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# ASSISTIVE TECHNOLOGY COMPETENCIES OF SPECIAL EDUCATION IN JORDAN

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# Abstract:

This study aimed at determining the degree to which special education teachers possess the skills and knowledge adopted by the council of Children with Special Needs, in assistive technology. The questionnaire, which included assistive technology standards, was used to measure the degree to which Jordan's special education teachers have access to these standards. It was distributed to teachers of special education centers, as well as teachers of sources in various Jordanian governorates. The population of the study consisted of (200) male and female teachers. The sample of the study consisted of (100) specialists in special education in centers and schools. The findings showed that there is a high degree of possession of these standards in the specialists on the tool as a whole, and a medium degree of possession on the items relating to theoretical information on assistive technology in the following dimensions: knowledge of laws and legislation in special education, leaners characteristics, evaluation and diagnosis, professional and ethical practice and instructional content.

Keywords: assistive technology, special education, special education in Jordan

# 1. Introduction

This study was conducted to find out the degree to which special education teachers in Jordan possess the necessary competencies of knowledge and skills in assistive technology. And to discuss the competencies needed for teachers of special education, and what they have knowledge about them. Assistive technology has become a modern requirement in the field of special education, according to Jordan's Disabled Persons Act 2017, and the IDEA Act 1997, which stipulated access to the regular curriculum for people with special needs, just like their normal peers, which requires the provision of assistive technology equipment and services, and the appearance of the Law on Assistive Technology for person with Disabilities (1998). Assistive technology (AT) has

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been defined as any tool, piece, product system, and modified object or manufactured according to demands, with the aim of increasing the scientific and functional efficiency of people with special needs (Bryant, & Bryant, 2014).

Schools and centers are responsible for selecting people will provide assistive technology services, in accordance with Disability Act (IDEA), professionals involved in the evaluation process for receiving AT services in schools and centers are regular teachers and special education teachers, as well as, occupational therapists, physiotherapists. Psychologist and assistive technology specialists (Bread, Carpenter& Johnston, 2016; Dyal, Carpenter & Wright, 2009, Parette, Blum & Boeckmann, 2009).

Due to the lack of competent technical assistive staff, this task is carried out currently in some schools and centers the individual who has an interest in the field of technology support and has no academic background or experience in the field of supporting technology, as a result of a shortage of skilled and well-trained professional staff, as well as a shortage of financial resources (Hemmingsson, Lidstrom & Nygart, 2009). Dalton Rouch (2010) indicated that there are currently no specialized certificates to monitor and follow-up the requirements to be available to those who provide assistive technology services in addition to the competencies they should have in this field.

A study conducted by Li, et al. (2012) aimed at identifying the extent to which teachers with visual impairments are employed for assistive technology devices, which assumed that they play an important role in the process of teaching and evaluation of students' academic content, teachers were asked to self-assess their own skills and knowledge in assistive technology by completing self-assessment lists on the internet. The finding indicated that about 840 teachers with visual disabilities had confidence in the utilization of assistive technology about (40%) in supporting and teaching these students. While (59.3%) reported that they had some confidence in skills and special knowledge. However, the study showed that younger teachers were more confident and utilized the technology to support teaching than older teachers. There has also been a need for what is known as training in assistive technology, as service providers in this filed are supposed to be trained, because it is part of the assistive technology Service, So that the modifications made to assistive technology equipment are made by these professionals by utilizing them, so it does what is required instead of leaving it and not being used by the individual (Parettem, Bortherson, Hourcade& Bradly, 1996).

Training should be at the top list of priorities to ensure the optimal and successful use of assistive tools that are modified (Wehmeyer, 1999). Todis (1996) pointed out that the supporting equipment had been left by the teachers with using them, which led to the lack of access to the students the support they need, hence the need of training which should be available to everyone who will work with the student, such as classroom teachers, assistant teachers and specialized professionals (Speech and language specialists and family members). This is because the teachers are the first people that the families discuss the school issues with them, and therefore must possess the necessary competencies of knowledge and skills in the field of assistive technology (Parettem, Brotherson & Huer, 2000).

The IEP team should also determine the student's need for support technology services, based on individual student needs. Its task is to select the best assisting devices that are adapted to ensure better student learning.

One of the challenges that emerged from the literature review is that there is a lack of knowledge and skills among technology service providers. This has negatively affected the benefit of students with special needs due to their lack of suitability for their needs and academic achievement, and even referred to the neglect of activating the use of assistive technology in some centers for the lack of knowledge of teachers and specialists in the utilization of them.

Morailti, Abeelee, Vanrope & Geurts (2015) have pointed out that the rate of using and abandonment of specialists for equipment and tools of assistive technology have ranged from (8-15%). They also indicated that the recommended assistive technology services and equipment have failed to meet the needs of student users, in addition to the material and human resources loss of the agencies that support them. Alper & Raharinina (2006) also explained the need to provide additional numbers in the field of utilizing assistive technology through the educational curricula, as well as continuous educational training on the latest technological developments in the field of preparation and delivery of educational programs for professionals working in this sector. In a study conducted by Long et al, (2007) to find out the needs in training in technology support for about (272) occupational therapists. It clarified that while they were trained in assistive technology, the training was less than required. In addition, their confidence in providing assistive technology was low. Several previous studies have also indicated that teachers of students with disabilities lack the necessary knowledge in the field of assistive technology (Lee & Vega, 2005; Mc Cray, Brownell & Lignugaries, 2014; Smith et al, 2009).

According to a study conducted by Smith, et al., (2009) there is an urgent need for teachers of students with visual disabilities to have the necessary competencies in the field of assistive technology, where researches used Delphi Technique, to assess the perceptions of (40) professionals who are concerned with the competencies needed in the field of assistive technology. The findings have led to the development of technology assistive competencies. Hemmingsson, Lidstrom & Nygrat, (2009) and Leung, Brain & Chau, (2013) found also that the lack of clarity of competencies that teachers must have in field of assistive technology in schools has resulted in the non-use of assistive technology devices with students with disabilities, as well as the existence of feelings and negative attitudes to lack of their professional competency in this area.

# 1.1 The purpose of the study

The aim of the study was to evaluate the competencies of the teachers and special education specialists in the field of assistive technology.

# 1.2 The study questions

To what extent can Jordanian special education specialists have the skills of assistive technology?

# **1.3** The population and sample of the study

The population of the study consisted of (200) specialists in special education, while the sample which was drawn randomly from the population consisted of (100) specialists.

The instrument of the study was a questionnaire which was developed on the basis of the standards of assisting technology in special education. Face validity of the questionnaire was found. The reliability of the instrument of the study was verified by using Cronbach-Alpha formula, to test the degree of compatibility of respondents' responses to the questions of the questionnaire. Reliability coefficients ranged from (0.85-0.95). These values are acceptable for the purposes of the present study. Table (1) clarifies the values of the internal consistency of the dimensions of questionnaire.

| Tuble 1. Reliability coefficients of the study instrument |   |                |  |  |  |  |  |  |
|---|---|----------------|--|--|--|--|--|--|
| No.   | Dimensions                                      | Cronbach-Alpha |  |  |  |  |  |  |
| 1.  | Philosophical, Historical and legal foundations | 0.91           |  |  |  |  |  |  |
| 2.  | Characteristics of leaders                      | 0.85           |  |  |  |  |  |  |
| 3.  | Assessment & evaluation                         | 0.95           |  |  |  |  |  |  |
| 4.  | Professional & ethical practices                | 0.95           |  |  |  |  |  |  |
| 5.  | Instructional content & practice                | 0.92           |  |  |  |  |  |  |

### Table 1: Reliability coefficients of the study instrument

# 1.4 Procedures of the study

The questionnaire was distributed to the sample of the study. The number of its members was (100) specialists working in centers and schools concerned with special education. The degree of possessing the skills and knowledge adopted by the Council of children with special needs in assistive technology was divided into three levels: high as the arithmetic mean range between (2.36-3.00), medium, the arithmetic mean ranged between (1.68-2.35) and low, the arithmetic mean ranged between (1-1.67), by using the following formula:

The high value of the alternative – the low value of the alternative Number of levels  $\frac{3-1}{3} = \frac{2}{3} = 0.67$  the range

Means and standard deviations were used in analyzing data.

# 2. Findings and discussion

To answer the question of the study: to what extent can Jordanian special education specialists have the skills of assistive technology? Means and standard deviations were calculated. Ranks and the degree of possessing the skills were determined for the dimensions of the questionnaire. As shown in table (2).

#### Amani Mahmoud ASSISTIVE TECHNOLOGY COMPETENCIES OF SPECIAL EDUCATION IN JORDAN

|     | the competencies of assistive technology in descending of | order acco | ording t | o dimens | sions  |
|-----|---|------------|----------|----------|--------|
| No. | Dimension   | Mean       | S.D      | Rank     | Degree |
| 5   | Philosophical, historical and legal foundations           | 2.61       | 0.39     | 1        | high   |
| 4   | Characteristics of leaders                                | 2.52       | 0.43     | 2        | high   |
| 3   | Assessment and evaluation                                 | 2.51       | 0.43     | 3        | high   |
| 2   | Professional and ethical practices                        | 2.49       | 0.49     | 4        | high   |
| 1   | Instructional content and practice                        | 2.42       | 0.46     | 5        | high   |
|     | Total score   | 2.51       | 0.40     | -        | high   |

| Table 2: Me        | eans, standard deviations  | , ranks and the degree | of possessing       |
|--------------------|----------------------------|------------------------|---------------------|
| the competencies ( | of assistive technology in | descending order acco  | rding to dimensions |

Table (2) shows that the degree which teachers of students with special needs have the skills and knowledge in assistive technology was high, for the total score. The mean was (2.51) with a standard deviation of (0.40). The degree of possessing of skills and knowledge ranged from (2.61-2.42), and in a high degree "The philosophical, historical and legal foundations" dimension came in the first rank, with a mean of (2.61) and standard deviation of (0.39). While "Instructional content and practice" came in the fifth and final rank, with a mean of (2.42) and standard deviation of (0.46).

This is due to the awareness of decision makers in the centers and schools of special education to keep abreast of the recent technological developments support these groups, which have provided many opportunities and training workshops on resources, tools, devices and knowledge in technology supporting teachers and specialists that can be adapted to the needs of students and different disabilities, so that they can overcome their disabilities and compensate them. This result was agreed upon by the study of Li et al, (2012).

As for the items of each dimension, the results were as follows:

## 2.1 Philosophical, historical and legal foundations dimension

To answer this dimension, means and standard deviations were calculated and ranks and degrees of possessing skills and knowledge were determined, as shown in table (3).

| Table 3: Means, standard deviations, ranks and the degree for the possession of               |
|---|
| special education teachers for skills and knowledge in assistive technology of philosophical, |
| historical and legal foundations dimension in descending order                                |

| No. | Item  | Mean | S.D  | Rank | Degree |
|-----|---|------|------|------|--------|
| 9.  | Knowledge of laws and regulations related to assistive technology   | 2.78 | 0.44 | 1    | High   |
|     | and its applications  |      |      |      |        |
| 7.  | Adopting clear goals and philosophy related to utilization of       | 2.77 | 0.47 | 2    | High   |
|     | technology in special education                                     |      |      |      |        |
| 10. | Knowing the working mechanism within the technology support         | 2.74 | 0.46 | 3    | High   |
|     | team and cooperate with them to achieve the goals                   |      |      |      |        |
| 8.  | Knowing and understanding of technological assistance papers        | 2.73 | 0.49 | 4    | High   |
|     | related to support technology considerations                        |      |      |      |        |
| 4.  | Identifying the classifications of the modifications allowed on     | 2.64 | 0.50 | 5    | High   |
|     | devices   |      |      |      |        |
| 3.  | The ability to explain when support devices can be used in          | 2.63 | 0.53 | 6    | High   |
|     | national tests  |      |      |      |        |
| 11. | The ability to clarify the inability to use some supporting devices | 2.56 | 0.57 | 7    | High   |

European Journal of Special Education Research - Volume 3 | Issue 4 | 2018

Amani Mahmoud ASSISTIVE TECHNOLOGY COMPETENCIES OF SPECIAL EDUCATION IN JORDAN

|    | through national tests  |      |      |    |      |
|----|---|------|------|----|------|
| 1. | The ability to provide IEP team with the necessary training to  | 2.51 | 0.56 | 8  | High |
|    | make adjustments to the classes                                 |      |      |    |      |
| 5. | Collaboration with the IEP team on parental notification        | 2.47 | 0.58 | 9  | High |
|    | procedures, while the use of supporting technology was          |      |      |    |      |
|    | recommended   |      |      |    |      |
| 6. | Providing IEP team with technical assistance in identifying the | 2.44 | 0.56 | 10 | High |
|    | supporting equipment according to the law                       |      |      |    |      |
| 2. | Knowing the cases in which support technology can be used in    | 2.42 | 0.65 | 11 | High |
|    | different learning environments                                 |      |      |    |      |
|    | Total score   | 2.61 | 0.39 | -  | High |

Table (3) shows the degree to which teachers of students with special needs have skills and knowledge in philosophical, historical and legal foundations dimension in assistive technology was high for the total score, the mean was (2.61) with standard deviation of (0.39).

All items of this dimension came in the high score. The means ranged from (2.78-2.42) Item (9) that states "knowledge of laws and regulations related to assistive technology and its applications" came in the first rank. Its mean was (2.78) and a standard deviation of (0.44). In the second rank came the item (7) which states that "Adopting clear goals and philosophy related to utilization of technology in special education". The mean was (2.77) with a standard deviation of (0.47). While item (6) that states "Providing IEP team with technical assistance in identifying the supporting equipment according to the laws" came in the rank before the last. Its mean was (2.44) with a standard deviation of (0.56). Item (2) that states "Knowing the cases in which support technology can be used in different learning environments" came in the final rank. The mean was (2.42) with a standard deviation of (0.65).

The reason for gaining high scores on the items of this dimension is that those enrolled in the programs of preparing specialists in special education, and in different classes of study are subject to university- level plans in assistive technology, which includes the awareness and adequate knowledge of the foundations of laws and legislation in the area of specialization so that the Jordanian law of disabled provides for the benefit of technological development, that enable students with special needs to access knowledge and academic information as well as their ordinary peers.

## 2.2 Characteristics of learners dimension

To answer this dimension, means, standard deviations were calculated and ranks and degrees were determined as shown in table (4).

| <b>Table 4:</b> Means, standard deviations, ranks and degrees to which teachers of students |
|---|
| with special needs have skills and knowledge for the item of "characteristics of            |
| learners "dimension in descending order   |

| No. | Item   | Mean | S.D  | Rank | Degree |
|-----|--|------|------|------|--------|
| 3.  | Knowing the impact of assistive technology on students with        | 2.64 | 0.54 | 1    | high   |
|     | special needs  |      |      |      |        |
| 4.  | Knowing the learning characteristic of students with special needs | 2.52 | 0.56 | 2    | high   |
|     | that can influence the use of their technology                     |      |      |      | _      |
| 1.  | Finding out the academic and physical dimensions that will be      | 2.44 | 0.59 | 3    | High   |
|     | imposed on the student from missing the software and related       |      |      |      |        |
|     | technological tools  |      |      |      |        |
| 2.  | Knowing the impact of technology on learners with moderate         | 2.36 | 0.63 | 4    | High   |
|     | disabilities   |      |      |      |        |
|     | Total score  | 2.49 | 0.49 | _    | high   |

Table (4) shows the degree to which teachers of students with special needs have skills and knowledge in "Characteristics of learners "dimension was high for the total score .The mean was (2.49) and standard deviation of (0.49) .All items of this dimension came in the high score. The means ranged from (2.64 - 2.36) item (3) which states "knowing the impact of assistive technology on students with special needs "came in the first rank. The mean was (2.64) with a standard deviation of (0.54). Item (4) that states "knowing the learning characteristics of students with special needs that can influence the use of their technology "came in the second rank. Its mean was (2.52) and standard deviation of (0.56). Item (1) that states "Finding out the academic and physical dimensions that will be impact on student from using the software and related technological tools "came in the rank before the last. The mean was (2.44) with a standard deviation of (0.59). While item (2) that states "knowing the impact of technology on learners with moderate disabilities ".came in the final rank. Its mean was (2.36) with standard deviation of (0.63).

This high result may be attributed to "teachers understanding of students" characteristics and their needs for assistive technology, and realize that it is their responsibility to determine their needs of these tools and devices, and effect of the use of these devices at the level of their progress and development and facilitate access to information. However, despite the high degrees, more training is still needed to harmonize the selection of assistive devices that are compatible with visual, auditory and motor impairments, as well as learning software for students with learning disabilities. This is indicated by previous studies such as Moraliti, Abeelee, Vanroye & Geurts (2015) and Alper & Raharinirian, (2005).

## 2.3 Assessment and evaluation dimension

To answer this dimension, means and standard deviation were calculated and ranks and degrees of possessing skills and knowledge were determined as shown in table (5).

**Table 5:** Means standard deviations, ranks and the degree to which teachers of students with specials needs have skills and knowledge for the items of "assessment and diagnosis" dimension on descending order

| No. | Item   | Mean | SD   | Rank | Degree |
|-----|--|------|------|------|--------|
| 8.  | The ability to analyze, summarize and write a report on student<br>performance information to be able to make the decision to use<br>assistive technology. | 2.53 | 0.56 | 1    | High   |
| 10. | Finding out and assessing the functional needs of the report if there is a need for an assessment of assistive technology.                                 | 2.53 | 0.58 | 1    | High   |
| 14. | Determining measureable targets to monitor development towards the desired objectives of using assistive technology.                                       | 2.52 | 0.58 | 3    | High   |
| 2.  | Identifying and evaluating functional needs, to report whether<br>there is a need to evaluate assistive technology.  | 2.50 | 0.58 | 4    | High   |
| 13. | Finding out if there is a need for additional conversion to access assistive technology  | 2.45 | 0.59 | 5    | High   |
| 6.  | Re-evaluation of the process when needed   | 2.44 | 0.67 | 6    | High   |
| 15. | The distinction that educational output are weak when using assistive technology.  | 2.44 | 0.61 | 6    | High   |
| 9.  | Monitoring and measuring students' performance using assistive technology after period of use  | 2.43 | 0.61 | 8    | High   |
| 11. | Knowing the roles and responsibilities of the IEP team members<br>in the evaluation process.   | 2.43 | 0.59 | 8    | High   |
| 5.  | The ability to collaborate with the team in relation to conversion<br>to receive assistive technology services   | 2.42 | 0.65 | 10   | High   |
| 12. | Knowing of laws and legislation related to evaluation procedures<br>to receive assistive technology services.  | 2.41 | 0.61 | 11   | High   |
| 1.  | Knowing the procedure for developing the referral plans for receiving assistive technology services  | 2.40 | 0.62 | 12   | High   |
| 7.  | The ability to provide an explanation of the mechanism chosen for the student's specific technology.   | 2.38 | 0.60 | 13   | High   |
| 4.  | The ability to work with team members with assistive technology to identify appropriate technology   | 2.33 | 0.73 | 14   | Medium |
| 17. | Finding out if there is a need to conversion to specialists.   | 2.32 | 0.63 | 15   | Medium |
| 3.  | Comparison of current performance with previous performance and goals set out in the student plan.   | 2.30 | 0.63 | 16   | Medium |
| 16. | Interview with student, family and caregivers of the report on appropriate assistive technology.   | 2.26 | 0.65 | 17   | Medium |
|     | Total score  | 2.42 | 0.65 | _    | High   |

Table (5) shows that the degree to which teachers of students with special needs have skills and knowledge in "Assessment and diagnosis" dimension in assistive technology was high for the total score. The mean was (2.42) with a student deviation of (0.65). The items of this dimension came in the high and medium scores. The means ranged from (2.53 - 2.26).

Item (8) that states "The ability to analyze, summarize and write a report on student performance information to be able to make the decision to use assistive technology" and (10) that states "Finding out and assessing the functional needs of the report, if there is a need for an assessment of the assistive technology", came in the first rank. Their mean was (2.53) and standard deviation of (0.56) and (0.58) respectively.

Item (14) that states "Determining measurable targets to monitor development towards the desired objectives of using assistive technology" came in the third rank. The mean was (2.52) and a standard deviation of (0.58). While item (3) that states "Comparison of current performance and goals set out in the student plan "came in the rant before the last. The mean was (2.30) and a standard deviation of (0.63) and in a medium degree. Item of (16) that states" Interview with student, family and caregivers of the report on appropriate assistive technology" came in the final rank. Its mean was (2.26) and a standard deviation of (0.65) and in a medium degree.

It seems from this result that teachers have the ability to evaluate and diagnose students with special needs, to receive assistive services. They indicated that they were able to identify, diagnose, write the report, monitor student's performance, and how they benefited from assistive technology services, The aspects related to the knowledge of the specialists about their ability to work with the relevant team to identify the appropriate assistive technology, and transfer to specialists and experienced, and compare the current performance with the past, and communicate with the family and be able to convince parents and students, the teachers had scored medium score, because there was no clear mechanism for all team members, And because it is not detailed by law the role of each specialist in the evaluation mechanism in terms of receiving assistive technology services. This may also be reflected on the mechanism of dealing with students and parents; this is consistent with the following studies: Hemmingsoon, Lidstrom & Nygart, (2009) and Leung, Briam & Chau (2013).

## 2.4 Professional and ethical practice dimension

To answer this dimension, means and standard deviation were calculated and rank and degrees of possessing skills and knowledge were determined as shown in table (6).

| No. | Item   | Mean | SD   | Rank | Degree |
|-----|--|------|------|------|--------|
| 8.  | Maintain confidentiality of information  | 2.75 | 0.46 | 1    | high   |
| 7.  | Knowledge of humanitarian, legal and ethical issues related to assisting technology                          | 2.71 | 0.50 | 2    | High   |
| 6.  | When experience is limited, the benefit of experts is required   | 2.68 | 0.47 | 3    | high   |
| 9.  | Commitment to developing the highest professional capacities of teachers who working in assisting technology | 2.56 | 0.50 | 4    | high   |
| 4.  | Participation in associations and institutions for assistive technology                                      | 2.62 | 0.57 | 5    | high   |
| 10. | Adherence to professional ethics related to the employment of assistive technology                           | 2.61 | 0.51 | 6    | High   |
| 3.  | Credibility by providing information on technology that supports parents and caregivers                      | 2.60 | 0.55 | 7    | high   |
| 5.  | The continuous pursuit of information about student development through assistive technology                 | 2.59 | 0.57 | 8    | High   |
| 11. | Knowledge of activities and resources that support professional growth related to assistive technology       | 2.57 | 0.56 | 9    | High   |

**Table 6:** Means, standard deviations, ranks and degrees to which teachers of students with special needs have skills and knowledge for the items of "Professional and ethical practice" dimension in descending order

#### Amani Mahmoud ASSISTIVE TECHNOLOGY COMPETENCIES OF SPECIAL EDUCATION IN JORDAN

| 17. | Take care to receive the required training on assistive technology   | 2.46 | 0.54 | 10 | High   |
|-----|--|------|------|----|--------|
|     | devices  |      |      |    |        |
| 1.  | To have a personal philosophy emanating from professional            | 2.44 | 0.61 | 11 | High   |
|     | ethics related to assistive technology                               |      |      |    | -      |
| 13. | The constant quest to find out the latest developments on the        | 2.41 | 0.61 | 12 | high   |
|     | availability of modified devices designed to facilitate the lives of |      |      |    |        |
|     | students with special needs  |      |      |    |        |
| 12. | Continuous evaluation of performance and knowledge about             | 2.37 | 0.61 | 13 | High   |
|     | assistive technology   |      |      |    |        |
| 16. | Continuous monitoring to ensure the effectiveness of the             | 2.35 | 0.70 | 14 | High   |
|     | employment of assistive technology                                   |      |      |    | _      |
| 14. | Employment of research methods for assistive technology              | 2.32 | 0.68 | 15 | Medium |
| 15. | Knowing the skills and knowledge that teachers have in terms of      | 2.25 | 0.77 | 16 | Medium |
|     | assistive technology and continuity in developing professional       |      |      |    |        |
|     | performance  |      |      |    |        |
| 2.  | Knowledge of copyright laws in copying and distributing              | 2.22 | 0.66 | 17 | Medium |
|     | software for assistive technology                                    |      |      |    |        |
|     | Total score  | 2.51 | 0.43 | -  | High   |

Table (6) shows that the degree to which teachers of student with special needs have skills and knowledge in "Professional and ethical practice" dimension in assistive technology was high for the total score. The mean was (2.51) with a standard deviation of (0.43). The items of this dimension came in the high and medium scores. The means ranged from (2.75-2.22).

Item (8) that states "Maintain confidentiality of information" came in the first rank. Its mean was (2.75) with a standard deviation of (0.46) and in a high degree. In the second rank came item (7) that states "Knowledge of humanitarian, legal and ethical issues related to assisting technology". The mean was (2.71) and a standard deviation of (0.50) and in a high degree. while item (15) that states "Knowing the skills and knowledge that teachers have in terms of assistive technology and continuity in developing professional performance", came in the rank before the last. It is mean was (2.25) and a standard deviation of (0.77) and in a medium degree. Item (2) that states "Knowledge of copyright laws in copying and distributing software for assistive technology", came in the final rank with a mean of (2.22) and a standard deviation of (0.66) an in a medium degree.

As to the degree to which special education teachers have access to professional and ethical practices related to assistive technology, the results appear to be generally high, but was medium in the ability of specialists to conduct research on assistive technology. This is due to the lack of experience of teachers in the practice of research techniques related to assistive technology, as a modern field, where they rely on experts with advanced scientific degrees in providing them with the results. The result also came medium in the knowledge and skills

Item that teachers have in terms of assistive technology and continuity of assistive technology and continuity in the development of professional performance. Due to the recent specialization and rapid technological developments on the tools, and software, and their needs to receive more training, as well as in Jordan, teachers often clone copies of some of the software being expensive and not always available.

# 2.5 Educational content dimension

To answer this dimension, means and standard deviations were calculated and ranks and degrees of possessing skills and knowledge were determined as shown in table (7).

**Table 7:** Means, standard deviations, ranks and degrees of which teachers of students with special needs have skills and knowledge for the item of

 "Table 7: Means, standard deviations, ranks and degrees of which teachers of students with special needs have skills and knowledge for the item of

| No. | Item  | Mean | S.D  | Rank | Degree |
|-----|---|------|------|------|--------|
| 7.  | The use of computers and software to support the stages of the<br>learning process and to facilitate the process of student progress<br>and the level of academic achievement | 2.64 | 0.50 | 1    | High   |
| 6.  | Employing special software that suits the student's needs in different learning environments  | 2.58 | 0.55 | 2    | High   |
| 9.  | Designing educational activities that are characterized by the<br>legal and ethical professionalism of the use of technology with<br>the student                              | 2.58 | 0.55 | 2    | High   |
| 10. | Knowing and using of assistive technology that can provide students access to educational tools.  | 2.57 | 0.57 | 4    | High   |
| 2.  | Teaching students with special needs to use educational software to solve classroom tasks   | 2.56 | 0.52 | 5    | High   |
| 1.  | The ability to design and evaluate appropriate learning activities for students.  | 2.55 | 0.52 | 6    | High   |
| 5.  | Knowing the elements of the special education curriculum and what appropriate technological applications  | 2.49 | 0.63 | 7    | High   |
| 4.  | Procedures for evaluation of software and other assisting technological tools and how to use them   | 2.47 | 0.56 | 8    | High   |
| 8.  | Providing educational environments that support access to educational content.  | 2.47 | 0.59 | 8    | High   |
| 11. | Developing classroom tools using support technological- based tools   | 2.46 | 0.69 | 10   | High   |
| 3.  | Keeping abreast of developments in assisting technological tools<br>and software and their application in education   | 2.32 | 0.68 | 11   | Medium |
|     | Total score   | 2.52 | 0.43 | -    | High   |

"Educational content dimension in descending order"

It seems from the table (7) that the degree to which teachers of students with special needs have skills and knowledge in the dimension of "Educational content" was high for the total score. The mean was (2.52) and a standard deviation of (0.43). The items of this dimension came in the high degree except one item came in the medium degree. The means ranged from (2.64-2.32).

Item (7) that states "The use of computers and software to support the stage of the learning process, and to facilitate the process of student progress and the level of academic achievement", came in the first rank. Its mean was (2.64) with a standard deviation of (0.50) and in a high degree. At the second rank were the items (6) that states "Employing special software that suits the students' needs in different learning

environments and (9) that states "Designing educational activities that are characterized by the legal and ethical professionalism of the use of technology with the student". Their mean was (2.58) and a standard deviation of (0.55), and in high degree. Item (11) that states "Developing classroom tools using support technological-based tools', came in the rank before the last .Its mean was (2.46) and a standard deviation of (0.69) while item (3) that states "Keeping abreast of developments in assisting technological tools and software and their application in education". Came in the final rank with a mean of (2.32) and a standard deviation of (0.68) and in a medium degree.

All of the items were high , except the item (3) that states "Keeping abreast of developments in assisting technological tools and software and their application in education" came in the final rank, and in the medium degree. This result may be attributed to the lack of resources and financial allocations, and for the cost of purchasing sophisticated equipment, as well as the lack of some administrative facilities in some centers and schools in Jordan.

# 3. Recommendations

In light of the findings of the study, the researcher recommended the following:

- Preparing quick and emergency training programs for technology assisting providers for pre-service and in-service training.
- The introduction of a code within the law of the Jordanian disabled competencies that must be provided by teachers of special education in a particular and ordinary teachers and physiotherapists in general.
- Conducting further studies on the competencies that must be met by the employees in assisting technology.
- Introducing many university courses that include theoretical and practical aspects in the field of assistive technology.

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