



Identifying Gifted and Talented Students and Methods to Enhance their Development: A Conceptual Framework

Fouad Ahmed Ali Albrahim¹ and Sumaihan Naser Al Rashidi²

¹ Department of Curriculum and Teaching Methods, College of Education, King Faisal University, Al Ahsa, Saudi Arabia

² Department of Special Education, College of Education, King Faisal University, Al Ahsa, Saudi Arabia

تحديد الطلاب الموهوبين والمتفوقين وطرق تعزيز تنميتهم: إطار مفاهيمي

فؤاد أحمد علي البراهيم¹ وسميحان ناصر الرشيد²

¹ قسم المناهج وطرق التدريس، كلية التربية، جامعة الملك فيصل، الأحساء، السعودية

² قسم التربية الخاصة، كلية التربية، جامعة الملك فيصل، الأحساء، السعودية



LINK الرابط	RECEIVED الاستقبال	ACCEPTED القبول	PUBLISHED ONLINE النشر الإلكتروني	ASSIGNED TO AN ISSUE الإحالة لعدد
https://doi.org/10.37575/h/edu/2192	01/03/2020	24/04/2020	24/04/2020	01/03/2021
NO. OF WORDS عدد الكلمات	NO. OF PAGES عدد الصفحات	YEAR سنة العدد	VOLUME رقم المجلد	ISSUE رقم العدد
7078	8	2021	22	

عدد خاص: الموهبة والإبداع والتميز
Special Issue: Giftedness, Creativity and Excellence

ABSTRACT

This research intends to address the problems of identifying gifted students, supporting their excellence and promoting their care. Identifying gifted students is a challenge for individual teachers and for educational institutions, particularly in terms of developing programs that suit and contribute to the development of their skills. This article provides a comprehensive exploration of the characteristics of gifted students and the relationship of these characteristics to the identification of talent. The characteristics of the gifted have already attracted the attention of researchers and others interested in educational matters, and the current article therefore seeks to answer some of the most important questions arising from previous work in the field. These questions revolve around defining the criteria for systematically identifying gifted students, establishing the best strategies for developing their talents, and developing the most effective teaching methods that meet their educational needs. In response to these research questions, this article follows a systematic process of defining relevant concepts, theories and existing strategies for developing student talent. More specifically, this research reviews the descriptive methodologies of educational studies that have been conducted in the field of gifted students. Therefore, this work can be considered a conceptual framework the characteristics of gifted students which aims to demonstrate the importance of these features and their impact on the design and implementation of talented curricula as well as highlight the most important strategies for teaching gifted students and the use of modern technologies in their education.

المخلص

يهدف هذا البحث لمعالجة الإشكالية في تحديد الطلبة الموهوبين وتميزهم ورعايتهم. إن مسألة تحديد الطلبة الموهوبين مسألة تحدي للمعلمين والمؤسسات التربوية لوضع البرامج التعليمية التي تناسبهم وتسهم في تنمية مهاراتهم. وتقدم هذه الدراسة استكشافاً شاملاً لخصائص الطلبة الموهوبين وعلاقتها بتعريف الموهبة والكشف عنها. هذه السمات للطلبة الموهوبين حظيت باهتمام الباحثين والمهتمين بالشؤون التربوية، وبالتالي تسعى الورقة الحالية للإجابة على بعض أهم الأسئلة الناشئة عن الأعمال السابقة في هذا المجال. تمثلت المسائل المطروحة للبحث تحديد معايير الاستناد العلمية لتحديد الطلبة الموهوبين بشكل منهجي، ووضع أفضل الاستراتيجيات لتنمية المواهب للطلبة، وتطوير طرق التدريس لتلبية الاحتياجات التعليمية للطلبة الموهوبين واستخدام التقنيات الحديثة لتطوير مواهبهم. استجابة لهذه الأسئلة البحثية، تتبع هذه الورقة عملية منهجية لتحديد المفاهيم والنظريات والاستراتيجيات التدريسية لتنمية المواهب للطلبة، وذلك بالمقارنة من المنهجية الوصفية لجملة من الأبحاث العلمية، والدراسات التربوية التي تمت في مجال اكتشاف المواهب وتنميتها. يمكن اعتبار هذا العمل دراسة نظرية لمحاولة الوقوف على خصائص الطلبة الموهوبين، والتي تهدف إلى إظهار أهمية هذه الخصائص وتأثيرها على تصميم وتنفيذ مناهج الموهبة، وكذلك تسليط الضوء على أهم الاستراتيجيات لتدريس الطلبة الموهوبين ومجالات استخدام التقنيات الحديثة في تعليمهم.

KEYWORDS

الكلمات المفاتيحية

Gifted, talented, intelligent, creative, Identifying Gifted, characteristic of gifted, teaching strategies, teaching methods, modern techniques

الموهوبون، المتفوقون، الذكاء، الإبداع، تحديد الموهوبين، خصائص الموهوبين، استراتيجيات التدريس، طرق تدريس، تقنيات حديثة

CITATION

الإحالة

Albrahim, F.A.A. and Al Rashidi, S.N. (2021). Tahdid altullab almawhubin walmutafawiqin waturuq taewiz tanmitihim: litar mufahimiin 'Identifying gifted and talented students and methods to enhance their development: A conceptual framework'. *The Scientific Journal of King Faisal University: Humanities and Management Sciences*, 22(Special Issue: Giftedness, Creativity and Excellence), 15–21. DOI: 10.37575/h/edu/2192

البراهيم، فؤاد أحمد علي و الرشيد، سميحان ناصر. (2021). تحديد الطلاب الموهوبين والمتفوقين وطرق تعزيز تنميتهم: إطار مفاهيمي. *المجلة العلمية لجامعة الملك فيصل: العلوم الإنسانية والإدارية*، 22(عدد خاص: الموهبة والإبداع والتميز)، 15–21.

1. Introduction

Gifted students are a nationally emerging asset and a benefit to humanity in terms of the potential scientific progress they may engender. The energy and mental capacity of humans are varied but some authors, such as Feldhusen (1998), allege that it is immoral to identify a large majority of the nation's youth as not gifted, and immoral not to provide any educational services to them. This would be true if education was only provided for gifted students or giftedness was identified only through apparent behavior. However, education is the right of all children. In addition, educational principles invite teachers to consider the needs of students with both learning difficulties and those who are gifted. As to the inadequacy of educational curricula for students with learning difficulties, it is equally unfair to neglect those with potential talent and is a waste of

a gifted generation. Therefore, an objective of education should be to identify each student's talents and assist in the development of those talents to the fullest extent (Feldhusen, 1996). This essay will review the definition of the concept of giftedness and the relationship between giftedness and intelligence, as well as explain the best strategies for the care of the gifted. Furthermore, it will review a philosophy for building appropriate educational curricula to successfully prepare teachers for the care of gifted children. These curricula should include the teacher's use of modern techniques and computers to meet the needs of gifted students.

The main purpose of this article is to address the problem of gifted student identification to be able to nurture their skills and develop their talents optimally. Another intended outcome it to uncover any fundamental ambiguities in caring for the gifted. The research questions are as follows:

- Are there problems related to identifying gifted students?
- What are the characteristic criteria for identifying gifted students?
- What are the best educational strategies for teaching gifted students for the overarching curriculum?
- What are the most effective teaching methods for educating gifted students?

The current research will contribute to existing knowledge about the concept of being "gifted" and about its relationship to intelligence, achievement, and creativity. There is a need to identify gifted students, and to classify them, in order to determine their requirements and illustrate contemporary practical trends in their discovery and their care. It is also important to design and develop curricula specifically for gifted students which emphasizes the prominent role of the teacher in employing effective teaching methods and modern techniques.

Academic research strives to answer questions raised on various topics, and this requires a determination of the concepts, theories, and approaches that can contribute to the analysis of the phenomenon being studied. The current article therefore presents a range of conceptual and theoretical work about strategies relating to gifted students, using a descriptive approach to analyze qualitative data from the relevant educational studies. The method of descriptive analysis is considered particularly appropriate for exploring human phenomena, including education, and can be used when sufficient information about a subject is known. As such, descriptive analysis can provide answers to very specific research problems. The descriptive approach relies on the study of a phenomenon as it occurs in reality. Descriptive analysis can also be used as a precursor to studies that are more quantitative in nature, although it is not primarily intended to provide basic data for scientific research; rather, its purpose is to develop explanations and conclusions that contribute to knowledge.

2. Importance of the Discovery and Nurturing of Giftedness

Attention to the care of the gifted is imperative because the small percentage of very talented people in the world are able to accomplish progress in all areas of life. Each student has the right to learn according to his or her abilities, thereby providing compatibility and interaction with the educational process. However, traditional education does not adequately meet the needs of gifted children. Furthermore, most philosophies concerned with teaching gifted children emphasize that gifted children have special needs that can be best satisfied if they have the opportunity of a good and varied education, one which is dependent on the areas in which their talents lie (Feldhusen, 1996). Thus, it is necessary to develop curricula and education for the care of students and to help discover their individual giftedness.

3. The Concept of Giftedness

Definitions of the concept of giftedness are diverse. Some agree with the idea that giftedness is consistent with intelligence, some that it is consistent with mental superiority in the light of academic achievement, while others believe it is the outcome of creative thinking. For example, Brakenbry (1976) believes that it is related to intelligence and identifies gifted children through intelligence testing. Durr (1964) equates the gifted with those who have high academic readiness. Hence, there is research based on the assumption that a gifted person is possessed of high intelligence (an I.Q. of 130 or above), on relating giftedness to academic attainment, and on relating giftedness to creativity.

Among the diversity of definitions, Hussein (2006) believes that

Moraland's definition for the American Education Office is one of the most comprehensive. His definition states that being gifted is synonymous with superiority in academic achievement, so he suggests that gifted and superior students are identified by specialists in the field of education. However, in 1981, the American Congress amended Moraland's definition and the concept of gifted has expanded to include potential capacity in school or before school. The definition is now as follows: gifted and superior children can be identified at the stage of pre-school, primary or secondary and they have special capabilities, either actual or potential, in terms of their performance in the areas of high mental capacity, innovative academic leadership, performing and the visual arts. In addition, gifted students need special services not provided to them by ordinary schools (Clark, 2002).

4. The Relationship Between Giftedness and Intelligence

The measurement of intelligence for the assessment of the educational level of students has been going on for over 100 years. In 1905, French psychologist Alfred Binet developed the first intelligence test in collaboration with Theodore Simon at the request of the Ministry of Education in Paris in order to identify and help students at risk of failing. Binet published revisions of his intelligence scale in 1908 and 1911 (Fancher, 1985). However, Harris (2007) found that the first scientist to examine intelligence from a quantitative perspective was "Sir Francis Galton in his epic study, *Hereditary Genius* (1869)" (Harris, 2007: p.12).

More than eighty years after Binet first measured intelligence, Howard Gardner, a psychologist at Harvard University, challenged the common definition of intelligence as measured by I.Q. tests. Gardner believes that our culture has defined intelligence far too narrowly and that there are multiple types of intelligence. He defines intelligence as, "an ability to solve problems or fashion products that are of consequence in a particular cultural setting or community" (Gardner, 1993, p. 15). In addition, in 1983 Gardner suggested in his book "Frame of Mind" that there are seven types of intelligence; in 1999 he added two further types. The types of intelligence, according to Gardner are: 1- linguistic, 2-logical-mathematical, 3-spatial, 4- bodily-kinesthetic, 5-musical, 6-interpersonal, 7- intrapersonal, 8- naturalistic, and 9-existential. The theory of multiple intelligences has helped to create multiple criteria for the identification and development of talented students.

Generally speaking, the method of learning should be matched to the type of intelligence an individual excels in. For example, children with advanced spatial intelligence may show a preference for learning new things through, for example, photos, drawing activities, building three-dimensional models, or using computer software that contains graphics. Thus, linking the multiple intelligence theory to theories of learning methods is an attractive project for the development of education.

5. Contemporary Scientific Trends in the Discovery of Giftedness

Attention to giftedness is old but scientific study in this area only really began in the later part of the nineteenth century. The emergence of Alfred Binet's I.Q. test has helped in the discovery of gifted children.

The basic problem which faces those responsible for the discovery of gifted children and their selection for gifted care programs is choosing whether to base their selection criterion on academic achievement, intelligence or innovative capacity (Baer, 1993). Another problem is whether to select only those where talent is apparent or to include

those with latent potential. If only those with existing talent are selected, judgment of the student's talent comes from the reality of his or her outstanding performance and this measurement is negotiable which makes the process of discovery easier. However, it could lead to the omission of some gifted children who currently exhibit low educational attainment as a result of their environment or circumstances, despite their potential for superiority. Therefore, identifying giftedness as a latent potential in some allows students with low grades to benefit from giftedness programs that will develop their potential and enable their excellence and distinction in the future.

Identification of the latent talent of students requires more than one standard. Feldhusen (1996) determined that the purpose of education should be to identify talent in each student and assist students in developing those talents. However, this requires finding criteria to identify non-academic talent in gifted children with low academic achievement. School readiness tests are often used for this purpose in the developed countries, along with intelligence tests of collective and individual intelligence, innovative capabilities tests and evaluative lists. It is advisable that talented children are selected in the light of all of these standards together rather than through reliance on the standard I.Q. test. According to Coleman (2003), identification is a means not an end and Coleman stresses that the identification of best practices in the search for talented students relies on multiple criteria which include: multiple types of information; multiple sources of information; and multiple time periods. Coleman also explains that the use of multiple criteria does not mean creating multiple barriers to identifying students as talented. There is a need to look for students with outstanding potential in a variety of ways.

6. Characteristics of Gifted Students

The identification of gifted students in schools depends largely on knowledge of the characteristics that distinguish them. It has been found that mentally gifted students enjoy a range of features that differ between students who are technically or academically talented (Manning, 2006). Therefore, educational needs vary according to the area of talent enjoyed by the student.

Several studies have indicated that talent can be represented by a set of attributes including the following characteristics:

6.1. A. Mental Qualities

- Rapid learning and understanding, a strong memory, constant questioning and superiority in academic achievement.
- Capable of perseverance, focus, attention and directed thinking for long periods.
- Rapid responses, quick-witted with the ability to analyze, infer and see the link between past and future experiences.
- Curiosity and an eagerness to explore and mentally reflect on multiple questions.
- Novel ideas that may seem strange to some.
- The capacity for observation and absorption.
- The capacity for creative imagination.
- The capacity for abstract and objective thought.
- The ability to find multiple solutions to any problems addressed.
- The capacity for inductive logic, reasoning, generalization, abstraction, formulating concepts, and the formation of new connections between things that might seem contradictory.

6.2. Affection Qualities (Emotional)

- The ability to enjoy high mental health and the ability to adapt.
- A strong will, not frustrated easily, has patience and tolerance.
- A high capability for emotional equilibrium, undisturbed when

confronting problems.

- Possesses sensitivity to the feelings of others.

6.3. Social Qualities

- A love of freedom and resistance to social pressures. Resists interfering in the affairs of others.
- Initiates action and is prepared to make the effort to aid others, can be trusted.
- Capable of winning friends and prefers friendship with others who are gifted.
- The capacity to criticize themselves and accept criticism from others without feeling discouraged.
- Confidence and pride in oneself, and tendency towards independence.
- Assumes responsibility and enjoys harmony between colleagues.

7. Categories of Gifted Students

Classification of talent helps to understand educational needs and to search for ways to meet them. The gifted can be classified into the following categories:

7.1. Mentally gifted students

Mentally gifted students are characterized by rapid mental growth, their mental age is ahead of their chronological age. The student is ahead of his peers in his or her ability to learn, understand relationships, attitudes and in academic excellence. Mental superiority is usually measured with intelligence tests. Students with an I.Q. of 130 or above qualify as mentally gifted (Ang, 2007).

7.2. Academically gifted students

Academically gifted students are characterized by genius in one academic area such as mathematics, science or languages. They also tend to have a high capacity for absorption, conversation and rapid learning. They need to learn at a faster rate only in the subject in which they excel. Accelerated learning in certain subjects might be considered one of the most successful methods in the education of the academically gifted. This method allows students to apply themselves to the study of certain subjects according to their learning abilities (Manning, 2006).

7.3. Creative students

Creative students are characterized by special creativity, the ability to produce new solutions and ideas for the solution of genuine problems. They are particularly skilled in critical thinking. They also have the desire for change and renewal. The degree of creativity varies depending on the age of the student.

7.4. Students gifted in leadership

Leadership talent is instinctive and makes the person gregariousness and familiar with people. Individuals talented in this area enjoy solving the problems of a group and assume responsibility (Sternberg, 2003).

7.5. Students with special talents and abilities [Arts - Formation Arts]

Special talent is innate and prepares the student for superiority in the arts, music or literature (the arts include painting, sculpture and metal molding). Musical talent can be the performance of music or music authorship. Literary talent includes writing poetry or prose. Innate preparation alone is not enough to make a person superior in these areas, appropriate environmental conditions must be provided through the education, training and practice that develop these

talents and abilities.

Students gifted in sports activities

Students gifted in sports activities (Hussein, 2006) are characterized by agility, muscle strength, physical stamina, agility, good synergy of muscles and a good sense of movement.

8. Best Strategies for Care of the Gifted

Care for the gifted is based on a number of considerations related to the adopted ideologies in society, goals set by the society for care of the gifted, roles available for gifted performance and features that characterize the same kinds of talent. In this regard, most of the literature has focused on the most important strategies for the education of gifted students which include the degree of interference and does not necessarily consider gifted students independently of one another. Strategies include:

8.1. Aggregation Strategy

This strategy is concerned with the aggregation of gifted students into groups organized in either classes or special schools for them.

Positives of the aggregation strategy include:

- Provides the educational opportunity for work to be more focused and effective with the possible follow-up and monitoring necessary to develop a positive working environment.
- Allows for the development of the individual capabilities of the talented.
- Gives the opportunity to compete with equals with the emergence of greater homogeneity in the talented group.

8.2. Acceleration Strategy

The intention of educational acceleration is to amend the admission system in regular schools and the progress procedures at every education stage so gifted students can terminate their study of elementary, middle and secondary schools earlier than usual. This requires the empowerment of gifted students to pass through school stages more quickly than is the case for ordinary students.

The acceleration of education is used in some developed countries such as Australia. Western Australia is one of the areas most in favor of an acceleration strategy. Its Ministry of Education has encouraged all schools to offer special classes that allow gifted students to learn at a faster rate, allowing them to accelerate in several ways. This:

- Enables the talented to omit one class at each stage of education.
- Shortens the three years of high school to just two years.
- Allows continued progress in speed of learning during the first six years of education.

As Eastern Australia offers opportunities to study the use of the technique, curricula have been developed for this purpose at the secondary education level.

Positives of an acceleration strategy include:

- Catering to the individual requirements of the gifted, thus allowing their enjoyment of education to mirror that of other learners.
- Economical in terms of effort, time and money in the process of learning and teaching (Pyryt, 1999).

8.3. Enrichment Strategy

Enrichment is intended to increase the educational experience for gifted students commensurate with their abilities, preferences and readiness. For instance, this strategy depends on the follow-up of talented students in regular classes and a greater depth to the curriculum adopted, plus additions in the level of knowledge, skills and attitudes. There are four methods that can help the process of amending or altering the normal curriculum for the gifted to be more

commensurate with their capabilities, as follows:

- Increase curriculum or deepen the content.
- Add to the educational curriculum.
- Link to the enrichment of the kind of talent exhibited.
- Enrich through the development of higher thinking skills.

Positives of an enrichment strategy include:

- It allows the gifted student to participate in regular programs so that he or she can still interact with normal classmates of different skills and levels.
- It increases experimentation with the individual's potential.
- There is the possibility of competition, cooperation and a sense of superiority to a certain extent (Teare, 2004).

Extension Strategy

This strategy means that gifted students spend part of the time in school classrooms as usual and perform tasks within the normal curriculum and with their colleagues, and spend another part of their time receiving expert or special teaching in groups with distinct levels of performance.

9. Philosophy for Building a Curriculum for Gifted Students

Several studies have focused on the need to develop special curricula, in whole or in part, to distinguish the gifted from others as gifted students have the ability to learn faster and remember more.

There are a number of considerations that Berger (1991) deemed relevant to the vision of curriculum development for gifted students, including the following:

- Meet the needs of gifted students.
- Balance the developmental aspects and stages of cognitive development, as in Jean Piaget's educational theory.
- Assist in the protection of the gifted's capacities and interests and avoid developmental characteristics of decline.
- Develop curricula to train students in productivity, creativity and self-learning; for example, the evolution of students higher thinking skills and the skills of scientific research methods.

Bassow (1979) considered that the private curriculum for gifted students consists of four levels or methods which complement each other, as follows:

- General curriculum: the provision of general knowledge, skills and attitudes which are necessary in general culture as a basis for any specialized talent.
- Specialist curriculum: the provision of the knowledge, skills and attitudes necessary for the development of any talent.
- Hidden curriculum: the provision of the necessary equipment to develop the mental and emotional aspects of the individual.
- Non-scholastic curriculum: the provision of educational opportunities through social institutions outside of school.

10. Models for Building the Curriculum of Students

There are three integrated models of educational research that have proved valuable in building platforms for gifted students at any stage or age, and in any area of education. These models are as follows:

- Model of mastery of content: This is focused on learning skills and specific concepts related to specific themes and it depends on learning through the acceleration and elaboration of skills and concepts.
- Model of processes and outputs: The curriculum focuses on learning skills and social scientific investigation to reach a high output level and it requires cooperation and interaction.
- Integrative model (integration of knowledge): The curriculum focuses on the perception of gifted students of their own knowledge about themselves and each other (Hussein, 2006).

The role of the teacher is crucial to the success of these strategies and curricula. Work must be done on training teachers on how to discover gifted children and sponsoring this work.

A teacher's work and his permanent contact with students makes him a tool of the educational system that could determine the fate of all efforts to develop the capabilities and talents of the students. Thus, the importance of teacher training programs cannot be over-stressed. These programs are composed of two main elements.

The first element is training teachers in modern teaching methods, such as the methods of problem-based learning and cooperative learning. In addition, it is suggested that teachers minimize expository teaching as it offers a negative model for students. Teachers should also be trained in the use of modern technologies in education, such as the use of computers and the means of presentation. Many educational studies have indicated the strong influence teachers can have on student attitudes towards technology. The positive use of technology can lead to the growth of a student's capacity and positive attitude towards the use of computers.

The second element is training teachers in their awareness of how to discover and develop the talents of students. Teachers should also be trained in the application of standards and tests that reveal gifted students. Teachers need also to be informed of those characteristics and qualities that distinguish gifted children. To a great extent this will help the teacher to provide appropriate care for them (Meador, 1996).

11. Teaching Methods to Meet These Multi-Educational Needs

There are teaching methods important to meeting gifted students learning needs. Such methods have been confirmed by scientists and educational theories as helpful in the development of the abilities and talents of students. These methods are:

11.1. Using appropriate teaching methods.

- Discovery learning leads students to gain self-confidence, raises self-motivation for learning and develops the capacity for innovation and critical thinking skills.
- Problem-based learning (PBL) uses opportunities in the environment and hypothetical problems to encourage students to problem-solve and find innovative solutions.
- Brainstorming generates ideas and benefits the creativity of the individual; it is also more useful for the production of new ideas.

11.2. Providing the appropriate environmental factors for the growth of capacity and talent.

- Teachers create an instructional environment that is non-authoritarian and democratic in order to allow students to express their ideas.
- Students are encouraged to search for new relationships between different things.
- Students are managed in a flexible manner and debate is encouraged. Students also analyze problems and modify their tactics during face-to-face debates in order to develop their flexibility.
- Teachers urge students to search for links between the subjects that they study. This develops their independent thinking, comprehensive view of things and offers an integrative curriculum.
- Students are encouraged to use materials from the environment to conduct experiments and model educational work.
- Students are trained in the use of various technologies, such as computers and the Internet, during the learning process (Brown, 2008).

13. Advantages of Using Computers in

the Education of the Gifted

Computers possess enough potential to make them serious competition to many other educational media. They also compete with many educational strategies that focus on activity and positive learning. Moreover, computers are superior in their working methods in the classroom, as they take account of individual differences or overcome some of the problems inside the class related to controlling and managing students. Furthermore, a computer is an easy tool to use and integrate into many traditional teaching strategies and can develop these traditional techniques and increase their efficiency. Their superiority is evident in many problem-solving and detection strategies involving the following (Andrew and Derek, 1993):

- An important benefit of computers for gifted students is that they allow students to progress at their own speed. Thus, the gifted student can progress rapidly without the need to wait for their classmates.
- The computer provides an opportunity for students to understand the mechanism by which computers work and to understand computer programming. This is a distinct way of teaching the skills of solving problems, developing logical thinking and developing creative alternatives.
- The most important qualities of good software are to provide choices or alternatives to the user that may not be available in the real environment. For example, software that provides simulated environments resembling a real experience, with the opportunity for the learner to determine the conditions of the experience.
- What distinguishes positive software instruction is the follow-up to the mistakes of the learner, finding the source of errors, addressing their causes and guiding the student to study specific topics, according to his achievements or errors.

Following the development of ways of using computers in education, attention has now focused on the development of approaches to teaching accompanied by computers. There are a variety of areas in which computers can be used for the education of the gifted:

- As educational material where it becomes the main focus of the study; this includes awareness of the roles of computers. Computer literacy increases through the study of multiple computer use, data processing, various applications, computer programming and system operations. It is not only language and literacy skills that are essential in the primary stage, it is necessary to educate gifted children also in basic skills using computers such as painting, coloring, writing, printing, copying and storing data (Setzer, 2000).
- As an educational tool because computers make unique and effective educational tools, providing a characteristic positive interaction between user and computer. It also allows for individual attention as a means to stimulate the learner.
- As a tool for the development of thinking skills in students. For example, some software programs can train students in the awareness of logical relationships. Moreover, some programs require skill exploration that develops a student's skills in memory, exploration, research, responsibility and problem solving.
- As tools for the presentation of an academic subject, computers can be used as a guide and trainer of basic technical skills for gifted students.

14. Classifications of Educational Software

With the varied uses of computers in education, many classifications are emerging that explain the different uses of computer software. In the view of several studies (Michael and Kelly, 1994; Bramble and Watson, 1985), computer educational programs can be classified into four types according to the contents of the software.

14.1. Modeling and Simulation Programs.

Simulated means the establishment of a set of attitudes and

conditions representative of those in life. Simulations facilitate the presentation of otherwise inaccessible experiences, allowing the exploration and identification of potential consequences of proximity. Moreover, simulations are programs which can make a series of events obvious to the learner and which allow him or her the opportunity to participate in a positive events program, providing many choices that suit the individual learner. Thus, computer simulations give the learner control of the learning environment and provide a great deal of information that could be used for understanding the topic under study.

Simulation programs provide a non-traditional educational approach for the gifted and encourage gifted thinking. The gifted can use the advanced potential of computers, something which is not found in other media. Moreover, computers can also aid in the study of processes and procedures that are difficult to study using conventional methods. Simulation also provides an opportunity to apply some of the skills learned in the classroom (Alessi, & Trollip, 1985).

14.2. Tutorial Software.

Tutorial software is one of the most prevalent types of software. It somewhat resembles traditional methods such as books, cassette tapes, videos, slides and lectures. Teaching provided through tutorial software offers certain knowledge to the talented student, knowledge which may be new to him or her. Therefore, the student can gain new knowledge by themselves, verify the validity of previous information and reinforce his or her responses as correct. This software can assess student's performance, either through work with the tutorial software or with the traditional method of paper and pen. The teacher can guide students to re-examine certain parts or to study another subject and the student can be assisted in their study of the current topic. This type of software requires the preparation and organization of a large amount of knowledge suitable for a gifted learner. In addition, it should be designed for the development of higher levels of knowledge. Moreover, preparation in the use of tutorial software is necessary, ensuring that the student is able to work independently with the software and understands the guidance it provides.

This type of working directs the gifted learner to study the information in an orderly fashion. It helps and guides students during and after study through feedback, which helps to achieve the best outcome from the learning process. It is very useful in learning about facts, laws and theories and their applications. Furthermore, these programs allow the learner to progress at their own pace and are useful in general in topics that are quite verbal and require a large amount of information to be learnt.

14.3. Instructional Games

Educational computer games rely on the integration of the learning process into the playing of a recreational model event in which students compete to gain valuable points. In order to achieve a victory the learner is required to solve problems involving mathematical, logical, spelling, vocabulary, reading and interpretative skills.

Educational games programs maintain the interest of talented students in the learning material for longest. The student uses animated cartoons, colors, music and competition as the basis of the game. Some of these types of program provide images and sound effects when the correct response is given. It should be clear in the mind of the gifted learner what the ultimate goal of the game is, and the learner can work to achieve it with the use of information and advice that shows the way (Crawford, 1984).

14.4. Drill and Practice Software.

This software offers problem-solving exercises to improve the learning process and increase the level of student achievement, particularly of talented students. These exercises are important for the development of certain skills and focus on a particular skill through providing many exercises in it. Moreover, drill and practice software provides the three essential components of the learning cycle, namely training, feedback and treatment. This software is also different from traditional training methods as it determines the appropriate level of training for students by administering at the outset a series of pre-tests to determine the student's level and then provides appropriate training or problems at this level before moving to a higher level. Thus, it takes into account the principle of individual differences among students, something which can often not be met by traditional methods. The most important characteristic of drill and practice software could be its provision of sensory feedback which reinforces education greatly (Godfrey and Sterling, 1982).

Overall, there are many types of education software and proposed programs for talented students all of which depend on the educational material, the student's participation in the events of the program, the goal of the program and the academic nature of the subject. The goal may be learning concepts and scientific facts so tutorial software or simulation software would be most appropriate. If it is to target training in certain skills then drill and practice software or instructional games would be most appropriate. This does not necessarily mean that there are distinct differences between each type of software, as a single program could contain characteristics of two or more types of previous software. Moreover, the integration of software into one program helps enrich the learning process and makes it more effective and influential for gifted students.

15. Conclusion

The body of literature that has focused on theories, concepts and influential strategies in the education of gifted children has contributed to the recognition of the needs of the gifted. In addition, linking educational theories and concepts of education for gifted children with modern methods of teaching and the use of modern technology in education has educational importance with regards to meeting learning needs. This essay has reviewed the literature on the concept of giftedness, the relationship between giftedness and intelligence, and strategies for the care of gifted children. It has also attempted to develop a philosophy for the building of appropriate educational curricula for gifted children. Furthermore, it has suggested that preparing teachers for the care of gifted children is important, as is the use of computers in teaching gifted children. Connecting education theories on teaching gifted children with modern educational techniques could be an attractive project for further research.

The main purpose of the present article is to explore problems related to the identification of gifted students and the importance of discovering and nurturing talent. The article also identifies definitions of "talent" and the need to broaden the concept to include a student's potential as discovering latent talent remains a topic of investigation for educators.

With regard to defining the criteria for the identification of gifted students, the article follows contemporary scientific trends in talent discovery that select students according to academic achievement, intelligence, or creative ability. In addition, the article presents the key characteristics of gifted students including both mental and emotional traits.

The article highlights categories of intellectually, academically, and

creatively gifted students in leadership, sports, and the arts. This puts the need for the early detection of apparent and latent talents in the hands of teachers and educational institutions according to organized procedures and multiple criteria.

The best strategies for nurturing gifted students and developing their talent are defined in this article as aggregation, acceleration, enrichment, and extension approaches. There is a requirement to design and develop curricula that meet the needs of gifted students, and so the teacher plays a crucial role in the success of these strategies through talent-developing curriculum design.

The teaching methods that most effectively meet the educational needs of gifted students, as presented in the current article, are, for example, the use of computers and modern techniques in gifted education. Effective educational software can be classified as modeling and simulation games, and educators can themselves design applications for use with gifted students. These applications have multiple advantages, work on portable devices, and their educational effectiveness can be investigated through classroom experimentation.

Bios

Fouad Ahmed Ali Albrahim

Department of Curriculum and Teaching Methods, King Faisal University, Al Ahsa, Saudi Arabia, +966135896484, falibrahim@kfu.edu.sa

Dr Albrahim has graduated from Latrobe University Melbourne, Australia, with a PhD in Education. He is an Assistant Professor. He performs many administrative tasks, for example, being the Assistant Dean of the College of Education and the Coordinator of the Curriculum and Teaching Methods Department. He is also the Subjects Coordinator for University Requirements, Head of the Media Committee at the Deanship of E-Learning at King Faisal University. He holds a membership of the Golden Key International Honor Society. He has published many educational papers and articles. He has attended various international educational conferences.

Sumaihan Naser Al Rashidi

Department of Special Education, King Faisal University, Al Ahsa, Saudi Arabia, 00966135899110, salrashidi@kfu.edu.sa

Dr Al Rashidi has graduated from the University of Northern Colorado, USA, with a PhD in Special Education. He is an associate professor and the Dean of the College of Education at King Faisal University. He worked as the Head of Special Education Department and the Dean of Academic Development. He chaired many committees at King Faisal University. He has received many awards for scholarly excellence, such as the Prince Bander Bin Sultan Award for Early Scientific Achievement. He has published many educational articles and attended various international educational conferences.

References

- Alessi, S. and Trollip, S. (1985). *Computer-Based Instruction: Methods and Development*. Englewood Cliffs: Prentice-Hall.
- Andrew, N. and Derek, B. (1993). *An Introduction to Microcomputers in Teaching*. London: Anchor Press.
- Ang, M. (2007). Defining characteristics of giftedness. *NAGCM Newsletter, Nos. 48 and 49, Bumper Issue, National Association for Gifted Children, Malaysia*, n/a(n/a), 14-15.
- Baer, J. (1993). Why you shouldn't trust creativity tests. *Educational Leadership*, 51(4), 80-83.
- Bassow, A. (1979). *The Gifted and the Talented: Their Education and Development*. USA: The Seventy-Eight Year Book of the National

- Society for the Study of Education.
- Berger, S. (1991). *Differentiating Curriculum for Gifted Students*. Reston, Virginia: ERIC Clearinghouse on Handicapped and Gifted Children.
- Bramble, W. and Wason, J. (1985) *Computers in Schools*. New York: McGraw-Hill.
- Brockenbury, A. (1976). *Round The Clock with Gifted Musicians*. Latimer, London: n/a.
- Brown, V. (2008). Best Practices in Gifted Education: An Evidence-Based Guide (Book review). *Association for Childhood Education International*, 84(3), 175.
- Clark, B. (2002). *Growing Up Gifted*. Columbus, Ohio: Merrill Prentice Hall.
- Coleman, M. (2003). *The Identification of Students Who Are Gifted*. ERIC Clearinghouse on Disabilities and Gifted Education. Available at: <http://www.ericdigests.org/2004-2/gifted.html> (accessed on: 25/03/2008)
- Crawford, C. (1984). *The Art of Computer Game Design*. McGraw-Hill: Berkeley.
- Durry, W. (1964). *The Gifted Student*. New York: Oxford University Press.
- Fancher, R. (1985). *The Intelligence Men: Makers of the IQ Controversy*. New York: W.W. Norton & Company
- Feldhusen, J.F. (1996). How to Identify and Develop Special Talents. *Educational Leadership*, 53(5), 66-69.
- Feldhusen, J.F. (1998). Programs for the Gifted Few or Talent Development for the Many? *Phi Delta Kappan*, 79(10), 735-738.
- Gardner, H. (1983). *Frames of Mind: The Theory of Multiple Intelligences*. New York: Basic Books.
- Gardner, H. (1993). *Multiple intelligences: The Theory in Practice*. New York: Basic Books.
- Godfrey, D. and Sterling, S. (1982). *The Elements of CAL*. Reston: Reston Publishing Co
- Hussein, M. (2006). *Multiple Intelligence and Development of the Gifted*. Cairo: Dar Alafg.
- Manning, S. (2006). *Recognizing gifted students: a practical guide for teachers*. *Kappa Delta Pi Record*, 42(2), 64-68.
- Meador, K. (1996). Meeting the needs of young gifted students. *Childhood Education*, 73(1), 6.
- Michael, J. and Kely, L. (1994). *The Design, Development and Evaluation of Instructional Software*. New York: Macmillan Publishing Company.
- Pyryt, M. (1999). *Acceleration: strategies and benefits*. *Center for Gifted Education, University of Calgary*, n/a.
- Setzer, V.W. (2000). *Computers in Education*. Brazil: University of Sao Paulo.
- Sternberg, R.J. (2003). Creative Thinking in the Classroom. *Scandinavian Journal of Educational Research*, 47(3), 325-338.
- Teare, J.B. (2004). *Enrichment Activities for Able and Talented Children*. Stafford: Network Educational Press.