# The Role of Assistive Technology in Success of the Individual Education Program for Disabled Students in Jordan

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## *Abstract*

***Background***

*Individual Education Program (IEP) is a basic educational curriculum designed specifically for the disabled, which parallels the normal curriculum in an ordinary education system. If disabled or ordinary students succeed in the curriculum, it allows them to proceed from one grade to another and from one stage to another.*

***Purpose***

*The study aimed to determine the role of assistive technology in the success of the Individual Education Program for disabled students in Jordan.*

***Methodology***

*The data was collected from a purposive sample which consists of 129 teachers teaching students from different categories of disability, such as; mental, motor, auditory, visual, and autism disorder. Data was collected from centers and institutions of special education in the governorates of Mafraq and Irbid located in Jordan. A set of questionnaire consisting 45 items focusing on nine specific areas; communication, academic, sensory, kinetic, social, self-care, daily life, organization, and computer use, was distributed. Data was analysed using the descriptive approach consisting of a multi-variance analysis, mean values and the standard deviations.*

***Findings***

*The role of assistive technology in the success of IEP curriculum for student with disabilities was high for all the nine areas of the questionnaire. Most importantly, it was found that there are no statistically significant differences ($\alpha = 0.05$) attributed to the variables including the type of disability and the sex of the teacher.*

***Significance***

*The findings suggest that the governorates of Mafraq and Irbid, specifically, and the governorates of other states in Jordan, generally, should conduct courses for teachers who are teaching the disabled students, on the types of assistive technology that can be used in all areas of the IEP and on how to use and sustain it.*

***Keywords****: Assistive Technology, Individualized Education Program (IEP), Student with Disability, Teacher in Special Education.*

## 1. Introduction

The movement for the rights of persons with disabilities in 1970s sought to achieve equality through individual programs, academic integration, social integration, full participation, independent life, and economic self-sufficiency. As referred to by the Improvement of Education for Persons with Disabilities Act (IDEIA 1997, 2004), which reflects the government's role in controlling the process of the individual education program, and the procedural requirements associated with the IEP that ensure "fair treatment" for each student (McLaughlin, 2010, p. 269). Where different terms in multiple countries are used to refer to the IEP, but there is a common description, such as the "backbone," the foundation, the "core element," and the "heart and soul" of private education (Mitchell et al., 2010). Sugarman (2014) noted that children are understood to be directed according to the goals and practices of different educational institutions [such as the IEP], and prepare for learning in pre-institutionalized ways. From this perspective, education focuses on preparing student who are able to do some things well and society need it. It means all persons without regard to race, sex, disability or other indicators of bias and discrimination. Notes the strength of the IEP in building the identity of students with disabilities academically and socially to put it in the educational landscape (Gregory, 2015). The IEP can be defined as a written document for each individual with special needs through a specialized team from the educational institution to which the individual is followed, and be qualified to supervise and implement the program to meet the individual educational needs of student with special needs (Al-Khashrami, 2001). The individual education program also aims to develop the personal, social, and professional efficiency of those with special needs, which enable them to live independently in the community (Hanafi, 2005). It is easily to say that multiple technological solutions are available and they might be selected on the basis of the specific characteristics and needs of the persons included in the intervention process (Lancioni, 2017).

Educational institutions seek to ensure the success of the individual education program through its application, evaluation and follow-up to achieve its objectives by using various ways and methods, including assistive technology. In recent years, the number of assistive technology devices is grow that have the capacity to empower individuals with disabilities (Wong, Law, 2016). Simon (1991) said that the real miracle of technology is its ability to remove insurmountable barriers faced by student with disabilities (Ahmad, 2015) since the source of greatest barriers come from natural environment, surroundings and information (Widehammar et al, 2017). Assistive technology as described (Reed and Bowser, 2005) is the term that includes adaptive and rehabilitation devices for persons with disabilities and includes almost anything that can be used to compensate for none of the certain capacities. It can also be defined, any piece, equipment, product system, whether commercially obtained it, modified it or customized, which is used to increase, preserve, or improving the functional capacities of children with disabilities (IDEIA, 2004). Assistive Technology ranging from low-tech devices such as crutches or a special grip to the pen, to high-end devices such as hearing aids, glasses, and high-tech devices such as computers with specialized software such as devices that help student with dyslexia to read (WHO, 2009).

## 2. Literature and previous studies to use of assistive technology with disabled student in IEP.

The success and applicability of any particular technical device is measured by actual usage, accessibility by users, which enables them to interact with their environments. It is essential to ensure that support devices are needs-based, inexpensive for their production, purchase and

maintenance, easy to use, effective, can be guaranteed use by potential users at every stage of design and development (Ahmad, 2015). Appropriate assistive technology is working to increase the functional capacity of the disabled and which enables them to live independently in life (Lee & Templeton, 2008). The assistive technology student with special needs have many benefits, such as contribution to the treat of individual differences between student with special needs, configure desirable trends, and build sound concepts, give children with special needs academic skills necessary to adapt their with surrounding their community, provide instant feedback, the possibility of repeating experiences and making them more effective, assist in the growth of all skills such as: mental, social, linguistic, sensory, and motor, full participation in public education classes and reduce dependency on others (Abed Al-Aati, 2014). Also variety of supporting technologies are used to highlight the cognitive potential of students, provide opportunities communication for them, enabling the curriculum to achieve its objectives and enable students to participate in the educational process. For example, (Day, Dell and Smith, 2011; Gierach, 2009; Reed, 2007; Colleman, 2011) classified assistive technology by dependence on the skills that developed in learners during the learning process such as reading, writing, auditory, sensory or communication skills. Erdem (2017) identified areas of use of assistive technology in the education and rehabilitation of persons with disabilities (Communication skills; reading, writing, mathematics, vision and hearing, movement skills, social skills and use leisure time, daily life skills; organization and work skills; computer skills and access it). Moreover, the IEP team can also find a great assistive technology location for student with special needs (AbleData. website) that containing nearly 40,000 technological tools.

Many researchers have also conducted different studies in different countries on the role of assistive technology in the education of student with disabilities that represent the areas IEP. Coleman et al. (2015) found effectiveness of the strategy of using the PowerPoint to learn words for students of the third grade of the hearing impaired. Ferreira et al. (2013) studied the effectiveness of computer games on student with cerebral palsy who can't speak, where the results showed improved their nonverbal linguistic communication (facial expressions reading). Armstrong and Hughes (2012) found the storytelling strategy effectiveness by the computer in improving the level of reading comprehension in a sample of students of autism. Peterson-Karlan (2011) studied the effect of different types of computer software such as voice recognition program, word prediction program and word reading program on the results of students with writing difficulties. Bouck et al. (2013) studied the role of digital audio books and some computer software such as word tracking software and reading it, digital zoom in the teaching of mathematics for sample of the visually impaired, the results showed the role of technology in understanding the mathematical content and the ability to succeed for the study sample. Schmidt (2014) found the effectiveness of using a three-dimensional learning environment to teach social skills in everyday life for a sample of autism students. Sfar, (2006) studied the effectiveness of a computer program in modifying the behavior of the excess activity and reducing the time of the modification of mild mental retardation, the study proved the effectiveness of the computer program in modifying the behavior of excessive activity of mild mentally retarded children and some of the behaviors associated with the behavior of hyperactivity such as distraction, impulse and hyperactivity are improved. Dakhil, (2000) demonstrated the positive role of multimedia as an instructional technique in improving pronunciation and speech for mentally retarded children. Al-Risais, (2003) demonstrated the effectiveness of interactive programs as an educational technique by using a computer to facilitate the teaching of mathematics and to transfer the impact of education to new situations for mild mentally retarded students.

## 2.1. Problem Statement

The researchers observed the existence of a level of weakness in achieving the objectives of the individual education program, which represents the essential axis and the nerve of special education. Therefore, this study was presented to determine the role of assistive technology in the success of the individual education program from the point of view of their teachers. The problem of the study was formulated as a main question: What is the role of assistive technology in the success of the IEP for disabled student from the point of view of their teachers in Jordan? With the following sub-question:

Are there differences in degree of the role of assistive technology in the success of the IEP due to the type of disability taught by the teacher and the sex of the teacher?

## 2.2. Significance of Study

The use of the IEP can historically be linked to the ideological thinking and educational goals of contemporary educational institutions that emphasize the democratic and equal aspects of each student's education, regardless of disability, acute needs and psychological or medical diagnosis (Christle & Yell, 2010; Etscheidt & Curran, 2010; Gabel, 2008; Gabel & Connor, 2009). Special education teachers seek to succeed IEP with the disabled in different ways and means. The study acquires its importance from recent major component (assistive technology) that works to success of IEP. It Provides a distinctive education for all students and help in developing the abilities of learners in different areas of growth (Cognitive, linguistic, kinetic, academic, etc) (Boone & Higgins, 2007; Edyburn, 2000; Hitchcock, Meyer, Rose, & Jackson, 2002; Lange, McPhillips, Mulhern, & Wylie, 2006; MacArthur, Ferretti, Okolo, & Cavalier, 2001). At present, efforts are being made to use assistive technology mainly in the education of students with disabilities, emphasize their access to the general scholastic curriculum within the normal classroom, access them to the maximum extent possible, and their ability to challenge the expectations for all students. Prepare them to be more mature and independent student in their future lives (Tenmple, 2006). This study also helps the team responsible for preparing the IEP on the importance of employing assistive technology in terms of, knowledge, identify the appropriate species for each category of disability, training on how to use and impediments to use it in the individual education program.

## 2.3. Objectives of the study

The study aims to achieve the following objectives:
• Identify the role of assistive technology in the success of the IEP for disabled from the point of view of their teachers in Jordan.
• Identify the impact of some variables (type of disability, sex of teacher) for the importance of assistive technology in the implementation of the IEP for disabled persons.

## 2.4. Determinants of Study

The results of the study can be generalized in the light of the following determinants:
• The sample of the study was limited to teachers with disabilities in the institutions and centers of special breeding of the ministry of social development in the governorates of Mafraq and Irbid in Jordan.
• The study was limited to categories student with disabilities (mental, motor, auditory, visual, autism disorder).
• The study was conducted during the first semester of the academic year 2017-2018.

## 3. Methodology

The researchers used the descriptive approach, which is based on the analysis and study of a set of phenomena, and describes these phenomena accurately and specific, and express them by giving them numerical characteristics (means, standard deviations, etc.). This research is of great importance, especially in the field of human studies, where the disclosure of the views of people and their beliefs and qualities, and attitudes from a certain position.

### 3.1. Population and Sampling

The study community composed of all teachers of disabled students from institutions and centers of special education in the ministry of social development in Jordan. A purposive sampling method (Creswell, 2014) was selected for this study, which included 129 teachers for different categories of disability such as: mental, motor, auditory, visual, and autism disorder from the governorates of Mafraq and Irbid. Table (1) shows the distribution of the sample of the study.

**Table 1. Distribution of The Sample of The Study**

| The Governorate / Disability | Sex | Intellectual | Motor | Hearing | Visual | Autism | Total |
|---|---|---|---|---|---|---|---|
| Mafraq | Male | 7 | 7 | 6 | 5 | 6 | 31 |
| | Female | 10 | 6 | 5 | 6 | 5 | 32 |
| | **Total:** | 17 | 13 | 11 | 11 | 11 | 63 |
| Irbid | Male | 7 | 7 | 7 | 6 | 7 | 34 |
| | Female | 7 | 6 | 6 | 7 | 6 | 32 |
| | **Total:** | 14 | 13 | 13 | 13 | 13 | 66 |

### 3.2. Instrumentation

Theoretical literature and previous studies on assistive technology besides the individual education program such as the following studies: (Erdem, 2017; Ahmad, 2015; Boone & Higgins, 2007; Edyburn, 2000; Hitchcock, Meyer, Rose, & Jackson, 2002; Lange, McPhillips, Mulhern, & Wylie, 2006; MacArthur, Ferretti, & Cavalier, 2001) has been revised. The study tool was developed to form a questionnaire. Next, it divided into two main sections. The first section includes demographic information such as: sex, type of disability, and governorate. The second part consists of 45 item that are divided into nine areas including communication, academic, sensory, kinetic, social, self-care, daily life, organization, and computer use. Each field has five paragraphs. An appropriate 5-level Likert scale (very large degree, significantly

degree, medium degree, acceptable degree, low-grade degree) was used. Each degree is given a mark through five to one and this process is called ranking. This facilitates obtaining answers for the paragraphs in questionnaire. Then, the questionnaire is distributed among (10) arbitrators, in order to extract an indication of the apparent validity of the questionnaire. They are qualified from faculty members in special education, in terms of the appropriateness of the paragraphs of the field to which it belongs, linguistic safety, and any other suggestions to improve the apparent validity of the questionnaire (measuring what was designed for it). Then, comments from the arbitrators were taken which were confined to the linguistic integrity of the formulation of paragraphs and rearrange some paragraphs with the survival of the same number of paragraphs of the scale 45 items, appendix 1. Then, a pilot study was selected that it included 20 male and female teachers of special education. The questionnaire was distributed twice (test and retest) with a time difference of two weeks in order to extract reliability of the questionnaire. Table (2) shows the coefficients of Cronbach's alpha for the reliability of questionnaire.

**Table 2. Stability Coefficients - Cronbach Alpha**

| Field | Reliability Coefficient |
|---|---|
| Communication | 0.88 |
| Academic | 0.91 |
| Sensory | 0.85 |
| Kinetic | 0.90 |
| Social | 0.88 |
| Self-care | 0.90 |
| Daily life | 0.92 |
| Organization | 0.85 |
| Computer usage | 0.90 |
| **All fields** | 0.91 |

The reliability coefficient values for the questionnaire ranged from 0.85 to 0.91, Table (2), as it is considered sufficient and acceptable research in taking its results on the study sample.

## 4. Results

To answer the main question: What is the role of assistive technology in the implementation of the IEP for disabled student from the point of view of Jordanian teachers? The total means and standard deviations of the person sample responses were calculated, as shown in Table (3).

**Table 3. Means and Standard Deviations for The Role of Assistive Technology in The Success of IEP**

| Field | SMA | Standard Deviation | Degree of role |
|---|---|---|---|
| Communication | 4.30 | 0.459 | High |
| Academic | 4.24 | 0.466 | High |
| Sensory | 4.07 | 0.561 | High |
| Kinetic | 4.20 | 0.545 | High |
| Social | 4.03 | 0.520 | High |
| Self-care | 4.26 | 0.448 | High |
| Daily life | 4.12 | 0.451 | High |
| Organization | 3.86 | 0.633 | High |
| Computer Usage | 4.11 | 0.504 | High |
| **All fields** | 4.05 | 0.342 | High |

The degree of role of assistive technology from the point of view of teachers with disabilities in the success of IEP was high on all areas including communication, academic, sensory, kinetic, social, self-care, daily life, organization, computer usage, and the program as a whole, Table (3).

To answer the second question: Are there differences in degree to the role of assistive technology in the success the IEP program due to the type of disability taught by the teacher and the sex of the teacher? The total means and standard deviations were calculated for the variables of the type of disability taught by the teacher and the sex of the teacher in determining the role of assistive technology in success IEP as shown in Table (4).

**Table 4. Means and Standard Deviations for The Sex of Teacher and Disability Taught by The Teacher**

| Variable | Type | Field | Commu-nication | Academic | Sensory | Kinetic | Social | Self-care | Daily life | Organi-zation | Computer Usage | All field |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sex** | **Male** | SMA | 4.31 | 4.23 | 4.10 | 4.17 | 3.99 | 4.21 | 4.12 | 3.87 | 4.08 | 4.03 |
| | | SD | 0.477 | 0.489 | 0.552 | 0.579 | 0.492 | 0.430 | 0.451 | 0.616 | 0.510 | .349 |
| | **Female** | SMA | 4.30 | 4.25 | 4.05 | 4.23 | 4.06 | 4.31 | 4.12 | 3.85 | 4.13 | 4.07 |
| | | SD | 0.447 | 0.448 | 0.573 | 0.514 | 0.547 | 0.463 | 0.455 | 0.653 | 0.503 | .338 |
| | **Total** | SMA | 4.30 | 4.24 | 4.07 | 4.20 | 4.03 | 4.26 | 4.12 | 3.86 | 4.11 | 4.05 |
| | | SD | 0.459 | .466 | 0.561 | 0.545 | 0.520 | 0.448 | 0.451 | 0.633 | 0.504 | .342 |
| | **Mental** | SMA | 4.30 | 4.34 | 4.08 | 4.17 | 4.14 | 4.25 | 4.01 | 3.82 | 4.05 | 4.01 |
| | | SD | 0.455 | 0.367 | 0.613 | 0.542 | 0.481 | 0.537 | 0.443 | 0.514 | 0.452 | .327 |
| | **Kinetics** | SMA | 4.31 | 4.28 | 4.16 | 4.30 | 3.92 | 4.30 | 4.12 | 3.95 | 4.21 | 4.07 |
| | | SD | 0.458 | 0.374 | 0.481 | 0.476 | 0.613 | 0.443 | 0.431 | 0.792 | 0.423 | .290 |

| Disability | Audio | SMA | 4.28 | 4.04 | 3.95 | 4.11 | 4.04 | 4.22 | 4.16 | 3.89 | 4.20 | 4.02 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SD | 0.447 | 0.668 | 0.714 | 0.704 | 0.566 | 0.437 | 0.579 | 0.7486 | 0.687 | .468 |
| | Visual | SMA | 4.28 | 4.31 | 4.03 | 4.22 | 3.90 | 4.24 | 4.12 | 3.83 | 4.02 | 4.04 |
| | | SD | 0.504 | 0.427 | 0.528 | 0.462 | 0.44248 | 0.44296 | 0.41751 | 0.626 | 0.458 | .330 |
| | Autism disorder | SMA | 4.37 | 4.24 | 4.15 | 4.23 | 4.15 | 4.30 | 4.20 | 3.78 | 4.03 | 4.12 |
| | | SD | 0.478 | 0.370 | 0.399 | 0.507 | 0.434 | 0.386 | 0.343 | 0.394 | 0.436 | .258 |
| | Total | SMA | 4.30 | 4.24 | 4.07 | 4.20 | 4.03 | 4.26 | 4.12 | 3.86 | 4.11 | 4.05 |
| | | SD | 0.459 | 0.466 | 0.561 | 0.545 | 0.520 | 0.448 | 0.451 | 0.633 | 0.504 | .342 |

Table (4) showed that there are apparent differences attributed to sex and disability taught by the teacher variables in the importance of assistive technology in the success of the individual education program. In order to distinguish the significance of these differences, multivariate variance analysis was used as shown in Table (5).

**Table 5. Multivariate Variance Analysis Results by Sex and Disability Taught by The Teacher Variables**

| Source of variance | Field | Average squares | Degrees of freedom | Value (F) | Statistical significance |
|---|---|---|---|---|---|
| **Sex** | Communication | 0.007 | 1 | 0.032 | 0.859 |
| | Academic | 0.000 | 1 | 0.001 | 0.970 |
| | Sensory | 0.068 | 1 | 0.211 | 0.647 |
| | Kinetic | 0.120 | 1 | 0.393 | 0.532 |
| | Social | 0.117 | 1 | 0.432 | 0.512 |
| | Self-care | 0.273 | 1 | 1.319 | 0.253 |
| | Daily life | 0.003 | 1 | 0.014 | 0.906 |
| | Organization | 0.008 | 1 | 0.018 | 0.892 |
| | Computer usage | .096 | 1 | 0.370 | 0.544 |
| | **All fields** | 0.056 | 1 | 0.465 | 0.497 |
| **Disability** | Communication | 0.028 | 4 | 0.127 | 0.972 |
| | Academic | 0.354 | 4 | 1.650 | 0.167 |
| | Sensory | 0.188 | 4 | 0.583 | 0.676 |
| | Kinetic | 0.127 | 4 | 0.416 | 0.797 |
| | Social | 0.309 | 4 | 1.142 | 0.341 |
| | Self-care | 0.033 | 4 | 0.157 | 0.959 |
| | Daily life | 0.115 | 4 | 0.549 | 0.700 |
| | Organization | 0.104 | 4 | 0.250 | 0.909 |
| | Computer usage | 0.220 | 4 | 0.854 | 0.494 |
| | **All fields** | 0.044 | 4 | 0.366 | 0.832 |

There are no statistically significant differences at the significance level ($\alpha = 0.05$) attributable to variables type of disability taught by the teacher and sex of teacher in determining the role of assistive technology in the success of the individual education program, Table (5).

## 5. Discussion

Overall this study indicates that the degree of role of assistive technology from the point of view of teachers with disabilities in the success of IEP was high on all areas including communication, academic, sensory, kinetic, social, self-care, daily life, organization, computer usage. It can be explained from point of researcher's as follows: the wide usage of assistive technology in the individual education program was applied to increase the functional capacity of the disabled, to treat individual differences among student with special needs, to configure desirable directions, to fashion and construct of sound concepts, to provide children with special needs with the academic skills necessary to adapt them to the surrounding community, to provide instant feedback, to facilitate the repetition of experiences and to make them more effective, to assist in the growth of all skills such as: mental, social, linguistic, sensory and motor, to make it is possible for full participation in public education classes and to reduce dependence on others (Abdel Aati, 2014). According to the present study, the tools of assistive technology for student with disabilities is possible to be identified in the IEP in the following areas:

- Communication: Assistive technologies work to achieve the objectives in IEP in side of communication with students with special educational needs in different situations and environments (Cumley, Maro and Steenek, 2009). Including communication boards, photo books, eye glasses/frames, speech-generating devices, text-based devices with speech synthesis and image exchange system (PECS), (Coleman, 2011; Reed and Bowser, 2013 ;Day, Dell and Smith, 2011).
- Academic skills: Assistive techniques help to achieve goals in IEP in academic skills with students with disabilities (Cumley, 2009). Some of them help to develop reading skills such as normative content, modified and adapted books, electronically modified content, use of images with content, electronic content, content reader, computer, and scanner. Some of them help the development of writing skills such as adaptations of the environment and seating, pencils and pens varied adapted or modified, modified papers, writing forms, sections and words prewritten, computer software. Also including that helps to develop the skills of mathematics such as ruler, stamps and protractor, arithmetic abacus, line setup, calculators, computer software, measuring devices, Tap and smart devices.
- Sensory skills: Assistive technology helps students with disabilities maintain and recognize sensory stimuli especially visual and audio, which they are exposed to in their environments during the implementation of the IEP (Hersh and Johnson, 2008). They include magnifying glasses, stereoscopic images, Braille writing, audio aids, visual alarm devices and smart phones.
- Sit and movement skills: Assistive technology works to enable disabled student to sit and move appropriately during the implementation of the IEP. Include the walking devices – crutches and wheelchairs (Traditional, Electrical).
- Social and recreational skills: Assistive technology prepare opportunities for student with disabilities to achieve the goals of social and recreational skills in the IEP. Including the electronic games, computer games, various sports equipment and free Games.
- Daily life skills: The availability of assistive technology enables disabled student to learn daily life skills in IEP. Including the books are simple and illustrated to learn preparation of food, pictured guidance signals and computer software.
- Organizational and knowledge skills: Assistive technology assists student with disabilities to learn basic cognitive skills during the implementation of the IEP.

Including the electronic tables, keywords, study guides, online search tools and notebooks.

- Computer skills: Assistive technology for student with disabilities has facilitated the education of student with disabilities in computer used skills in the IEP. It includes keyboard, mouse, camera, operating system and touch or digital screen.

That means most of the previous studies that investigate on the subject of assistive technology with student with disabilities demonstrated successful and effective role with disabled student such as study: Coleman et al. (2015), Ferreira et al. (2013), Armstrong and Hughes (2012), Peterson-Karlan (2011), Bouck et al. (2013), Schmidt (2014), Sfar, (2006), Al-Dakhil, (2000), and Al-Risais, (2003).

To answer the second research question in this study, as shown in the diagram below, the role of assistive technology in the success of IEP is high. This reveals that the gender of the teacher and the type of disability is an important role moving towards assistive technology in successful implementation of IEP among students with disabilities. As shown in figure below;
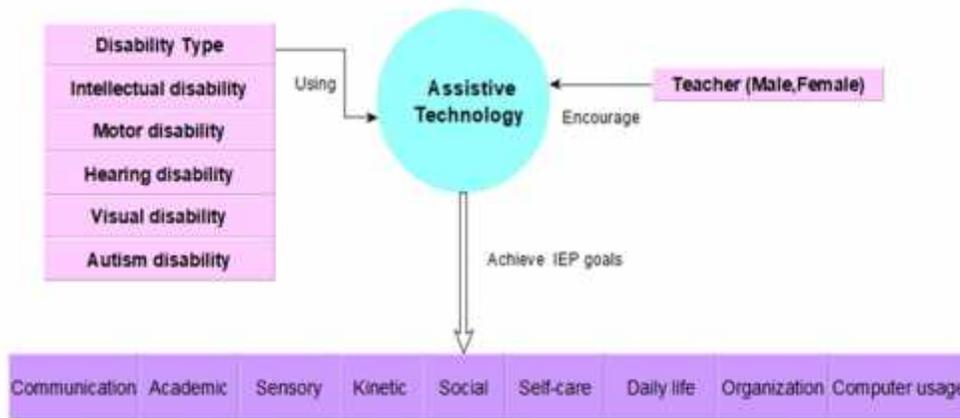


**Figure 1: Role of Assistive Technology with IEP**

## 6. Conclusion and Recommendations

This study has discovered that assistive technology helped categories of student with special needs regardless of age or the nature of their disability, and barriers were broken in front of them at home, school, work and public places. It has enabled them to live their lives naturally in many cases and made them engage in their societies satisfactorily, producing in it without dependent on others (Shaqour, 2011). As a result of global, regional and local attention to students and individuals with special needs that based on the various philosophical foundations of morality, human dignity, equality and heavenly religions. Therefore, international and domestic laws and regulations have been enacted, which aimed at the final to enable persons with disabilities to live independently by providing appropriate opportunities for them through the use of rapid technological progress at all levels in different areas of life. Where the use of advanced technology and educational devices contributed in learning and achieving goals in their IEP and making them receive the same quality of education as their regular peers. It provides appropriate learning environment to overcome their existing disability. Also the study many recommendations such as:

• Hold courses for teachers of the disabled on the types of assistive technology that used in all areas of the IEP and how to use and maintain it.

• Conduct studies about obstacles to the use of assistive technology with student with disabilities.

• Inform the educational decision makers on the results of this study, which identifies one of the most important factors in the success of IEP for student with disabilities.

### 6.1. Disclosure of potential conflicts of interest

"No potential conflict of interest was reported by the authors."

## References

[1]  Abed Al-Aati, Hassan Alebatta Mohammad. .(2014). Education Technology with Special Needs and Aids, Alexandria, New University House.

[2]  Ahmad, Fouzia Khursheed (2015): "Use of Assistive Technology in Inclusive Education." Transcience Vol. 6, Issue 2. Pp.62-77.

[3]  Al-Dakhil. hessah. (2000). The Effect of the use of Multimedia Techniques in Teaching Children with Simple Mental Disabilities to Improve their Pronunciation and Speech, King Saud University, Unpublished Master Thesis.

[4]  Al-Khashrami, sahar. (2001). Evaluation of Individual Educational Programs, Symposium of Medical Diagnosis and Self-Assessment for those with Special Educational Needs - Saudi Arabia, 183 - 217.

[5]  Al-Risais, Reem. (2005). The Effectiveness of a Computer-aided Learning Program in Teaching the Skill of Combining for Students with Simple Mental Retardation, Arabian Gulf University, Unpublished Master Thesis.

[6]  Armstrong, T. K., & Hughes, M. T. (2012). Exploring computer and storybook interventions for children with high functioning autism, *International Journal of Special Education*, 27(3), 1-12.

[7]  Boone, R. & Higgins, K. (2007). The role of instructional design in assistive technology research and development. *Reading Research Quarterly, 42(1),* 135-139.

[8]  Bouck, E. C., Meyer, N. K., Joshi, G., & Schleppenbach, D. (2013). Accessing algebra via math speak™: Understanding the potential and pitfalls for students with visual impairments, *Journal of Special Education Technology*, 28(1), 49-63.

[9]  Christle, C.A., & Yell, M.L. (2010). Individualized education programs: legal requirements and research findings. *Exceptionality, 18*, 109-123. doi:10.1080/09362835.2010.491740.

[10] Christle, D., Morton, M., & Hornby, G. (2010). *Review of the literature on individual education plans*. Report to the New Zealand Ministry of Education.

[11] Coleman, M. B. (2011). Successful implementation of assistive technology to promote access to curriculum and instruction for students with physical disabilities, *Physical Disabilities: Education and Related Services*, (30), 1-22.

[12] Coleman, M.B., Maclauchlan, M.P., Cihak, D.F., & Martin, M.S., & Wolbers, K. (2015). Comparing Teacher provided and computer-assisted simultaneous prompting for

vocabulary development with students who are deaf or hard of hearing, *Journal of Special Education Technology*, 30(3), 145-156.

[13] Cumley, J., Maro, J., & Stenek, M. (2009). Assistive technology for communication. Assessing Students' Needs for Assistive Technology (ASNAT) 5th Edition. J. Gierach (Ed.). (p.1-62).

[14] Day, S., Dell, M., & Smith, T. (2011). Assistive Technology Monroe County School District. (p.1-11). Retrieved fromhttp://region5at-udl.wikispaces.com/file/view/AT+ Referral +Monroe + County. PDF.

[15] Edyburn, D. L. (2000). Assistive technology and students with mild disabilities. *Focus on Exceptional Children, 32(9),* 1-23.

[16] Erdem ,Raziye (2017). Students with Special Educational Needs and Assistive Technologies: A Literature Review, The Turkish Online Journal of Educational Technology – January 2017, volume 16 issue 1.

[17] Ferreira, M. I. J., Travassos, X. L., Sampaio, R, & Pereira-Guizzo, C. deS. (2013). Digital games and assistive technology: Improvement of communication of children with Cerebral Palsy. International Journal of Special Education, 28(2), 36-46.

[18] Gabel, S. L. (2008). A model for political activism. In S.L. Gabel & S. Danforth (Eds.), *Disability studies in education: An international reader*. New York: Peter Lang.

[19] Gabel, S. L., & Connor, D. J. (2009). Theorizing disability: Implications and applications for social justice in education. In W. In W. Ayres, T. Quinn, & D.

[20] Gregory, P Karen. (2015). Individual Education Plan (IEP) Development for Children with Developmental Disabilities in Ontario's Public Schools: A Narrative Case Study Inquiry, A thesis for the degree in Doctor of Philosophy, The University of Western Ontario.

[21] Hanafi, Ali. (2005). Obstacles to the Application of the Individual Educational Program with the Hearing Impaired in Al Amal Institute for the Deaf and Integration Programs in Regular Schools, Psychological Guidance Journal, 19, 245-304.

[22] Hitchcock, C., Meyer, A., Rose, D., & Jackson, R. (2002). Providing new access to the general curriculum: Universal design for learning. *Teaching Exceptional Children, 35(2),* 8-17.

[23] Individuals with Disabilities Education Improvement Act (IDEIA). (2004). Amendments to Public Law No. 108-446, §602, USC 1401. Retrieved from http://idea.ed. gov/download/statute.html.

[24] Lancioni, Giulio E. (2017), Assistive technology for people with developmental disabilities, International Journal of Developmental Disabilities, 63:4, 187-189, DOI:10.1080/20473869.2017.1331787.

[25] Lange, A. A., McPhillips, M., Mulhern, G., & Wylie, J. (2006). Assistive software tools for secondary-level students with literacy difficulties. *Journal of Special Education Technology, 21(3),* 13-22.

[26] Lee, H., & Templeton, R. (2008). Ensuring equal access to technology: Providing assistive technology for students with disabilities. *Theory into Practice*, *47*(3), 212–219.

[27] MacArthur, C. A., Ferretti, R. P., Okolo, C. M., & Cavalier, A. R. (2001). Technology applications for students with literacy problems: A critical review. *The Elementary School Journal, 101*, 273-301.

[28] McLaughlin, M.J. (2010). Evolving interpretations of educational equity and students With disabilities. *Exceptional Children, 76*, 265-278.

[29] Peterson-Karlan, G.R (2011). Technology to Support Writing by Students with Learning and Academic Disabilities: Recent Research Tends and Findings. *Summer*, *7*(1), 39-59.

[30] Reed, P. and Bowser, G. (2005): "Assistive technologies and the IEP" in Edyburn, D., Higgins, K., Boone, R. (Eds.) Handbook of Special Education Technology Research and Practice. Knowledge by Design Inc. Whitefish bay.

[31] Reed, P., & Bowser, G. (2013). Assistive technology pointers for parents. Wisconsin Assistive Technology Initiative, Winchester, Oregon.

[32] Schmidt, M. M. (2014). Designing for learning in three-dimensional virtual learning environment: A design based research approach. *Journal of Special Education Technology*, 29(4), 59-71.

[33] Sfar, Ohood, (2006). The Effectiveness of a Computer Program in Modifying the Behavior of the Excess Activity and Reducing the Time of Modification Using the Design of the Individual Sample of the Category of Simple Mental Retardation, King Saud University, Unpublished Master Thesis.

[34] Shaqour, Ali Zuhdi. (2011). Article Entitled Educational Communication Technology for People with Special Needs. Available at the following link: https://uqu.edu.sa/files2/tiny_mce/plugins/filemanager/files/4281116/spsial.pdf.

[35] Stovall (Eds.), *Handbook of social justice in education* (pp. 377- 399). New York: Rout ledge.

[36] Temple, C. (2006). Successes and barriers: Teachers' perspectives on implementing assistive technology in educational settings. Dissertation.

[37] WHO (2009): "Assistive devices/technologies", Available at: http://www.who.int/Disabilities/technology/en/

[38] Widehammar, Cathrine; Lidström, Helene; Hermansson, Liselotte (2017). Environmental barriers to participation and facilitators for use of three types of assistive technology devices, Assistive Technology, DOI: 10.1080/10400435.2017.1363828