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EDUCATIONAL ASSESSMENT & EVALUATION | RESEARCH ARTICLE

Current status of gifted education in Saudi Arabia

Fahad S. Alfaiz^{1*}, Abdulrahman A. Alfaid² and Abdullah M. Aljughaiman³

Abstract: The purpose of the study was to explain the current status of gifted education in Saudi Arabia based on the Educational and Learning Capital Model. The researchers used a mixed method design with two research questions: (a) what is the current status in Saudi Arabia to serve gifted students based on the Educational and Learning Capital Model? (b) what did gifted education specialists' believe about gifted education in Saudi Arabia based on the Educational and Learning Capital Model? The authors used three resources to collect data to answer the question: official documents, raw data, and a survey. The researchers evaluated Saudi Arabia's experience in gifted education and shed a light on the strengths and weaknesses of this experience. A number of recommendations had been proposed to enhance Saudi Arabia's experience in the field of gifted education.

Subjects: Teaching & Learning - Education; Educational Research; Gifted & Talented

Keywords: gifted education; Educational and Learning Capital Model; gifted education in Saudi Arabia

1. Introduction

The concept of giftedness developed significantly in the late twentieth century and the beginning of the twenty-first century. Many researchers embraced the idea of a systematic development

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PUBLIC INTEREST STATEMENT

The study was conducted to evaluate the experience of Saudi Arabia in gifted education. The authors used the Educational and Learning Capital Model to highlight the strengths and weaknesses of this experience. Three resources were used to gather the data: official documents, raw data, and a survey. The researchers found that Saudi Arabia's experience in gifted education is exemplary among other Arab countries. They have different practices to serve gifted students, such as summer enrichment programs, self-contained classroom programs, pull-out programs, evening and Saturday programs, gifted education centers, mentorship programs, and Olympiads and competitions programs. However, some issues should be considered by the leaders of gifted education in Saudi Arabia, such as connecting gifted programs to future professional careers, paying more attention to including physical and health components within gifted programs, and integrating scientific content with thinking and personal skills in same gifted programs.

approach. This movement was based on the perceived shortcomings in the traditional view of giftedness as a high, general ability while considering psychological and environmental processes as supporting items. In addition, it did not include essential variables such as creativity as a component of giftedness but considered it the result of experience accumulation and cognitive mastery (Brody & Stanley, 2005; Lubinski et al., 2014; Van Tassel-Baska, 2005).

Those who adopted the concept of talent development and the systemic conception of giftedness acknowledged that giftedness and multiple psychological factors within the individual himself cannot be separated from the surrounding environment. Environmental factors play a vital role in directing and crystallizing giftedness, and thus it describes a developing state, not a self-contained state in a specific time (Gagné, 2005; Ziegler, 2005). These ideas have emerged as a reaction to the exaggerated focus on genetic aspects. Therefore, they viewed giftedness as not a fixed characteristic owned or possessed by the individual but as a factor that develops over time. Giftedness is affected by the surrounding environment, educational setting, and the individual's opportunities.

Two further trends can be identified. The first subgroup shows that the mental, environmental, social, and economic factors are critical and affect talent formation, with the mental factors being the main components. This trend includes a main component with contributing factors. A second direction is that one system works together as components of giftedness, and there is no primary and auxiliary formation but one integrated whole. These two trends will be explored and then applied to current gifted education in Saudi Arabia.

Mönks and his colleagues made one of the first attempts to expand gifted development (Mönks et al., 1986). They developed Renzulli's Three-Ring model by adding the social environment as a fourth component. They further expanded it by emphasizing the role of the family, school, and peer group as three dimensions of the social content of gifted development. Similarly, Tannenbaum (1983) presented an early model called the "Sea Star Model." Tannenbaum indicated giftedness results from the interaction of five psychological and social factors: general ability, special aptitude, non-intellective requisites, environmental supports, and chance. Feldhusen (1997) presented a model of giftedness called the Talent Identification and Development in Education, defining talent as the consistency of general ability resulting from genetic predispositions, affected by life experiences at home and school. Piirto's (2000) model for giftedness presented it as an innate component in the first place, but that creativity is also an essential component in its recognition. Both can be developed through the surrounding environment.

Perhaps one of the most important efforts of the first subgroup is the model presented by Gagné (1991, 2005), which he called the Differentiated Model of Gifted and Talented. He pointed out that giftedness is an innate aptitude, and excellence results from this aptitude. Giftedness is an ability that needs care and development to be transformed into excellence through structured and targeted learning and training in skills required for a specific field.

Aljughaiman (2005, 2018) presented another concept of giftedness, considering giftedness an integrated system. He defines giftedness as a state of reliable excellence that appears due to the interaction of a group of influencing factors inside and outside the individual. Thus, the size and type of personal characteristics and support obtained from the surrounding environment affect the crystallization of excellence. According to Aljughaiman (2018), giftedness is a developmental concept, with the condition that there should be a basis for this growth represented in the presence of general or special innate preparations in one or more specific areas. This means that innate ability needs other factors to grow and expand to realize an exceptional ability in mental and learning skills and personality, enabling the individual to present creative behavior in a field distinguishing them from their peers.

Another view of the giftedness of the integrated system has been called the Munich Model of Giftedness by Heller (2004). The concept of giftedness is based on four variables with overlapping

dimensions: (a) independent variables related to talent (willingness), (b) areas of performance and achievement, (c) personal variables, and (d) variables related to the environment and areas of personal and environmental development. There are the factors of transformation from talent to performance or achievement showing superiority. Therefore, giftedness in this model is a multi-manifest ability that develops through non-mental influences. It can be noted that this model did not assume innate ability as a significant component and the rest supporting components but considers them all equal parts in influencing the development of giftedness.

Ziegler (2005) also presented an understanding of giftedness similar to the Munich model, called the Actiotope model. Being more detailed, the central idea is that giftedness is no longer located within the individual but in the system that consists of the individual and their environment. Therefore, this model can be classified under the integrated system. This model views giftedness as an integral part of the surrounding system, and consequently, the focus should be directed towards actions that comprise a sequence of partial measures. Giftedness emerges by focusing on the specific actions (all the actions that the individual can perform), which, in turn, is located in a system comprising individual elements (such as goals, self-actualization space, and self-efficacy) and a variety of contexts (such as environmental, social, and school). The conclusion is that developing excellence or talent in a particular field requires gradually expanding the specifics of one's actions. This might include helping the individual develop their understanding of their abilities and what is right for them, defining their own goals, distributing their efforts appropriately, confidence in their ability to perform and succeed, and self-follow-up on performance and goals. Since giftedness is localized in the individual's system and environment, both individual (internal) and environmental (external) sources must be taken into account. The internal sources have been called learning capital, and the external sources educational capital (Ziegler & Baker, 2013).

The Munich Model and the Actiotope Model share in maximizing the role of environmental factors at the same level (or possibly higher) than the personal factors represented in innate abilities. Here, the growth and crystallization of giftedness depend on the support factors available in the surrounding environment. The three models of Munich, Actiotope, and Aljughaiman stress that the coalescing of giftedness into exceptional excellence is subject to other considerations not limited to the presence or absence of innate talent or personal traits. However, external environmental and social factors, the availability of internal factors, and the individual's ability to self-develop all are important. Thus, giftedness blooms or fades according to the combination of those factors.

The critical question is if this is a significant development in the concept of giftedness reflected in the actual practices in gifted education in Saudi Arabia? The literature indicates that gifted education began in 1968 when education policies in the Kingdom included three legal articles stating the importance of identifying gifted students and providing educational programs (Aljughaiman et al., 2016). In 1990, a Talent Search Project was established which resulted in the development a general ability scale, codifying the Wechsler scale, a behavioral checklist by parents and teachers, and self-nomination (Al-Nafi' et al., 2000). Providing actual programs and services for gifted students began in 1999 when the King Abdulaziz and His Companions Foundation for Giftedness and Creativity (Mawhiba) was established. Shortly afterward, the General Administration for Gifted Education was established in the Ministry of Education in 2000. Centers for the gifted were established in all regions of Saudi Arabia, now numbering nearly 90. They are distributed between males and females, where services are provided in the evening and on weekends.

The Ministry of Education in Saudi Arabia has adopted an expanded definition of the gifted student, who is represented as the student who has extraordinary aptitudes and abilities or outstanding performance from the rest of their peers in one or more of the areas valued by society, especially in the areas of mental excellence, educational achievement, creativity and innovation, and special skills and abilities, who are selected according to the specific scientific

bases and standards used for this purpose (Aljughaiman et al., 2009). Enrichment programs of various kinds are the most prevalent for students identified through the approved tools. They provide enrichment through pull-out programs in public education schools and evening and weekend programs at gifted centers. During the summer vacation, enrichment programs are organized by gifted centers, universities, research centers, and major companies (Aljughaiman, 2010, 2011-a-a). The implementation of the academic acceleration has been limited to grade skipping for very few students each year.

It is encouraging that many studies have evaluated gifted education in Saudi Arabia. Several studies have dealt with the methodologies of identifying gifted students (Albusaif & Aljughaiman, 2020; Aljughaiman, 2010, 2019) and educators' attitudes towards these programs (Aljughaiman et al., 2009). Research has also investigated the quality of training provided to educators (Aljughaiman, 2008, 2012). The effectiveness of enrichment programs has been evaluated from multiple aspects (Al-Aqil et al., 2019; Aldaoud, 2010; AlQahtani, 2009; Al-Qarni, 2010; Aljughaiman, Aljughaiman, 2011-b-b, 2011-c; Maajini, 2006). These studies, in general, reported that there are many gifted education programs in Saudi Arabia. Except for Hein et al. (2014), who attempted to identify the surrounding environmental factors that could impact gifted students' programs, it is noticeable that most reports cover variables that are directly related to the quality of enrichment programs. These include the qualification of teachers for these programs, their effectiveness in terms of student performance, and the attitudes of educators and students. These studies seek to determine the immediate impact of these programs on students, and this may be an indicator of the perception of giftedness as centered within the individual.

In the current study, the researchers seek to examine the extent to which the educational field in Saudi Arabia has adopted the modern concept of giftedness. To do that, the Actiotope model was chosen as the basis since it provides good details of the internal and external factors affecting giftedness, which are not available in other models.

2. Conceptual framework

The conceptual framework was based on the Educational and Learning Capital Model (ELCM) developed by Ziegler and colleagues (Ziegler & Baker, 2013; Ziegler et al., 2018, 2017). The ELCM includes two main parts of capitals (Ziegler et al., 2017). First, educational capitals focus on resources that support individuals' learning. It includes five subcomponents (didactic, social, infrastructural, cultural, and economic resources). Second, learning capitals focus on environmental resources that support individuals' learning. It contains five subcomponents (telic, actional, episodic, organismic, and attentional resources). The ELCM is based on the assumption that "a systemic perspective on giftedness is more theoretically and educationally useful than a trait perspective" (Vialle & Stoeger, 2018, p. 295). Table 1 includes a defamiation of each subcomponent of the Educational and Learning Capital Model.

The flexibility of the ELCM is one of its advantage in education. This model can be studied with respect of domain-specific of talent development (Reutlinger et al., 2020; Ziegler et al., 2019). The ELCM has been successfully implemented empirically in Arab countries (Debatin et al., 2018).

3. Purpose and research questions

The study aimed to shed light on gifted education practices in Saudi Arabia based on the ELCM and enhance the development of programs and services in Saudi Arabia. The following questions guided the study:

- (1) What is the current status in Saudi Arabia to serve gifted students based on the Educational and Learning Capital Model?
- (2) What did gifted education specialists' believe about gifted education in Saudi Arabia based on the Educational and Learning Capital Model?

Table 1. Definitions of the Educational and Learning Capital Mode (ELCM)

Capital	Definition
Didactic	“Didactic educational capital is the assembled know-how involved in the design and improvement of educational and learning processes” (p. 26).
Social	“Social educational capital includes all persons and social institutions that can directly or indirectly contribute to the success of learning and educational processes” (p. 26).
Infrastructural	“Infrastructural educational capital relates to materially implemented possibilities for action that permit learning and education to take place” (p. 26).
Cultural	“Cultural educational capital includes value system, thinking patterns, models and the like, which can facilitate or hinder the attainment of learning and educational goals” (p. 25).
Economic Resources	“Economic educational capital is every kind of wealth, possession, money, or valuables that can be invested in the initiation and maintenance of educational and learning processes” (p. 25).
Telic	“Telic learning capital comprises the totality of a person’s anticipated goal states that offer possibilities for satisfying their needs” (p. 27).
Actional	“Actional learning capital means the action repertoire of a person the totality of actions they are capable of performing” (p. 27).
Episodic	“Episodic learning capital concerns the simultaneous goal and situation relevant action patterns that are accessible to a person” (p. 28).
Organismic	“Organismic learning capital consists of the physiological and constitutional resources of a person” (p. 27).
Attentional Resources	“Attentional learning capital denotes the quantitative and qualitative attentional resources that a person can apply to learning” (p. 28).

Note: The definitions in Table 1 are based on Ziegler’s and Baker’s definitions of the ELCN (2013).

4. Method

4.1. Research design

A mixed-method design was used in the current study. This approach is suitable for analyzing quantitative and qualitative data (Creswell, 2014).

4.2. Participants

Two institutions were included in the study: the Ministry of Education in Saudi Arabia and King Abdulaziz and his Companions Foundation for Giftedness and Creativity, known as Mawhiba. Because some information of the study was difficult to obtain from the two institutions, we included the following participants: (a) directors of the gifted education departments, (b) directors of the gifted education centers, (c) gifted education supervisors, (d) gifted education teachers, (e) gifted education coordinators, and (f) gifted education experts.

4.3. Instruments

Three resources of data were used to answer the research questions. They included documents, raw data from the Ministry of Education, and survey data.

4.4. Documents

For the study purpose, the research team used documents from the Ministry of Education and Mawhiba. These resources included annual reports, procedural guideline documents, and reliable information from websites.

4.5. Raw data

The research team developed excel documents to gather statistics data about gifted students, teachers, schools, and gifted programs.

4.6. Survey

Some information was not available for the research team due to the difficulty of accessing data in both institutions: the Ministry and Mawhiba. Thus, a survey was developed and then reviewed by experts. It included two parts: general information and survey statements. For example, we asked participants about their perspective whether if: (a) there is a clear mechanism in the Ministry of Education to support gifted students in various programs (self-contained classroom, pull out programs, summer enrichment programs, etc.), (b) parents participate in gifted programs to develop students' abilities, (c) there are various learning resources available for gifted programs (internet, libraries, laboratories, etc.), (d) there is a positive perspective of gifted students towards the programs offered to them, and (e) the Ministry of Education provides a special budget for gifted programs.

5. Data collection procedures

5.1. Documents

The documents were collected through two methods. First, a member of the research team searched for information and documents that belonged to the purpose of the study from the websites owned by the Ministry of Education and Mawhiba. Second, communications with staff in both the Ministry and Mawhiba. Most of the documents were found through the first method.

5.2. Raw data

The research team sent excel documents to a responsible individual in both the Ministry and Mawhiba and asked them to share statistical information about gifted students, teachers, schools, and gifted programs. Because of the current pandemic (COVID-19), we used only information in the 2019–2020 Academic Year. However, no in-depth information was received from Mawhiba due to its policy of sharing data with researchers.

5.3. Survey

The survey was created through Google Doc. And then shared with participants (directors of the gifted education departments, directors of the gifted education centers, gifted education supervisors, gifted education teachers, gifted education coordinators, and gifted education exports) through WhatsApp. Also, emails were sent to directors of the gifted education departments and asked them to complete the survey and shared it with staff in their departments. The total number of participants who completed the survey was 193: 107 male and 86 female.

5.4. Data analysis

Two authors reviewed and studied all documents collected from the Ministry of Education and Mawhiba through their official websites to determine the strengths and weaknesses of gifted education practices in Saudi Arabia. The authors used MS Excel to convert survey data to percentages based on different variables such as students, gifted education staff, schools, grade levels, and type of gifted programs.

6. Results

To organize the results based on the research questions, we followed the same structure of the Educational and Learning Capital Model (Ziegler & Baker, 2013; Ziegler et al., 2018, 2017). We started with educational capital and then reported the results of learning capital.

Table 2. Percentage of students in gifted education programs in the Ministry of Education based in school year 2019–2020

Based on Total Students in SA*

Program	School levels											
				Elementary school			Middle school			High school		
	All%	M%	F%	All%	M%	F%	All%	M%	F%	All%	M%	F%
Self-Contained Classroom	0.44	0.39	0.49	0.28	0.28	0.28	0.50	0.44	0.56	0.47	0.39	0.56
Pull-Out	0.64	0.58	0.71	0.91	1.00	0.82	0.50	0.34	0.68	0.47	0.28	0.72
Evening and Saturday	0.23	0.28	0.18	0.19	0.22	0.16	0.25	0.29	0.21	0.29	0.32	0.25
Gifted Education Centers	1.21	1.14	1.29	1.04	1.11	0.95	1.17	1.03	1.32	1.29	1.17	1.45
Gifted School	0.06	0.07	0.06	0.00	0.00	0.00	0.10	0.11	0.09	0.09	0.09	0.10
Acceleration	0.01	0.01	0.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Note: * Students in grades 1 to 3 were removed from these statistics since no gifted education programs were available for them; Percentage of students, who received gifted education services, compared with all students' population; M = Male, F = Female, N/A = No data available based on school level; SA = Saudi Arabia.

6.1. Educational capital

The educational capital includes five subcomponents: didactic, social, infrastructural, cultural, and economic resources. We presented the results of the current status and then reported the perspective of gifted education specialists about each subcomponent.

6.1.1. The didactic educational capital- current status

Gifted students in Saudi Arabia are identified by an official instrument called: Mawhiba Multiple Cognitive Aptitude Test (MMCAT), developed by Mawhiba in 2011 (National Center for Measurement, 2018). The Ministry also used another instrument called: General Ability Test (Aljughaiman, 2018). According to the Ministry of Education, in 2019, 1.12% of total students (1.24% males and 0.98% females) were identified as gifted by MMCAT while the other instrument identified 0.43% of total students in Saudi Arabia. Students nominated to MMCAT by two methods: teachers or self-nomination (by students or parents).

Two types of gifted education programs are offered to students in Saudi Arabia: enrichment and acceleration (The Ministry of Education, 2019). In 2019, the total number of students in public and private sectors from grades 4 to 12 was approximately 4,220,000 students. Among these students, around 1.06% were identified as gifted students (General Administration of Gifted, 2019). The low number of gifted students who are identified yearly may attribute to the fact that most gifted programs in Saudi Arabia focus on STEM majors and ignore other talents, such as gifted students in social sciences. Table 2 presented the number of students who participated in enrichment and acceleration programs implemented by the Ministry of Education in 2019. It should be noted that the number of students who received services from Mawhiba was not included in Table 2 because no data were available in detail.

Enrichment Programs. The term enrichment refers to “richer and more varied educational experiences, a curriculum that is modified to provide greater depth and breadth than is generally provided” (Davis et al., 2013, p. 127). Different types of enrichment programs are implemented in Saudi Arabia since 2000 based on an institution capacity: the Ministry of Education and Mawhiba. These programs are offered to students from grade 4 to grade 12.

Summer Enrichment Program (SEP). The SEPs are recently focused on Science, Technology, Engineering, and Mathematics (STEM) and implemented in two routes: academic or research. Mawhiba implements its SEPs at universities, research centers, and schools inside and outside Saudi Arabia by faculty members, researchers, and teachers (Mawhiba, 2020). Mawhiba has developed 28 enrichment units in STEM in collaboration with the Center for Talented Youth (CTY) at Johns Hopkins. The SEPs are presented as part-time or residential programs based on students’ age. The number of students who are participated in the SEPs each year is varied. For example, in summer 2019, around 6337 students (18,040 students were identified as gifted in that year) benefited from SEPs presented by Mawhiba (Mawhiba, 2021-a). The Ministry of Education has suspended its SEPs recently.

Self-Contained Classroom Program. Both the Ministry and Mawhiba have offered this type of program and set their requirements to open these classrooms (GAG, 2016-a; Mawhiba, 2021-b). Not all gifted students identified in Saudi Arabia are accepted in this program due to the limitation of seats and eligibility requirements. For example, in the school year 2019–2020, 32.7% of total gifted students (45,084) in the Ministry were enrolled in these classrooms. Around 1.29% of schools in the Ministry of Education hosted this kind of program (Table 3). The percentage of students (based on gender and school levels) who benefited from this program in the Ministry of Education is presented in Table 2. Mawhiba mentioned that around 1998 students had enrolled in a self-contained classroom program in 2019, and it was implemented in 78 schools in eight cities around the kingdom of Saudi Arabia (Mawhiba, 2021-a). Gifted students are taught regular curricula and then received extracurricular focused mainly on STEM disciplines for part of the school day. It should be noted that the Ministry has its general standards for developing

Table 3. Spread of gifted education programs in schools in the Ministry of Education based in school year 2019–2020

Program	All Schools*			School levels								
	M%	F%	All%	Elementary school			Meddle school			High school		
All%	M%	F%	All%	All%	M%	F%	All%	M%	F%	All%	M%	F%
Self-Contained Classroom	1.29	1.10	1.47	0.77	0.77	0.65	0.88	2.05	1.61	2.52	1.98	2.41
Pull-Out	4.21	2.72	5.58	5.12	4.35	5.89	4.05	1.54	6.74	3.74	1.06	6.51
Gifted School	0.04	0.05	0.04	0	0	0	0.09	0.09	0.08	0.10	0.10	0.10

Note: *Percentage of gifted education programs in all schools in Saudi Arabia; M = Schools for Males, F = Schools for Females.

enrichment units as extracurricular for gifted students, while Mawhiba has developed 156 textbooks as extracurricular since 2009 (GAG, 2016-a; Mawhiba, 2021-b).

Pull-Out Program. Only the Ministry of Education offers this type of program in particular schools around the kingdom for students in grades 4 to 11 (GAG, 2016-b). The purpose of this program is to nurturing gifted students by providing a motivating and attractive educational environment based on specific standards to invest these capabilities to reach their maximum limits while maximizing equal educational opportunities for gifted students in a regular classroom (GAG, 2016-b). The focus of the pull-out program is to promote gifted students in two areas: thinking strategies and personal skills. Approximately 4.21% of total schools in Saudi Arabia hosted pull-out program (5.12% in elementary schools, 4.05% in middle schools, and 3.74% in high schools) Table 3. The percentage of students (based on gender and school levels) who benefited from the pull-out program is presented in Table 2.

Evening and Saturday Program. Part of identified gifted students does not receive services in their schools. Thus, the Ministry and Mawhiba have developed a number of evening and Saturday programs to serve these students in different cities in Saudi Arabia (General Administration of Gifted, 2015; Mawhiba, 2020, Mawhiba, 2021-a). In the Ministry, enrichment units are developed around scientific problems, and gifted students receive around 30 hours of training to develop their thinking and personal skills. In contrast, Mawhiba uses the same extracurricular that are used in the self-contained classroom program as teaching units in the Saturday program. In the Ministry of Education, the percentage of gifted students who benefited from this type of program is 0.23% of the total students in Saudi Arabia. Table 2 illustrated the percentage of students (based on gender and school levels) who benefited from the evening and Saturday program in the Ministry of Education. Mawhiba presents this program in two methods: in-person and online for seven weeks each semester with a total of 28 hours, and around 1404 students had enrolled in this program in 2019 (Mawhiba-2021-a).

Gifted Education Centers. Only the Ministry of Education offers this program in its 91 gifted education centers around the kingdom: 41 for males and 50 for females (General Administration of Gifted, 2019). The aim of this program is to serve 1% of total students in any educational district (General Administration of Gifted, 2019). In Saudi Arabia, there are 94 educational districts: 47 for males and 47 for females. Most educational programs provided by the centers focus on creative problem solving and research skills programs. Some educational districts have more than one gifted education center. In 2019, gifted education centers had served around 1.21% of total students. The percentage of gifted students (based on gender and school levels) who benefited from this program is presented in Table 2.

Gifted Schools. Only the Ministry of Education offers this program in its public schools in middle and high schools (General Administration of Gifted, 2019). Based on its statistics, 0.06% of total schools in the Ministry of Education are now classified as gifted schools. Table 3 illustrated the percentage of gifted schools in the Ministry of Education

Mentorship Program. This program is offered by Mawhiba for gifted students from age 15 to 18. The purpose of this program is to connect gifted students with distinguished supervisors (mostly faculty members) to develop students' abilities and skills based on their interests and to develop their scientific research skills and problem-solving strategies, in order to prepare the students to participate in the National Olympiad for Scientific Creativity (Mawhiba, 2020). The number of students who benefited from this program is not clear due to the difficulty of reaching accurate data.

Olympiads and Competitions Program. Mawhiba is collaborated with the Ministry to implement and participate in a number of national and international competitions. The purpose of this program is to identify and prepare high able students to have the honor of representing the

Table 4 Summary of Gifted Education Specialists' Perspectives about the Educational and Learning Capital Model

		Part A				
Capital	Statement	Participants' Responses		If Agreed, indicate your satisfaction		
		Agreed	Not Agreed	Do not know	Satisfied	Not satisfied
Didactic Educational Capital	There is a clear mechanism in the Ministry of Education to support gifted students in various programs	60.1%	31.8%	8.1%	4.7%	53%
	There is a training for gifted education teachers	62.6%	28.8%	8.6%	4.16%	58.4%
	Curricula are designed for gifted students in different programs	42.9%	44.9%	12.1%	46.1%	53.9%
	Programs offered to gifted students are based on the principle of a sequence of care during their general education journey	48%	41.9%	10.1%	52.9%	47.1%
	Programs offered to gifted students contribute to develop their scientific, thinking and learning skills, as well as personal and social skills in an integrated manner	64.6%	27.3%	8.1%	53.4%	46.6%

(Continued)

Table 4 (Continued)

Part A

Capital	Statement	Participants' Responses			If Agreed, indicate your satisfaction	
		Agreed	Not Agreed	Do not know	Satisfied	Not satisfied
Social Educational Capital	Parents participate in gifted programs to develop students' abilities	21.2%	61.6%	17.2%	38.8%	61.2%
	There are associations in Saudi Arabia to support gifted programs	27.3%	51%	21.7%	25.8%	74.2%
	There is a sufficient number of specialists working in the field of gifted education	17.2%	68.7%	14.1%	N/A	N/A
Infrastructural Educational Capital	There is an infrastructure for gifted programs (buildings, activities classrooms)	25.8%	69.7%	4.5%	32.6%	67.4%
	Gifted programs have a variety of learning resources (internet, libraries, labs...etc)	36.9%	53.5%	9.6%	31.7%	68.3%
	Universities and research centers participate in providing programs for gifted students	36.9%	43.4%	19.7%	40.9%	59.1%

(Continued)

Table 4 (Continued)

		Part A				
		Participants' Responses		If Agreed, indicate your satisfaction		
Capital	Statement	Agreed	Not Agreed	Do not know	Satisfied	Not satisfied
Cultural Educational Capital	society has a positive view toward gifted individuals	66.7%	20.2%	13.1%	N/A	N/A
	Parents have a positive view toward gifted programs	48.5%	34.3%	17.2%	N/A	N/A
	Gifted students have a positive view toward the programs offered to them	49%	32.8%	18.2%	N/A	N/A
	A clear definition of giftedness is adopted by the Ministry of Education	72.2%	18.7%	8.6%	69.9%	30.1%

(Continued)

Table 4 (Continued)

		Part A				
Capital	Statement	Participants' Responses			If Agreed, indicate your satisfaction	
		Agreed	Not Agreed	Do not know	Satisfied	Not satisfied
Economic Educational Capital	The Ministry of Education provides a special budget for gifted programs	22.7%	57.6%	19.7%	22.6%	77.4%
	The sources and entities supporting gifted programs in Saudi Arabia vary whether in public or private sectors	35.9%	48%	16.2%	29.9%	70.1%
	Parents spend financially to develop the gifts of their children	47.5%	27.8%	24.7%	41.4%	58.6%
	There are scholarships and support institutions for gifted programs	50%	27.8%	22.2%	40.3%	59.7%

(Continued)

Table 4 (Continued)

		Part A				
Capital	Statement	Participants' Responses			If Agreed, indicate your satisfaction	
		Agreed	Not Agreed	Do not know	Satisfied	Not satisfied
Attentional Learning Capital	Gifted programs provide sufficient time for gifted students to engage in developing their gifts	41.9%	43.9%	14.1%	41.2%	58.8%
	Gifted students are motivated to learn	79.8%	14.1%	6.1%	71.3%	28.7%
	Programs for gifted students tend to be recreational activities rather than programs designed to develop students' gifts	41.4%	49.5%	9.1%	20.2%	79.8%
Episodical Learning Capital	Programs offered to gifted students are related to their actual interest areas	38.9%	50.5%	10.6%	55.6%	44.4%
	Gifted students find enjoyable in gifted programs	65.7%	23.7%	10.6%	N/A	N/A
	Schools contribute to the development of students' gifts	51%	36.9%	12.1%	43%	57%

(Continued)

Table 4 (Continued)

		Part A				
Capital	Statement	Participants' Responses			If Agreed, indicate your satisfaction	
		Agreed	Not Agreed	Do not know	Satisfied	Not satisfied
Telic Learning Capital	Gifted programs motivate gifted students towards learning	75.3%	18.2%	6.6%	61.4%	38.6%
	Gifted programs are linked to the future professional needs of the gifted	39.4%	42.4%	18.2%	50%	50%
Organismic Learning Capital	Gifted programs are concerned with developing the physical aspects of gifted students and their healthy habits (food, sports, sleep)	20.2%	66.2%	13.6%	44.3%	55.7%
	Gifted students participate in international competitions	48%	30.8%	21.2%	48.4%	51.6%
Actional Learning Capital	Gifted students participate in international competitions	86.9%	5.1%	8.1%	68.2%	31.8%
	Gifted students win prizes in international competitions	86.9%	5.6%	7.6%	75%	25%
Capital	Statement	High	Medium	Low	Do not know	

(Continued)

Table 4 (Continued)

		Part A					
Capital	Statement	Participants' Responses			If Agreed, indicate your satisfaction		
		Agreed	Not Agreed	Do not know	Satisfied	Not satisfied	
Cultural Educational Capital	What is the level of society's expectations towards gifted students to serve their society in the future?	49%	27.3%	19.7%	4%	4%	
	How do you evaluate the perception of gifted students by their peers?	46.5%	37.9%	11.6%		4%	
Capital	Statement	Yes	No	Do not know	If yes, determine satisfaction		
Didactic Educational Capital	Gifted students' satisfaction is measured annually?	44.4	36.4	19.2	High	Medium	Low
	Parents' satisfaction is measured annually?	39.4	39.4	21.2	33.3	46.8	19.8
Capital	Gifted education teachers' satisfaction is measured annually?	39.4	47	13.6	36.6	41.6	21.8
	Statement	Yes	No	Do not know	If yes, are these standards actually implemented?		
					High	Medium	Low

(Continued)

Table 4 (Continued)

Part A

Capital	Statement	Participants' Responses			If Agreed, indicate your satisfaction		
		Agreed	Not Agreed	Do not know	Satisfied	Not satisfied	
Social Educational Capital	Are there clear standards for nominating gifted education teacher?	55.1	29.3	15.7	52.2	25.4	22.4
	Are there clear standards for nominating gifted education supervisor?	47	31.3	21.7	48.7	27.7	23.5
	Are there clear standards for nominating director of gifted education center?	33.8	33.3	32.8	34.5	30.1	35.4

Table 5. Gifted education teachers and supervisors in the ministry of education based in school year 2019–2020

Position	All	Male	%	Female	%
Gifted Education Teachers in all Programs	4577	2457	53.68	2120	46.32
Gifted Education Supervisors	348	170	48.85	178	51.15

Table 6. Ratio (teachers to students and supervisors to teachers) in the ministry of education based in school year 2019–2020

Elements	All	Male	Female
	Students	45,084	24,702
Teachers	4577	2457	2120
Supervisors	348	170	178
Students to Teachers	9.9:1	10:1	9.6:1
Teachers to Supervisors	13.2:1	18.9:1	11.9:1

country in distinguished scientific competitions in different areas, such as mathematics, computer sciences, physics, and chemistry (Mawhiba, 2020). All students from 3rd to 12th grades have a right to enroll in these competitions, and later eligible students are selected and be prepared to participate in international Olympiads and competitions through intensive training (Mawhiba, 2020). According to Mawhiba (2021-a), more than 84,418 students have enrolled in national competition (Ibdaa) in 2019, and more than 35,000 students have received training to participate in international competitions since the establishment of the Olympiads and competitions program (Mawhiba, 2020).

Acceleration: The term acceleration defines as a method to move a student, who is identified as gifted, from one grade level to another after they meet the acceleration requirements (General Administration of Gifted, 2017). Gifted students have a right to be accelerated twice during their journey in the general education system from grade 4th to 5th and/or from grade 7th to 8th (General Administration of Gifted, 2020). In the school year 2019–2020, approximately 0.01% of total students in the Ministry of Education were accelerated (Table 2).

Professional Development Workshops. In both institutions, the Ministry and Mawhiba, gifted education teachers receive professional development workshops to teach gifted students. The number of training hours depends on gifted education types and the role of staff members. For example, the Ministry provides 66 hours of training for gifted education teachers to participate in a self-contained classroom program. In contrast, no information about the total hours of training from Mawhiba was available. However, Mawhiba mentioned in its internal report (2021) that more than 30,000 individuals have received training to implement its programs since 2000.

Evaluation. The Ministry and Mawhiba evaluate enrichment programs every year. The evaluation processes targeted students, parents, and teachers (GAG, 2016-a, b; General Administration of Gifted, 2015; Mawhiba, 2021-b; Mawhiba, n.d.-a). However, the results of these evaluations are not available for the authors of the current study

6.2. Gifted education specialists' perspectives about the didactic educational capital

Not all data were available for the authors to investigate each component of Educational Capital. Thus, we asked specialists in gifted education in the Ministry of Education to share their perspectives about the practices of gifted education in Saudi Arabia. We could summarize their perspectives as follow: First, in general, there is a mechanism in the Ministry of Education and Mawhiba to support gifted students in various programs, such as gifted education classrooms and pull-out programs. Among 193 participants in our survey, 60.1% reported that a clear mechanism for supporting gifted students had been established. However, 53% of them were not satisfied with practices of supporting gifted education programs. Second, gifted education teachers, in general, had received professional development workshops. In our survey, 62.6% of participants agreed that teachers received training before implementing enrichment programs, while 28.8% were not agreed and 8.6% did not know. However, 58.4% of the sample was not satisfied with the method of training the teachers. Third, programs offered to gifted students contributed, in some ways, to develop their scientific, thinking, and learning skills, as well as personal and social skills. Nearly 64.6% of participants agreed with this claim, and 53.4 were satisfied with the components of programs that were offered to gifted students. Fourth, the Ministry of Education developed its teaching units in different gifted education programs, 53.9% of participants in our survey were not satisfied with teaching units designed by the Ministry. Fifth, programs offered by the Ministry of Education to gifted students, in general, are based on the principle of continuity during their general education journey. Approximately 48% of the participants agreed with this conclusion compared with 41.9% of the sample who did not agree. Finally, on average, 41.1% of the sample agreed there is evaluation of gifted education programs implemented by the Ministry of Education to measured stakeholders (students, parents, and teachers), 40.9% reported no evaluation was established, while 18% did not know. Table 4 (Parts A and C) summarized the samples' perspectives on the Didactic Educational Capital.

6.3. Social educational capital- current status

Different specialists are involved in nurturing gifted students' abilities and skills, such as gifted education teachers, gifted education supervisors, gifted education coordinators, and faculty members. In 2019, there were 4577 gifted education teachers in the Ministry of education (53.68% males and 46.32% females). The number of gifted education supervisors in the same year was 348 (48.85% males and 51.15% females) Table 5. The ratio between gifted students and gifted education teachers in 2019 in the Ministry of Education was 9.9:1 (10:1 for males and 9.6:1 for females), and the ratio between gifted education teachers and supervisors was 13.2:1 (18.9:1 for males and 11.9:1 for females) Table 6. However, the ratio was varied based on programs types. For example, in the pull-out program, the ratio was 16.7:1, while in a self-contained classroom program, the ratio was 5.3:1. The Ministry of Education and Mawhiba have set standards to nominate specialists to work with gifted students (General Administration of Gifted, 2015, 2016-a, 2016-b, 2017, 2018; Mawhiba, 2020). For example, gifted education teachers who work with students in pull-out programs must meet the following requirements: (a) has a bachelor degree in STEM or gifted education, (b) has three years of experience in teaching, (c) has nominated from their supervisors, (d) received an excellent grade in their annual evaluation in the past two years, and (e) has passed an interview (AGA, General Administration of Gifted, 2016-b). Faculty members in different universities are working with gifted students in two main programs: summer enrichment programs and mentorship. Unfortunately, the number of faculty members is not available for the purpose of the study. The advocacy groups in Saudi Arabia are not established yet for parents or specialists (Alamer & Phillipson, 2021) except for one new association called: Creative Association for Talent "ibdaa" in a small district (ibdaa, n.d.).

6.4. Gifted education specialists' perspectives about the social educational capital

There are standards to nominate gifted education teachers and gifted education supervisors, and directors of gifted education centers. On average, 45.3% of our sample believed that there were clear standards to nominate gifted specialists (teachers, supervisors, and directors of gifted education centers) compared with 31.3% who did not agree, while 23.4% did not know if there

any standards to nominate gifted education specialists. Parents, in general, did not participate in gifted education programs to develop students' abilities and this claimed was supported by 61.6% of the survey sample. The number of specialists working in the field of gifted education in Saudi Arabia is still insufficient. Around 68.7% of our sample agreed with this conclusion. Although gifted education in Saudi Arabia established officially in 2000, no official advocacy groups are existed. This claimed was supported with 51% of our survey sample. Table 4 (Parts A and C) summarized the samples' perspectives on the Social Educational Capital.

6.5. Infrastructural educational capital—current status

The special infrastructures are not developed specifically for gifted students. However, many resources are available for gifted students. For example, the Ministry of Education has established 91 gifted education centers for gifted students around the Kingdom (General Administration of Gifted, 2019). These centers are equipped with a number of devices and tools, such as labs, computers, and the internet (General Administration of Gifted, 2019). Mawhiba, on the other hand, has developed partnerships with universities, research centers, and private schools to allow students access to libraries, labs, and recreation centers (Mawhiba, 2020). In addition, Mawhiba has developed a strategy to translate gifted education books to specialists and made them available free on its website (Mawhiba, 2021-b, n.d.-b).

6.6. Gifted education specialists' perspectives about the infrastructural educational capital

The programs implemented directly by the Ministry of Education do still not benefit from the resources available in Saudi Arabia. Approximately, 69.7% of our sample reported that there was a lack of many resources available for them to support gifted students. Around 53.5% believed that gifted programs had no a variety of learning resources, such as the internet, libraries, labs. The specialists (43.4%) reported that universities and research centers did not participate in providing programs for gifted students. Table 4 (Part A) summarized the samples' perspectives on the Infrastructural Educational Capital.

6.7. Cultural educational capital—current status

The Ministry of Education is required to serve gifted students with different talents. Thus, The Ministry has adopted Marland's (1971) definition of giftedness (Aljughaiman, 2018). In contrast, no clear definition of giftedness has been developed by Mawhiba. However, the foundation has focused its programs on STEM disciplines recently. Gifted education programs provided by the Ministry cover a wide range of disciplines, such as STEM, art, and social science. Research that measures community belief about gifted individuals has not existed yet.

6.8. Gifted education specialists' perspectives about the cultural educational capital

Around 72% of our sample believed that the definition of giftedness adopted by the Ministry of Education is clear. The sample reported that 66.7% of society had a positive view toward gifted individuals, 48.5% of parents had a positive view toward gifted programs, and 49% of gifted students had a positive view toward the programs offered to them. Table 4 (Parts A) summarized the samples' perspectives on the Cultural Educational Capital.

6.9. Economic educational capital—current status

The budget of gifted education programs implemented by the Ministry of Education is within its annual budget. No information about the budget was available for researchers. However, the cost was mentioned in some programs' guidance. For example, in the evening program, the cost for each student for 30 hours is around \$217 (United States Dollar) included food, transportation, educational supplies, financial remunerations for implementers, and final ceremony (General Administration of Gifted, 2015). All gifted education programs implemented by the Ministry of Education are free of charge. On the other hand, Mawhiba received its budget from the "government, private sector, donations and investments, its budget is unknown" (Alamer & Phillipson, 2021, p. 10). Most of the programs offered by Mawhiba are tuition-based (Muammar & Alfaiz, 2021). Mawhiba collaborated with the Custodian of the Two Holy Mosques Program for Foreign

Scholarships to establish Mawhiba Scholarship for its students (Mawhiba, 2020). The number of students who benefited from this program was 190 students (Mawhiba, 2021-a). However, the program has suspended in 2021 (Mawhiba, n.d.-c).

6.10. Gifted education specialists' perspectives about the economic educational capital

Most of the specialists in our sample (57.6%) in the Ministry (gifted education teachers, supervisors, coordinators and experts, and directors of gifted education departments and centers) were not satisfied with the budget allocated to gifted education programs. The sample reported (48%) that the sources and entities supporting gifted programs in Saudi Arabia were not varied, whether in public or private sectors. Around 47.5% of the specialists believed that parents spent financially to develop the gifts of their children. The sample (50%) also indicated that there were scholarships and support institutions for gifted programs in Saudi Arabia. Table 4 (Part A) summarized the samples' perspectives on the Economic Educational Capital.

7. Learning capitals

7.1. The attentional learning capital—current status

Most gifted programs in Saudi Arabia (e.g., summer enrichment and pull-out programs) aim to activate the learner's role through higher-order thinking skills in various educational situations that require scientific research skills and experience (General Administration of Gifted, 2015; GAG, 2016-a; GAG, 2016-b; Mawhiba, 2019). The time allocated for gifted students to develop their talents depends on program types (GAG, 2015; GAG, 2016-a; GAG, 2016-b; Mawhiba, 2019). For example, students spend more time in summer enrichment programs than other gifted programs, especially programs implemented in schools, which increases the opportunity for students to develop their abilities and talents. Unfortunately, no data were available to assess the Attentional Learning Capital in-depth. However, we could explore this capital from the perspectives of gifted education specialists in the ministry of education through a survey that was developed for this purpose and was discussed in the following section.

7.2. Gifted education specialists' perspectives about the attentional learning capital

Approximately 41.9% of our sample agreed that gifted programs provided sufficient time for gifted students to develop their talents. Among this percentage, 41.2% of specialists were satisfied, while 58.8% were not satisfied. On the other hand, 43.9% of the sample did not agree that gifted programs provide sufficient time for gifted students to develop their talents. In contrast, 14.1% were unsure if gifted programs provide sufficient time for gifted students to develop their skills and abilities. These closed variations among participants' perspectives (especially those who were agreed and disagreed) raise the question of whether the gifted programs were implemented correctly or whether these programs were developed based on gifted education criteria.

In terms of motivation, 79.8% of specialists in our sample believed that gifted students were motivated to learn. Among this percentage, 71.3% were satisfied, while 28.7% were not satisfied. At the same time, 14.1% did not believe that gifted students were motivated to learn, and 6.1% of the total sample were uncertain. The majority of the specialists believed that gifted students were motivated to learn. This conclusion may attribute to the quality of identification processes in Saudi Arabia since motivation is considered one aspect of giftedness (Gagné, 1993, 2000; Howe, 1995; Phillips & Lindsay, 2006; Renzulli, 1986; Roe, 1983).

Regarding program design, 41.4% of our survey sample showed that programs for gifted students tended to be recreational activities rather than programs designed to develop students' talents. Among this percentage, 20.2% of them were satisfied, while 79.8% were not satisfied. In contrast, 49.5% of the total sample believed that programs for gifted students tended to be scientific rather than recreational activities, while 9.1% were uncertain. These closed disparities among participants' perspectives (agreed and disagreed) may be attributed to the variation in the

implementation of gifted programs in different educational districts and the quality of these programs' evaluation.

Approximately 38.9% of our sample believed that gifted programs were designed to meet actual students' interests. Among this percentage, 55.6% were satisfied, while 44.4% were not satisfied. By contrast, 50.5% did not agree that programs offered to gifted students were related to their actual interesting areas, while 10.6% were uncertain. The high percent (50.5%) raises the question of whether gifted programs are developed based on individualized plans and meet gifted education standards (Davis et al., 2013, NAGC, n.d.-b).

7.3. The episodical learning capital—current status

Gifted programs in Saudi Arabia provide various experiences on STEM majors for gifted students. Mawhiba collaborates with many specialized institutions to build a variety of scientific expertise for gifted students while the Ministry of Education developed and operated its gifted programs inside its schools or gifted education centers (GAG, 2015; GAG, 2016-a; GAG, 2016-b; Mawhiba, 2020). In general, two main problems faced gifted students in Saudi Arabia. First, the lack of continuity of services in most of the programs offered to gifted students. Most of the programs were not designed to help gifted students build their experiences on a specific major, resulting in repeating some experiences in different programs. Second, most gifted programs separated scientific content from other skills, such as creative thinking skills, critical thinking skills, personal skills, social skills, and scientific research skills.

7.4. Gifted education specialists' perspectives about the episodical learning capital

Approximately 65.7% of our sample agreed that gifted students enjoyed participating in gifted programs. However, 23.7% did not agree, while 10.6% were not sure if gifted students found enjoyment in gifted programs. The sample believed that students, in general, enjoyed their time in gifted programs. This conclusion could be connected to the specialists' perspectives on Attentional Learning Capital, especially motivation, where most of them (79.8%) believed that gifted students are motivated to learn.

In terms of the role of schools in developing students' talents, 51% of specialists believed that schools contributed to the development of students' talents. Among this percentage, 43% of them were satisfied with the role of school, while 57% were not satisfied. On the other hand, 36.9% did not believe that schools contributed to students' talents, while 12.1% were uncertain. These variations between specialists may attribute to the practices of implementing gifted programs among educational districts.

7.5. The telic learning capital—current status

Gifted programs in Saudi Arabia seek to motivate gifted students to learn, satisfy their tendencies and interests, and meet societal needs (GAG, 2015; GAG, 2016-a; GAG, 2016-b; Mawhiba, 2019). The goals of these programs are varying according to the type of programs. For example, gifted education centers aim to providing specialized scientific enrichment programs, spreading the culture of giftedness in the local community, providing an equipped environment capable of motivating students to be scientific and creative persons, and providing psychological and social counseling services (GAG, 2018).

The enrichment programs outside school hours aim to provide students with scientific research and problem-solving skills, develop their creative thinking skills, and develop students' tendencies and attitudes towards creativity. These programs also help gifted students produce scientific inventions, develop personal abilities, and enhance internal motivation to learn. Moreover, the programs aim to provide appropriate scientific content and link gifted students with educational institutions to adapt their talents (General Administration of Gifted, 2015).

7.6. Gifted education specialists' perspectives about the telic learning capital

Approximately 75.3% of the specialists believed that gifted programs motivate gifted students to learn. Among this percentage, 61.4% were satisfied, while 38.6% were not satisfied. At the same time, 18.2% did not believe that gifted programs motivate gifted students towards learning, while 6.6% were uncertain. A large number of participants emphasized the role of gifted programs to motivate students to learn. This conclusion was close to their perspectives on Attentional Learning Capital in which gifted students were motivated to learn.

In addition, 39.4% of our survey sample believed that gifted programs were linked to future professional needs for gifted students. Among this percentage, half of them were satisfied while the other half were not satisfied. In contrast, 42.4% of the total sample did not believe that gifted programs were linked to future professional needs of the gifted, while 18.2% were uncertain. These variations between specialists confirmed their perspectives on Attentional Learning Capital in which the majority of them (50.5%) believed that gifted programs were not developed based on students' interests and gifted education standards (Davis et al., 2013, NAGC, n.d.-b).

7.7. The organismic learning capital—current status

The interest in physical, food habits, and daily healthy behaviors in the gifted programs in Saudi Arabia are not a target for most of the gifted programs. They are considered as a secondary component in different gifted programs, such as summer enrichment programs. For example, sports and physical activities are treated as entertainment for breaking boredom and routine in gifted programs, not awareness and education.

7.8. Gifted education specialists' perspectives about the organismic learning capital

Around 20.2% of our sample believed that gifted programs were concerned with developing the physical aspects of gifted students and their healthy habits (food, sports, sleep). Among this percentage, 44.3% of them were satisfied, while 55.7% were not satisfied. By contrast, 66.2% of the total sample did not agree that gifted programs were concerned with developing the physical aspects of gifted students and their healthy habits (food, sports, sleep), while 13.6% were not certain. These results showed that most gifted programs ignored physical and health components.

7.9. The actional learning capital—current status

Gifted students participate in high-level annual global competitions (International Olympiad) in different majors (Mathematics, Physics, Chemistry, Science, Biology, and Informatics). The purpose of these participations are to achieve the following: (a) give gifted students a chance to show their talents among gifted students in the world, (b) develop gifted students' abilities in specific areas of knowledge, (c) enhance community awareness of the role of science and mathematics, and (d) contribute to building a creative generation capable of dealing with a scientific language (Mawhiba, 2020).

After passing local and national tests and competitions, gifted students nominate to international competitions, such as International Science and Engineering Fair (ISEF). Later they receive intensive programs in specific scientific majors, such as mathematics, to improve their skills and abilities to compete in international competitions. For example, students in the competition route program receive, on average, 3000 training hours during three years period to be ready to participate in international competitions (Mawhiba, 2020).

Saudi Arabia has won several awards in different international competitions (Mawhiba, 2020). For example, gifted students won 48 grand awards and 27 special awards in ISEF during 2007–2020. They won medals and certificates in different international Olympiads. For example, they won 50 medals and certificates in the international Math Olympiad during 2010–2020; 29 medals and certificates in the International Chemistry Olympiad during 2011–2020; 29 medals and certificates in the International Physics Olympiad during 2011–2018; 22 medals and certificates in the International Junior Science Olympiad during 2015–2018 (Mawhiba, 2020).

Saudi Arabia participated in the Program for International Student Assessment (PISA) on the first time in 2018 (Education and Training Evaluation Commission, n.d.). However, students' results were below the average in reading, mathematics, and science compared with students in other countries (Organisation for Economic Co-operation and Development, 2018).

7.10. The gifted education specialists' perspectives about the actional learning capital

Regarding gifted education programs' success in Saudi Arabia, 48% of specialists in our sample agreed that gifted programs in Saudi Arabia were successful. Among this percentage, 48.4% were satisfied, while 51.6% were not satisfied. At the same time, 30.8% of the total sample did not agree that gifted programs in Saudi Arabia were successful, while 21.2% were uncertain. The results showed the importance of assessing gifted programs regularly to provide evidence of whether these programs are successful. In addition, the results revealed the need to share evaluation outcomes with gifted education specialists to improve the practices of gifted education in Saudi Arabia.

In participating in international competitions, 86.9% of our sample believed that gifted students participate in international competitions. Among this percentage, 68.2% were satisfied, while 31.8% were not satisfied. However, 5.1% of the total sample did not believe that gifted students participate in international competitions, while 8.1% were uncertain. Approximately 86.9% of our survey sample believed that gifted students win prizes in international competitions. Among this percentage, 75% were satisfied, while 25% were not satisfied. However, 5.6% of the total sample did not believe that gifted students win prizes in international competitions, while 7.6% of them were not certain. The majority of specialists believed that gifted students showed their talents globally by winning several prizes in different international completions.

8. Discussion

8.1. Educational capital

Gifted education has been established officially in Saudi Arabia since 2000 in two institutions: the Ministry of Education and Mawhiba. The programs offered to gifted students by the Ministry are free of charge, while most programs offered by Mawhiba are tuition-based. The two institutions have developed a good experience in gifted education among other Arab countries. Gifted students have various options to participate in several programs to meet their interests and develop their skills, such as a summer enrichment program and a pull-out program.

The definition that the Ministry of Education in Saudi Arabia adopted gives the right for gifted students at any age to receive services within the educational system regardless of talents types (Aljughaiman, 2018). However, most of the programs implemented recently focus only on STEM majors for students in grades 4 to 12, with no programs have developed yet for students in early ages (kindergarten and Grades 1 to 3) and twice-exceptional students. In addition, around 1% of total students in schools (public and private) were identified as gifted by an official instrument (MMCAT). When we compare this percentage with the idea of the prevalence of giftedness in which 1% to 20% of the total population classifies as gifted (Terman, 1925; National Association of Gifted Children [NAGC], n.d-a.; Renzulli, 1986), we can conclude that the identification process in Saudi Arabia needs to be enhance to identify more gifted students.

The gifted education center program is the most popular practice to serve gifted students, with 1.21% of total students in Saudi Arabia enrolled in this type of program. There is almost a balance between gender and school levels in this program in 2019. Approximately 1.29% of female students enrolled in this program compared with 1.14% of male students. At school levels, 1.04% of students were from elementary school, 1.17% from middle school, and 1.29% from high school. The reason that may contribute to making the gifted education center program is the most popular practice is the flexibility of implementation in which gifted students can participate in this program after school hours.

The second popular practice for gifted students is the pull-out program. Approximately 4.21% of total schools implemented it (5.12% of total elementary school, 4.05% of total middle, and 3.74% of total high school). However, unbanned between school levels and gender is existed, especially in middle and high schools. In 2019, the pull-out program was implemented in 5.58% of total schools for females (5.89% of total elementary school, 6.74% of total middle, and 6.51% of total high school) while it was implemented in 2.72% of total schools for males (4.35% of total elementary school, 1.54% of total middle, and 1.06% of total high school). In addition, 0.71% of female students benefited from this program (0.82% of total students in elementary school, 0.68% of total students in middle school, and 0.72% of total students in high school) compared with 0.58% male students (1.00% of total students in elementary school, 0.34% of total students in middle school, and 0.28% of total students in high school). These statistics raise a flag about the strategy that the Ministry of Education had to serve gifted students. It is noted that there is a bias for female students in the pull-out program compared with male students, especially in middle and high schools.

The self-contained classroom program is the third popular practice to serve gifted students in Saudi Arabia. Approximately 1.29% of total schools implemented it (0.77% of total elementary school, 2.05% of total middle, and 1.98% of total high school). In 2019, the self-contained classroom program was implemented in 1.47% of total schools for females (0.88% of total elementary school, 2.52% of total middle, and 2.41% of total high school) while it was implemented in 1.10% of total schools for males (0.65% of total elementary school, 1.61% of total middle, and 1.57% of total high school). In addition, 0.49% of female students benefited from this program (0.28% of total students in elementary school, 0.56% of total students in middle and high school) compared with 0.39% male students (0.28% of total students in elementary school, 0.44% of total students in middle school, and 0.39% of total students in high school).

The evening and Saturday program is one of the least popular practices to serve gifted students. Approximately 0.23% of total students enrolled in this program (0.28% males and 0.18 females). It is noted that there is almost a balance between the number of male and female students in the evening and Saturday program in middle and high schools. The gifted school program is implemented in a small number of schools in Saudi Arabia (0.04%) and served around 0.06% of students in only middle and high schools. Although the acceleration program was established in 2016, few students have accelerated. For example, in 2019, for every ten thousand students in Saudi Arabia, only one had accelerated. The small percentage of acceleration (0.01%) calls to question the appropriateness of the procedures followed by the Ministry of Education to enable gifted students to move from one grade level to another according to their capabilities and abilities.

Gifted education teachers receive professional development workshops in the area of giftedness before joining any gifted programs. However, there are questions about the quality of these workshops and their impact on teachers' practices in classrooms. In our survey, 58.4% of the sample was not satisfied by the method of training gifted education teachers, although the number of training hours seemed to be high in some programs, such as the self-contained classroom program in which teachers receive 66-hours of training. The Ministry of Education had developed its teaching units in different gifted education programs. Yet, 53.9% of participants in our survey were not satisfied with teaching units. The Ministry may need to evaluate these units to ensure they meet gifted students' needs and interests and match gifted education curriculum standards.

One of the most issues in gifted programs in the Ministry of Education is the idea of continuity of services. Around half of our sample believed there is a need to provide services for gifted students during their general education journey from early age till grade 12. The evaluation system of gifted education programs implemented by the Ministry of Education to measured stakeholders (students, parents, and teachers) is not clear. In our sample, 40.9% reported that there is no evaluation for gifted education programs offered by the Ministry.

At first glance, the ratio between gifted students, teachers, and supervisors seemed to be exemplary, in which one teacher for every ten students and one supervisor for every 13 teachers. However, variation ratios between gender and gifted program types have existed. Based on 2019 statistics, there was one male teacher for every 19 male students compared with one female teacher for every 12 female students. In gifted education programs, the ratio also is different. In the pull-out program, there was one teacher for every 17 students, while there was one teacher in a self-contained classroom program for every five students. These differences need to be justified by the gifted education leaders in the Ministry of Education since the percentage of male teachers (53.68%) is higher than female teachers (46.32%).

Although gifted education in Saudi Arabia was established officially in 2000, standards for nominating gifted education staff in the Ministry of education need to be enhanced. More than half (54.7%) of our sample believed that these standards were not clear or they did not know if there are any standards. In addition, there is no advocacy groups to support gifted students (Alamer & Phillipson, 2021) except one association in a small province in the center of Saudi Arabia.

Saudi Arabia has different resources to develop gifted students' abilities and skills. However, gifted education leaders in the Ministry of Education must take an initiative to collaborate with universities and research centers to enable gifted students to benefit from resources available, such as laboratories and equipment. They also should engage experts in these institutions to work with gifted students to promote their skills. In contrast, Mawhiba has a strategy to build a partnership with many universities and research centers to serve its students.

8.2. Learning capitals

The purpose of gifted programs in Saudi Arabia is to promote students' abilities and skills (GAG, 2015; GAG, 2016-a; GAG, 2016-b; Mawhiba, 2019). Thus, developing programs based on gifted education criteria and standards (Davis et al., 2013, NAGC, n.d.-b) is the target for the Ministry of Education and Mawhiba. When we evaluate Saudi's experience in the field of giftedness based on the Learning Capital concepts (Ziegler & Baker, 2013; Ziegler et al., 2018, 2017), several points should be considered.

First, there are a variety of gifted programs for students in Saudi Arabia. However, our survey showed that 43.9% of specialists believed that the time allocated for gifted students to develop their talent was insufficient. The common two practices for students are gifted programs at gifted education centers and pull-out programs. In these two types, students do not have enough time to develop their talents. For example, students in pull-out programs meet with gifted education teachers for three sessions (45 minutes each) every week (GAG, 2016-b), and students at gifted education centers meet with specialists three hours for two days every week (GAG-2019).

Second, gifted students are motivated to learn. Approximately 79.8% of specialists believed that gifted students were motivated to learn. This conclusion may attribute to the quality of identifying gifted students in Saudi Arabia since motivation is considered one component of giftedness (Gagné, 1993, 2000; Howe, 1995; Phillips & Lindsay, 2006; Renzulli, 1986; Roe, 1983). In addition, 75.3% of specialists believed that gifted programs motivated gifted students towards learning, and the specialists (65.7%) mentioned that students enjoyed their time in the gifted programs. These may be due to cumulative experiences and knowledge that specialists developed to teach gifted students for years. Besides, 49.5% of specialists believed that gifted programs tended to be scientific rather than recreational programs.

Third, one major issue of gifted programs is the way of developing enrichment units for students. Most specialists (50.5%) believed that gifted programs were not developed according to students' interests. Based on the authors of the current study, one justification is that those enrichment units are developed in advance with no modifications from the gifted education teachers to meet students' needs and interests. In addition, most gifted programs recently

focus on STEM majors, which ignores other types of giftedness, such as art and social science. This conclusion may raise questions for programs developers about the criteria and standards adopted to design programs for gifted students (Davis et al., 2013, NAGC, n.d.-b). In addition, there is a need to develop programs around students' future professional careers and pay more attention to both physical and health aspects for gifted students. Besides, developers of gifted programs should consider combining both scientific content with other skills, such as research, thinking, and personal and social skills.

Finally, in general, gifted programs are successful. Around 48% of specialists indicated that gifted programs in Saudi Arabia are a success. Perhaps this is due to the variance in the programs offered for the gifted students in Saudi Arabia, as Saudi has made great strides in programs implemented outside the school (such as the summer programs) and achieved high levels of satisfaction among its participants. In contrast, the programs implemented inside the school still encounter organizational and administrative difficulties. In addition, gifted students exhibited their talents in different scientific domains globally by winning several international prizes (Mawhiba, 2020).

9. Conclusion and recommendations

Saudi Arabia experience in gifted education is exemplary among other Arab countries. However, some issues should be considered by the leaders of gifted education in Saudi Arabia, especially in the Ministry of Education, as follows.

First, there is a need to connect gifted programs to students' future professional careers. Around 42.4% of specialists believed that existing gifted programs are not related to the future professional needs of gifted students.

Second, physical and health are ignored in most gifted programs. The specialists (66.2%) mentioned that most of the programs for gifted students did not include the two aspects (physical and health) in these programs. It is common in Saudi Arabia that most gifted programs did not include subjects to raise students' awareness of healthy food, encourage practicing sports and physical fitness, and acquiring healthy sleep habits.

Third, there is a need to connect scientific content with skills in the same gifted programs, such as research and thinking skills. Some practices in gifted programs in Saudi Arabia are separating these two components from each other.

Fourth, gifted education programs should be evaluated annually from stakeholders' perspectives, such as gifted students, parents, and gifted education teachers to enhance these programs.

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The authors' research mostly focuses on developing practices and theories in the field of gifted education in Saudi Arabia and other countries. The authors have cooperated with a number of institutions in different countries to develop identification instruments, gifted

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