

**The degree of possessing the assistive technological
competencies of the gifted students' teachers
in Amman schools**

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Abstract

The study aimed to identify the degree of possessing the assistive technological competencies of the teachers of the talented students in the schools of the capital, Amman, and to achieve the objectives of the study, the descriptive and analytical approach was followed. The study population consisted of teachers of talented students, who numbered (80) teachers, a deliberate sample was chosen from these teachers and the sample of teachers of talented students consisted of (62) teachers in Amman schools. In order to achieve the objectives of the study, the two authors developed a questionnaire to reveal the degree of possession of the assistive technological competencies of the teachers of the talented students in Amman schools. The results of the study indicated that the degree of possession of assistive technological competencies of the teachers of the talented students in the schools of the capital Amman was high, and the results also revealed that there were no statistically significant differences attributed to the gender variable, and the absence of statistically significant differences attributed to the academic qualification variable, as well as the absence of statistically significant differences attributed to the variable of years of experience.

Key words: Technological Competencies, Assistive Technology, Gifted Students

Introduction

Gifted education services are available in Jordan, as well as scientific and social programs and activities are provided to them. The Ministry of Education in Jordan created the Talent Programs Department in 2011 to provide care for them through pioneering centers and rooms for gifted resources, and to meet the needs of these students, Jordanian universities, and through special education and gifted education specializations, provide teachers specializing in the field of giftedness. Assistive technology in gifted education, as mentioned by Sharman (2015), is largely positive as it is considered one of the basics for improving the outcomes of the educational process, by using it well and correctly in the educational process. Among the forms of assistive technology used in gifted learning: the Internet, as it provides a tremendous and large number of knowledge, experiences and useful information in scientific and practical life, and the presence of reliable sources to resort to it with whatever the gifted learner desires at any time, place and in any discipline, enrichment sites are no less important than the Internet in acquiring knowledge, stimulating motivation and thinking the learner is gifted with solving complex questions, such as questions of physics, chemistry and mathematics through playing and entertainment, including the development of talent in solving problems and complex and complex puzzles.

It must be noted that gifted students teachers must have the necessary assistive technological competencies, such as knowledge competencies in assistive technology, with knowledge of the concepts and issues related to the use of these technologies in the educational process and knowledge of the objectives of their use, knowledge of the regulations and instructions in the use of technology in special education, knowledge of individual differences and the characteristics of these learners with special needs affecting the use of assistive technology and vice versa as well, that is, knowing the effect of assistive technology on these learners, and determining the physical and academic requirements that the computer or other technologies impose on the learner (Gustafson, 2006). In addition to performance competencies (experience and skill) in evaluation and diagnosis, and that is by gathering information on student performance, analyzing and summarizing it, and then writing reports on it to take the appropriate decision regarding assistive technology, and ethical competencies for practicing assistive technology.

The professional competencies of the assistive technology required to be measured by teachers and specialists in special education to ensure their continuous professional development by measuring some specific competencies, among which depend on experience, skills, knowledge and training, and include skills and experience (Burgos, 2015). (Dalton, 2015) specified the nature of the standards and competencies of the necessary assistive technology used to prepare the teacher in each state in America, and the study relied on the descriptive survey approach, and the study tool used was the questionnaire, and among the findings of the study, as follows, there are only three states out of 51 states that possess both the competencies and standards for assistive technology according to the state's assistive technology guides and rules, and the existence of six states that have assistive technology standards only, and six other states also possess the assistive technology competencies only.

And to know the barriers and obstacles that consumers face in obtaining assistive technology and their satisfaction with it, and individual interviews were the tool of the study, then the results resulted that many consumers and service providers confirmed that they are aware of the benefits of assistive technology for people with special needs but expressed their dissatisfaction with the existing services and programs that indicate (high cost, lack of knowledge, and lack of training), which they consider to be one of the most important obstacles to accessing good assistive technology (Penton, 2015). To learn how teachers use in Alabama and the formation of technological experiences with students, to enhance students' learning of the twenty-First century skills, and to use the descriptive curriculum, and the sample number was (6) teachers, and interviews, notes and lesson plans were applied as a tool for the study, and the results revealed that the use of educational technology with students is shaped by factors such as teacher attitudes and experiences, available equipment and support, educational decisions related to working with technology, and the particular group of students involved in the use of the technology (Zimlich, 2015). In order to know the opinions of gifted student

about the use of technology in terms of using mobile phones and using social networking sites, knowing the place of technology in their lives as well, and their use of assistive technology in education, the descriptive method was used in this study, and the study population consisted of (105) students in the secondary stage, and according to the results of this study, talented students cannot live without technology, and some students also reported that they feel sad and angry when there is no Internet connection. Moreover, they found that assistive technology plays an important role in their education and that they share their experiences and knowledge with their colleagues through this technology (Ozcan & Bicen, 2016).

In order to reveal the beliefs of teachers and specialists working in rural schools of their role in providing assistive technology services, the study used an open questionnaire and semi-structured ethnographic interviews as a tool for the study, and the methodology used in the qualitative systematic study. Among the findings of the study there are concerns about the unclear role of assistive technology service providers as they resorted to using it as a last resort in education, or not to integrate assistive technology in the educational process (2017) Cronin.

Hollins (2017) conducted a study aimed at the professional development of special education teachers by virtue of that they are the main factor in the use of assistive technology for students in schools, and this study followed the qualitative approach, and observation and interview were used as tools of the study, and the results revealed that each teacher developed the competencies of assistive technology discovered aspects of the curriculum that became easy to access. To determine the degree of skill and knowledge in the assistive technology of the special education teachers approved by the Council for Children with Special Needs, Mahmoud (2018) used the questionnaire to collect data for the study, and distributed it to the study sample that consisted of (100) specialists and teachers in special education in schools and centers in Jordan, and the results resulted in a high degree among specialists and teachers in having these standards.

The problem of the study emerged through an interview of teachers and specialists, as it was found that most teachers and specialists lack good knowledge about assistive technology and its practical benefits, and their poor possession of the skills used in technology, so the idea of the current study came as an attempt to uncover the competencies of gifted students' teachers and to employ assistive technology in improving and developing the educational process for them. This study aimed to identify the degree of possessing the assistive technological competencies of gifted students' teachers in the schools of the capital Amman, and to achieve this goal the following questions were set:

What is the degree of possessing the assistive technological competencies of the gifted students' teachers in Amman schools?

Are there statistically significant differences at the level of significance (α 0.05) in the degree of possessing the assistive technological competencies of gifted students' teachers in Amman schools due to the gender variable?

Are there statistically significant differences at the level of significance (α 0.05) in the degree of possessing the assistive technological competencies of gifted students' teachers in Amman schools due to the academic qualification variable?

Are there statistically significant differences at the level of significance (α 0.05) in the degree of possession of the assistive technological competencies of the gifted students' teachers in the schools of the capital, Amman, due to the variable of years of experience?

Methodology

The descriptive analytical method was used, being the most appropriate for this present study.

Participants

The study population includes teachers of students with talent and excellence, whose number reached (80) teachers, according to official statistics from the competent authorities. A deliberate sample was chosen from teachers of the gifted students in the capital, Amman, and the number of the sample was determined after obtaining the official statistics required from the competent authorities such as the Ministry of Education and the Directorate of Special Education, to derive a sample of them to conduct the study on it through a statistical equation, where the sample included teachers of students with talent and excellence included (62) male and female teachers.

Instruments

A questionnaire was developed to collect information on the necessary competencies in assistive technological in centers and schools for gifted students in the capital, Amman. The apparent validity of the questionnaire was verified by presenting it in its initial form to fourteen arbitrators from the faculty members in the specialization of special education and educational technology in the Faculties of Educational Sciences of different universities, and their observations were taken about the relevance of the items to the topic, the extent of the belonging of the items to the fields, and the linguistic formulation. To verify the stability of the tool, the Cronbach's Alpha analysis was used, where it was found that all the Cronbach's Alpha coefficients are valid for the purposes of the study, also, statistical methods were used, descriptive statistics measures, as arithmetic mean and standard deviation were found to find the degree of approval of the study items and Independent Samples T-Test.

Limitations

It is represented by a sample of talented student teachers

Spatial Limits: It is represented in public and private schools in Amman.

Temporal Limits: This study was applied in the second semester of the year 2018- 2019.

The generalization of the results of this study depends on the extent to which the study tool is characterized by validity, consistency, objectivity, and accuracy of the response of teachers, and the results related to this study will only be circulated to the community of this study and similar societies.

Results

To answer this first question, “What is the degree of possessing the assistive technological competencies of gifted teachers in Amman schools?” The arithmetic mean and standard deviation of the degree of possessing the assistive technological competencies of gifted students’ teachers in Amman schools were found, and the following tables show that:

Table (1): Arithmetic Mean, Standard Deviation, Rank and Degree of Possession of Fields of Assistive Technological Competencies of Gifted Students’ Teachers

Item	Arithmetic Mean	Standard Deviation	Rank	Degree
Services provided on assistive technology for parents of gifted students.	3.99	0.756	١	High
The ethics of employing assistive technology among the gifted and talented students’ teachers.	3.87	0.642	٢	High
Knowledge of assistive technology for gifted and talented students’ teachers.	3.80	0.679	٣	High

	Employing assistive technology in the process of (planning / teaching / curricula) by teachers of the gifted and talented students.	3.78	0.796	ε	High
	Employing assistive technology in the process of (diagnosis / evaluation) by teachers of the gifted and talented students.	3.48	0.945	ο	Medium
	Total	3.79	0.639		High

Through Table (1), we notice that the degree of possessing the assistive technological competencies of the gifted students' teachers in Amman schools was high as the arithmetic mean was (3.79) and the standard deviation (0.639), and all the tool fields came high and middle, as the arithmetic mean ranged between (3.99 - 3.48), and the field "Services provided on assistive technology for parents of gifted students" came in the first rank with a high degree with an arithmetic mean (3.99) and a standard deviation (0.756), the last and fifth rank in the field of "Employing assistive technology in the process of (diagnosis / evaluation)" came with a medium degree, with an arithmetic mean (3.48) and a standard deviation (0.945).

To answer the second study question, "Are there statistically significant differences at the level of significance (α 0.05) in the degree of possessing the assistive technological competencies of gifted students' teachers in Amman schools attributed to the gender variable?" The T-test was used for independent samples and the following table shows that:

Table (2): T-Test Results of Independent Samples for the Effect of Gender

Teachers	Competencies	Gender	Arithmetic Mean	Standard Deviation	T Value	Degree of Freedom	Significance Level
Talented Students' Teachers	Knowledge of assistive technology for gifted and talented students' teachers.	Male	3.94	0.542	1.6	60	0.108
		Female	3.66	0.777			
	Employing assistive technology in the process of (diagnosis / evaluation) by teachers of the gifted and talented students.	Male	3.71	0.822	1.9	60	0.054
		Female	3.25	1.014			
	Employing assistive technology in the process of (planning / teaching /	Male			1.7	60	0.092
			3.61	0.750			

	curricula) by teachers of the gifted and talented students.	Female						
	The ethics of employing assistive technology among the gifted and talented students' teachers.	Male		4.01	0.597	1.7	60	0.093
		Female		3.73	0.666			
	Services provided on assistive technology for parents of gifted students.	Male		4.13	0.698	1.4	60	0.147
		Female		3.85	0.797			
	Competencies as a whole.	Male		3.95	0.591	2.0	60	0.55
		Female		3.62	0.652			

Through the previous table (2), we note that all T-values were not statistically significant at a significance level less than (0.05), which indicates that there are no statistically significant differences at the level of significance ($0.05 \geq \alpha$) in the degree of possessing the technological competencies of the gifted and talented students' teachers in Amman's schools due to the gender variable.

To answer the third study question, “Are there statistically significant differences at the level of significance (α 0.05) in the degree of possession of assistive technological competencies of gifted students’ teachers in Amman schools due to the academic qualification variable?” The one-way analysis of variance was used and the following table shows that:

Table (3): Results of the One-Way Analysis of Variance for the Effect of the Academic Qualification Variable

Teachers	Competencies	Qualification	Aithmetic Mean	Standard Deviation	Degree of Freedom	Mean Squares	F Value	Significance Level
Talented Students’ Teachers	Knowledge of	Diploma	4.1	0.424	2	0.255	0.0545	0.583
		Bachelor	3.86	0.733				
		Postgraduate	3.71	0.631				
	Assistive technology.	Total	3.8	0.679				
	Employing assistive technology	Diploma	4.07	0.303	2	0.57	0.06	0.531
Bachelor		3.54	0.962					
Postgraduate		3.37	0.952					

	ogy in the process of (diagnosis / evaluation).	Total		3.48	0.945		8	4	
	Employing Assistive technology in the process of (planning / teaching / curricula).	Diploma		4.17	0.55	2	0.373	0.581	0.563
		Bachelor		3.85	0.795				
		Postgraduate		3.68	0.817				
		Total		3.78	0.796				
	The ethics of employing assistive technology.	Diploma		4.08	0.18	2	0.06	0.142	0.868
		Bachelor		3.88	0.715				
		Postgraduate		3.84	0.584				
		Total		3.87	0.642				
	Services provided on Assistive	Diploma		4	0				0.662
		Bachelor		4.07	0.85				
		Postgraduate		3.89	0.667				
						0.2	.		

	technology for parents of gifted students.	Total		3.99	0.756	2	42	415	
	Competencies as a whole.	Diploma		4.08	0.279	2	0.244	0.059	0.557
		Bachelor		3.84	0.692				
		Postgraduate		3.7	0.592				
		Total		3.79	0.639				

Through the F values in the previous table (3), we notice that there are no statistically significant differences at the level of significance ($0.05 \geq \alpha$) in the degree of possession of the assistive technological competencies of the gifted students' teachers in Amman schools due to the academic qualification variable.

To answer the fourth study question, "Are there statistically significant differences at the level of significance ($\alpha 0.05$) in the degree of possession of the assistive technological competencies of gifted students' teachers in Amman schools, due to the variable of years of experience?" The one-way analysis of variance was used and the following table shows that:

Table (4) Results of the One-Way Analysis of Variance for the Effect of the Years of Experience Variable

Teachers	Competencies	Years of Experience		Arit hme tic Mean	Sta nda rd Devia tion	De gr ee of Fr ee dom	Mea n Squa res	F Value	Signi fican ce Level
Talented Students' Teachers	Knowl edge of assistive techno logy.	5 years or less		3.7	0.463	2	0.404	0.873	0.423
		6-10 years		3.6	0.772				
		11 years and over		3.885	0.709				
		Total		3.8032	0.679				
	Emplo ying assistive techno logy in the proces s of (diagn osis / evaluat ion).	5 years or less		3.5357	0.734	2	0.052	0.056	0.945
		6-10 years		3.5429	0.776				
		11 years and over		3.4536	1.05				
		Total		3.4839	0.945				
	Emplo ying	5 years or less		3.7778	0.534				

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	assistive technology in the process of (planning / teaching / curricula).	6-10 years		3.61 11	0.7 26	2	0. 1 8 8	0 .2 9	0.749
		11 years and over		3.82 78	0.8 83				
		Total		3.78 32	0.7 96				
	The ethics of employing assistive technology.	5 years or less		3.69 44	0.5 36	2	0. 2 5 8	0 .6 1 8	0.542
		6-10 years		3.98 33	0.6 73				
		11 years and over		3.89 17	0.6 68				
		Total		3.86 83	0.6 42				
	Services provided on assistive technology for parents of gifted student	5 years or less		4.16 67	0.7 04	2	0. 2 3 7	0 .4 0 6	0.668
		6-10 years		3.96 67	0.8 53				
		11 years and over		3.94 17	0.7 58				
		Total		3.98 92	0.7 56				

s.									
	Compe tencies as a whole.	5 years or less		3.77 49	0.4 52	2	0. 0 1 5	0 . 0 3 5	0.965
		6-10 years		3.74 08	0.6 61				
		11 years and over		3.79 99	0.6 92				
Total			3.78 56	0.6 39					

Through the values of F in the previous table (4), we notice that there are no statistically significant differences at the level of significance ($0.05 \geq \alpha$) in the degree of possession of the necessary assistive technological competencies among the gifted students' teachers in Amman schools due to the variable of years of experience.

Discussion

The results shown in Table (1) showed that the degree of possessing the assistive technological competencies of the gifted students' teachers in Amman schools was of a high degree in favor of the talented and superior students' teachers, with a mean of (3.79). The most of the competencies available to teachers of gifted students from the study sample are the services provided on assistive technology for parents of gifted students "with a high degree of (3.99), and it was ranked first among other fields, and the competency of "Employing assistive technology in the process of (diagnosis / evaluation)" came with a medium degree of (3.48) and it is in the last rank, which is fifth, and in light of the result of this question, it is clear that the degree of possession of the assistive technological competencies of the gifted students' teachers was largely and at the highest level. It is noted that this result is logical and in agreement with what is in reality because most schools (whether governmental or private) have prepared a fully equipped room ready to receive these talented students to take care of them and develop them scientifically and practically, as the Ministry of Education has established government schools dedicated to gifted and talented students, working to take care of them and train them as much as possible. In addition, private schools provided a large and distinguished educational cadre in each school separately, unlike government schools that provided only one teacher in each school, and the Ministry of Education was also interested in preparing training workshops for teachers during the period of service, in order to develop them professionally on an ongoing basis.

The results in Table (2) also indicate that there are no statistically significant differences at the level of (α 0.05) for the gifted and superior students' teachers possessing the assistive technology competencies according to the gender variable, based on the calculated value of (T) as it reached (2.066) and with a significant degree (0.55) for the overall score.

This can be attributed to the fact that having assistive technological competencies are not affected by gender, as male and female teachers receive the same training programs, and the assistive technology tools provided in male schools are the same as provided in female schools, meaning that gender does not affect as a variable their possession of technological competencies.

It is noticed from Table (3) that there are apparent differences among the arithmetic mean values of possessing the assistive technological competencies of the talented and superior students' teachers with an arithmetic mean of (3.79), as the holders of the category of (diploma) obtained the highest arithmetic mean of (4.08), and the lowest arithmetic mean came for the category (postgraduate) as it reached (3.7), the results of this study showed regarding the variable of academic qualification (scientific) that there were no statistically significant differences at the level of significance (α 0.05) in the degree of possession of assistive technological competencies among teachers of gifted students in Amman schools attributed to the scientific qualification variable.

The results in Table (4) indicate that there are no statistically significant differences at the level of significance ($0.05 \geq \alpha$) in the degree of possession of assistive technological competencies among teachers of talented and superior students in Amman schools, due to the variable of years of experience, as the arithmetic mean of the competencies as a whole reached (3.7856).

Recommendations

Conducting more research and studies on the same variables, but on other groups of people with special needs in the field of assistive technology, as this study was limited to the gifted category in Amman schools.

Providing electronic platforms and enrichment sites for teachers and gifted students.

Increasing the number of training courses and their applications in the field of in-service assistive technology for gifted teachers in the fields of teaching, evaluation and keeping abreast of developments in this field.

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