have not received much attention in academic guidance, teachers consider them important.

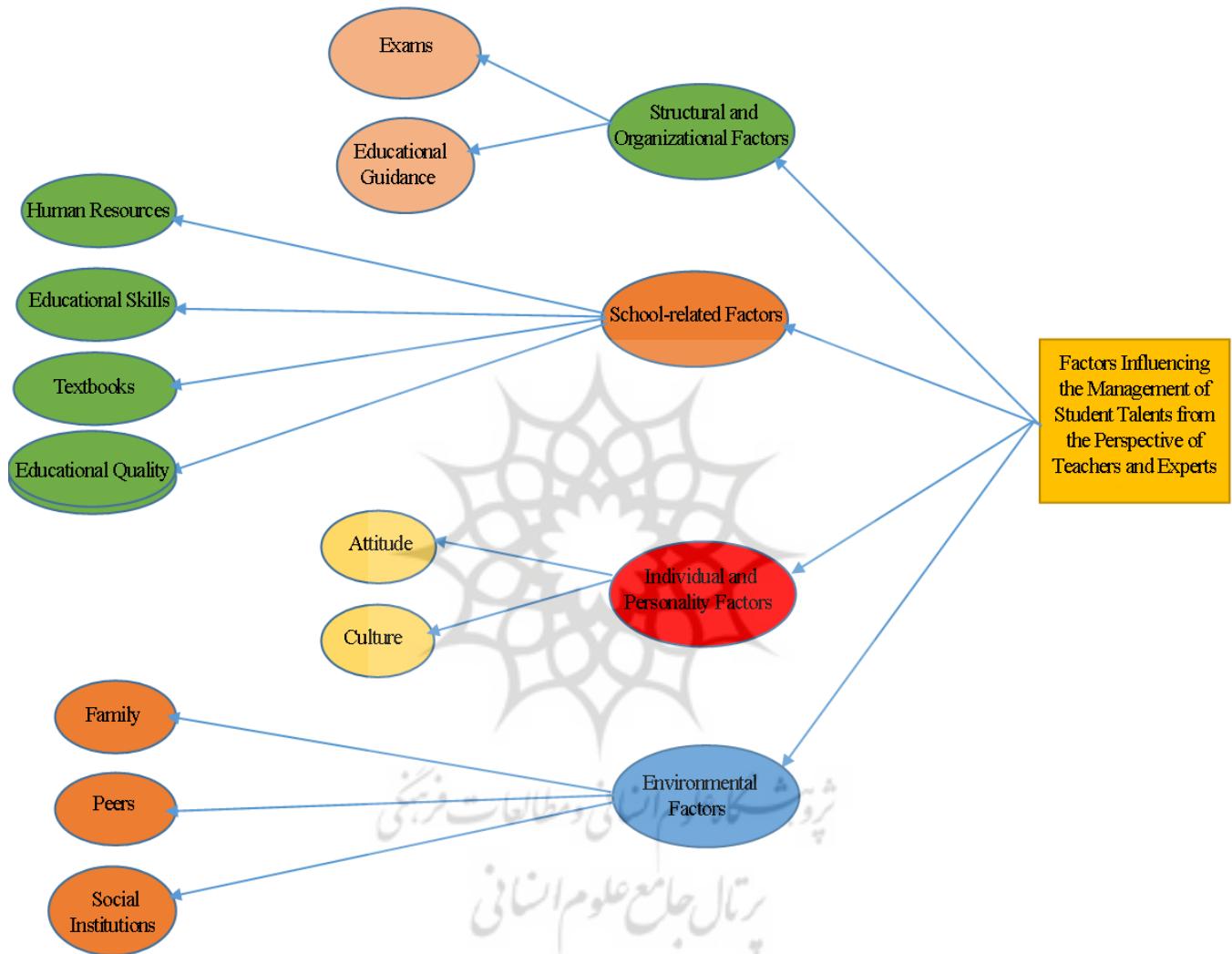
#### **Factor Four: Environmental Factors.**

Teachers and experts identified three sub-criteria for this factor. The first sub-criterion is family. Parents play a prominent role in managing student talents. However, at times, parents may negatively impact the talent identification process, as indicated by students in counseling sessions. Overall, though, parents' role in identifying student talents is noteworthy. The second sub-criterion is peers. Students' interactions with each other, particularly with peers, and their mutual influence are highly significant from the perspective of teachers and experts. The third sub-criterion is social institutions. Teachers and experts recognize that students' ongoing engagement with social institutions plays a crucial role in managing and identifying their talents.

Based on the analysis of Table 1 and the discovered axial and selective codes, the following conceptual model has been developed and designed.

**Figure 1**

*Conceptual Model of Factors Influencing the Management of Student Talents from the Perspective of Teachers and Experts*



This conceptual model is derived from qualitative studies using coding with an inductive reasoning approach from parts to the whole and is based on the grounded theory paradigm. However, in this research question, the dependent variable is the intellectual capital approach. Intellectual capital was studied quantitatively and descriptively, and the data collection method was questionnaire-based. Intellectual capital consists of three scales: human capital, organizational capital, and relational capital, which were designed using a five-point Likert scale. Human capital was measured with 15 items, organizational capital with 12 items, and relational

capital with 13 items. The statistical sample consisted of 108 teachers from gifted schools.

The study of intellectual capital components in three dimensions (human, organizational, relational) indicates that the observed variables or the items of intellectual capital overlap and are related to the factors influencing the management of student talents from the perspective of teachers and experts. Therefore, we first examine the status of intellectual capital in the studied schools. Since the sample is not entirely random but purposefully selected from knowledgeable and expert teachers, non-parametric

statistics and the binomial test were used to analyze the questionnaire results. This test, also known as the proportion test, predicts that more than 50% of teachers claim that intellectual capital and its scales are above the community average.

**Table 2**

*Binomial Test for Proportion Estimation (Intellectual Capital)*

Intellectual Capital	Category	N	Observed Prop.	Test Prop.	Exact Sig. (2-tailed)
Group 1	<= 120	9	.08	.50	.000
Group 2	> 120	99	.92		
Total		108	1.00		

The data in Table 2 show that, considering the average of 120, only 9 individuals have an average equal to or less than 120, while 99 individuals estimate this proportion to be greater than 120. Therefore, with a significance level (sig) of less than 5%, it can be concluded that at a significant level, more than 50% of the averages are greater than 120.

First, Intellectual Capital is tested, with the total average being 120. The assumption is that 50% of teachers believe the average intellectual capital in the studied sample is higher than the societal average.

Consequently, the hypothesis of equal proportions is rejected, and the hypothesis that more than 50% of the teachers' views are above the average is confirmed, indicating favorable intellectual capital in the studied sample.

**Table 3**

*Binomial Test for Proportion Estimation (Human Capital)*

Human Capital	Category	N	Observed Prop.	Test Prop.	Exact Sig. (2-tailed)
Group 1	<= 45	6	.06	.50	.000
Group 2	> 45	102	.94		
Total		108	1.00		

The data in Table 3 show that, considering the average of 45, only 6 individuals have an average equal to or less than 45, while 102 individuals estimate this proportion to be greater than 45. Therefore, with a significance level (sig) of less than 5%, it can be concluded that at a significant level,

more than 50% of the averages are greater than 45. Consequently, the hypothesis of equal proportions is rejected, and the hypothesis that more than 50% of the teachers' views are above the average is confirmed, indicating favorable human capital in the studied sample.

**Table 4**

*Binomial Test for Proportion Estimation (Structural Capital)*

Structural Capital	Category	N	Observed Prop.	Test Prop.	Exact Sig. (2-tailed)
Group 1	<= 36	12	.11	.50	.000
Group 2	> 36	96	.89		
Total		108	1.00		

The data in Table 4 show that, considering the average of 36, only 12 individuals have an average equal to or less than 36, while 96 individuals estimate this proportion to be greater than 36. Therefore, with a significance level (sig) of less than 5%, it can be concluded that at a significant level,

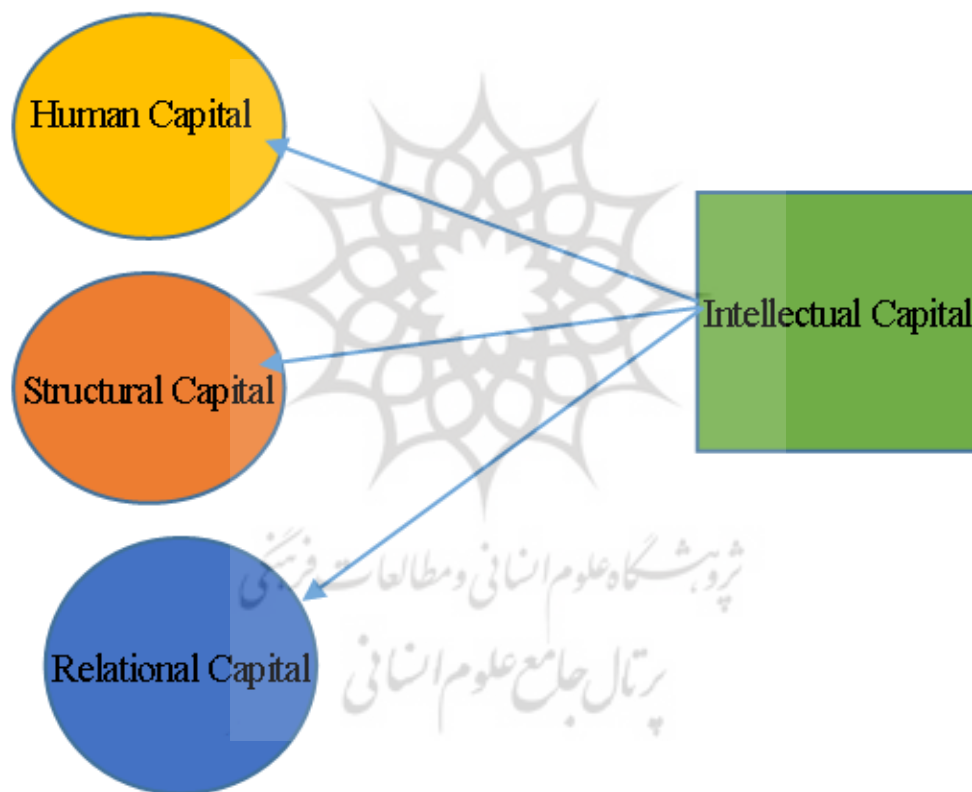
more than 50% of the averages are greater than 36. Consequently, the hypothesis of equal proportions is rejected, and the hypothesis that more than 50% of the teachers' views are above the average is confirmed, indicating favorable structural capital in the studied sample.

**Table 5***Binomial Test for Proportion Estimation (Relational (Customer) Capital*

Relational (Customer) Capital	Category	N	Observed Prop.	Test Prop.	Exact Sig. (2-tailed)
Group 1	$\leq 39$	6	.06	.50	.000
Group 2	$> 39$	102	.94		
Total		108	1.00		

The data in Table 5 show that, considering the average of 39, only 6 individuals have an average equal to or less than 39, while 102 individuals estimate this proportion to be greater than 39. Therefore, with a significance level (sig) of less than 5%, it can be concluded that at a significant level,

more than 50% of the averages are greater than 39. Consequently, the hypothesis of equal proportions is rejected, and the hypothesis that more than 50% of the teachers' views are above the average is confirmed, indicating favorable relational capital in the studied sample.

**Figure 2***Conceptual Model of Intellectual Capital*

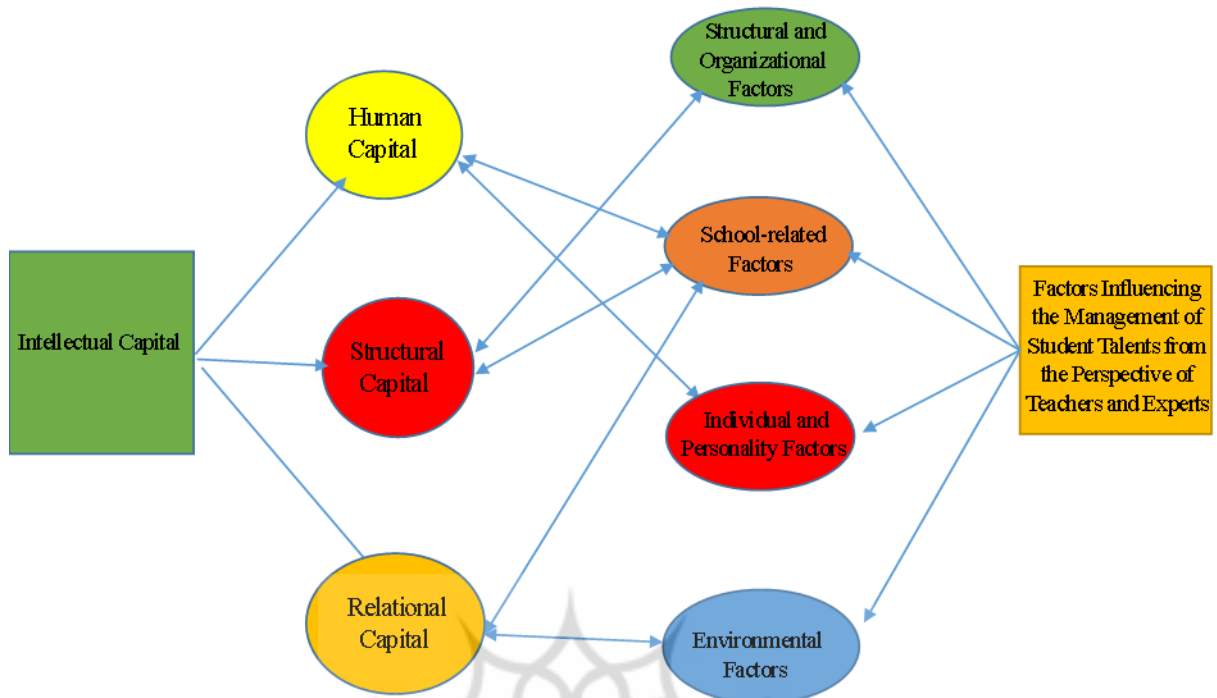
Given that the intellectual capital model in this research is confirmed based on teachers' views in gifted schools, intellectual capital is considered to be in a favorable state. Therefore, based on the qualitative results of this study and

a comparison with the quantitative results, the final research model on talent management in gifted schools with an intellectual capital approach is developed and designed.



**Figure 3**

*Final Model of Talent Management with an Intellectual Capital Approach*



In this model, the factors influencing the management of student talents are studied qualitatively. The results of the data analyzed using coding methods (open, componential, thematic) show that four factors (structural, school-related, individual and personality, environmental) are influential in the process of managing student talents. In the structural factor (the Ministry's academic track selection guidelines in grade nine), the selection of students' academic tracks is identified as a crucial and influential element in talent identification. This process is lengthy and involves various tools, with academic performance over three years (grades seven, eight, nine) being one of the most important components. Additionally, some ability, interest, and motivation assessment forms are completed by students, while the views of parents, teachers, and counselors play a significant role.

Another highly significant factor in managing student talents is the role of the school, which is referred to as the school-related factor. School-related factors (including human resources such as teachers, educational equipment and facilities, and textbook content) play a critical role in talent management, and the majority of the identified diagnostic codes fall within this factor. Among the school-related factors, teachers play the most prominent role,

although educational equipment and textbook content are also of great importance.

Students describe their personal information, individual characteristics, and interests as crucial in identifying their talents. This is referred to as the individual and personality factors. Environmental factors are another category that students believe can influence talent management. The social environment, family environment, peer environment, or any environment in which a person interacts closely can have a significant impact on the process and management of talent. Examples include out-of-school sports environments, out-of-school artistic environments, and any environments with which students have close and continuous engagement.

The intellectual capital conceptual model consists of three scales (human capital, structural capital, and relational capital). Research findings show that organizations with high intellectual capital based on these indicators are learning organizations that can achieve organizational goals more quickly. As a result, such organizations can efficiently leverage their internal talents to advance their objectives. It could be said that an organization with high intellectual capital is a talented organization. The overlap and strong correlation between talent management components and intellectual capital are clearly observable. The overlap between human capital and school-related factors, including

human resources, is evident, as is the high correlation between structural capital in intellectual capital and structural factors in talent management. Lastly, relational capital in intellectual capital overlaps significantly with environmental factors in talent management.

Based on these findings, the final conceptual model of this paper is developed and designed. The importance and weight of each factor can be analyzed separately. However, overall, strengthening intellectual capital in an organization can greatly contribute to effective organizational management, particularly in terms of human resources. The general conclusion is that intellectual capital can be a highly influential variable or concept in managing organizational talents, including human resources. Strengthening the components of intellectual capital in a school can comprehensively enhance the management of student talents.

#### 4. Discussion and Conclusion

This study aimed to investigate the role of intellectual capital in the management of talents among gifted secondary school students, focusing on how human, structural, and relational capital influence the processes of talent identification and management. The results confirm that intellectual capital, particularly human capital, plays a significant role in shaping the quality of talent management practices in educational institutions. Moreover, the findings underscore the importance of structural and relational capital in supporting an effective talent management framework. These results align with existing literature on the critical role of intellectual capital in organizational performance and development (Neeliah & Seetanah, 2016; Zeynalli, 2021).

The binomial test results demonstrated that the majority of teachers believe that intellectual capital in their schools surpasses the average societal expectation. Specifically, 92% of teachers viewed the intellectual capital score as higher than 120, confirming the favorable state of intellectual capital in these schools. This is consistent with Afridi's (2016) findings that human capital investments significantly enhance organizational performance. In the context of educational institutions, this underscores how well-prepared teachers and school staff contribute to the effective management of student talents (Afridi, 2016). Similarly, research by Escobedo et al. (2020) and Johnsen (2012) suggests that teacher training and knowledge about gifted education play a critical role in fostering intellectual capital within schools, allowing teachers to better identify

and nurture student potential (Escobedo et al., 2020; Johnsen, 2012).

When the components of intellectual capital were broken down, human capital emerged as the most significant factor, with 94% of the sample viewing it as above the average threshold of 45. This finding highlights the critical importance of human resources in the educational context, a sentiment echoed by Chahkandi et al. (2016), who emphasize the significant influence teachers and educational leaders have in shaping gifted education programs (Chahkandi et al., 2016). The overwhelming importance of human capital is further supported by the work of Vialle and Stoeger (2018), who argue that schools must focus on human capital development to achieve success in educating gifted students (Vialle & Stoeger, 2018). These findings align with the notion that well-qualified teachers and school leaders are indispensable to the development of intellectual capital and, consequently, to the overall effectiveness of talent management strategies.

Structural capital, which includes the guidelines, policies, and infrastructure supporting educational institutions, was another important factor, with 89% of teachers rating it as above the average threshold of 36. This result highlights the importance of a supportive organizational framework in the management of gifted students. Schools with well-structured academic and administrative systems, as outlined by Neeliah and Seetanah (2016), are more likely to have effective talent management systems in place (Neeliah & Seetanah, 2016). The structural elements of educational institutions play a pivotal role in guiding students through key academic and career pathways, as discussed in studies by Hernandez-Torrano and Saranlı (2014) and Kalbasi et al. (2018), which emphasize the importance of policies and curricular structures in supporting student development (Hernández-Torrano & Saranlı, 2014; Kalbasi et al., 2018). The current study confirms these observations, showing that schools with strong structural capital are better equipped to manage and nurture the talents of gifted students.

Relational capital, which refers to the networks and relationships that schools establish with families, communities, and other stakeholders, was also found to be a significant component, with 94% of respondents rating it above the average threshold of 39. This aligns with previous studies, such as those by Ghahremani et al. (2017) and Rayeji et al. (2020), which emphasize the role of community and familial support in student success (Ghahremani et al., 2017; Rayeji et al., 2020). Relational capital is crucial for creating an environment where students can thrive both

inside and outside of the classroom. The high value placed on relational capital by teachers in this study highlights the interconnectedness of schools with their broader social environments. By establishing strong partnerships with families and communities, schools can create a more comprehensive support system for managing student talents (Veas et al., 2018).

The findings of this study support the Actiotope Model of Giftedness proposed by Ziegler and Stoeger (2017), which emphasizes the importance of both endogenous and exogenous resources in the development of gifted students (Ziegler & Stoeger, 2017). The results indicate that human, structural, and relational capital collectively contribute to creating an optimal environment for talent management. This is in line with the observations of Ziegler et al. (2017), who suggest that learning organizations that prioritize intellectual capital are more likely to achieve long-term success in managing gifted education programs (Ziegler et al., 2017). Moreover, the present study's focus on the holistic nature of talent management, incorporating individual, school, and environmental factors, echoes the systemic approach advocated (Vialle & Stoeger, 2018).

The comparison of qualitative and quantitative findings further confirms that a well-rounded approach to talent management is necessary for the successful identification and development of gifted students. The qualitative data revealed four key factors influencing talent management: structural, school-related, individual and personality-related, and environmental factors. The role of school-related factors, particularly human resources, aligns with the quantitative findings that human capital is a crucial component of intellectual capital in schools. This reinforces the idea that talent management in schools is most effective when the quality of teaching staff is high, a conclusion supported by prior studies (Milinga, 2021; Mohammadi et al., 2018).

Furthermore, the influence of environmental factors, including family and peer relationships, is supported by previous research on the importance of relational capital. Ghahremani (2013) found that family involvement plays a critical role in shaping student success (Ghahremani, 2013), which is consistent with the present study's findings that family and community relationships significantly impact the management of gifted students' talents. This also echoes the findings of Rinn and Bishop (2015), who noted the role of external social factors in the development of gifted individuals (Rinn & Bishop, 2015).

While this study provides significant insights into the role of intellectual capital in the management of student talents, it is not without limitations. First, the study's sample was limited to teachers from a select group of schools, which may not be fully representative of the broader population of educators working in diverse educational settings. Additionally, the study's reliance on self-reported data from teachers may introduce a degree of bias, as respondents may overestimate or underestimate their schools' intellectual capital or talent management effectiveness. Moreover, the study focused primarily on secondary schools, leaving the dynamics of talent management in primary or higher education institutions unexplored. Finally, the cross-sectional nature of the research prevents a deeper understanding of how intellectual capital and talent management evolve over time, limiting the ability to establish causal relationships between the factors studied.

Future research could expand on this study by incorporating a larger, more diverse sample of schools and educators, including institutions from different geographical regions and socioeconomic backgrounds. Longitudinal studies could be conducted to observe how intellectual capital and talent management strategies develop over time, allowing for a more comprehensive analysis of the long-term effects of intellectual capital investment in schools. In addition, future studies could explore the role of intellectual capital in other educational levels, such as primary education or higher education, to examine how talent management practices differ across various stages of academic development. Furthermore, it would be valuable to investigate the perspectives of students and parents regarding talent management and intellectual capital to provide a more holistic understanding of the processes involved. Finally, future research could explore the impact of technology and digital tools on talent management and intellectual capital in education, as digitalization continues to play an increasingly important role in modern educational environments.

To enhance the management of student talents in gifted education, schools should invest in developing their intellectual capital, particularly by focusing on teacher training and professional development. Providing educators with the knowledge and skills necessary to identify and nurture gifted students will significantly improve talent management outcomes. Additionally, schools should establish strong organizational structures, including clear policies and guidelines for academic tracking and student



development, ensuring that structural capital is effectively leveraged to support student success.

Schools should also focus on strengthening their relational capital by building strong partnerships with families and communities. By engaging parents and other stakeholders in the educational process, schools can create a more supportive environment for students, helping to identify and nurture their talents both inside and outside the classroom. Finally, school leaders should continuously evaluate and improve their talent management practices, incorporating feedback from teachers, students, and families to ensure that their approaches remain effective and responsive to the needs of gifted students.

### Authors' Contributions

Authors equally contributed to this article.

### Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

### Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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### Declaration of Interest

The authors report no conflict of interest.

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### Ethical Considerations

All procedures performed in studies involving human participants were under the ethical standards of the institutional and, or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

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