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## The Utilization Level of Computer Techniques by Teachers of Special Education Centers to Give Students with Autism Spectrum Disorders the Verbal and Non-Verbal Communication Skills

### Abstract

*The study aims to reveal utilization level of computer techniques by teachers of special education centers that give students with Autism Spectrum Disorders (ASD) the verbal and non-verbal communication skills; at H.K of Jordan. The study sample consisted of (400) male and female teachers from special education centers in Jordan for the academic year (2020/2021) and developed a questionnaire as the study tool and distributed it in two areas, represented in the verbal and non-verbal communication skills. Researchers implemented the tool on the study sample members after verifying its validity and reliability. Study results showed a medium utilization level of computer techniques by teachers of special education centers that give students with ASD the verbal and non-verbal communication skills; at the H.K of Jordan. Results also showed nonexistence of statistically significant differences at the utilization level of computer techniques by teachers of special education centers, due to variables of gender, experience, and teachers' qualification. The study recommended that special education teachers should be trained on the use of Computer techniques to develop verbal and non-verbal communication skills.*

**Keywords:** Autism Spectrum Disorders, Computer Techniques, Special Education Centers, Verbal & Non-verbal Communication Skills.

### Introduction

ASD considers an evolutionary disability that significantly affects the verbal and non-verbal communication and social interaction, where many autistic children experience language delaying, echoing, and repeating instead of communicating properly (Khalifeh Etall, 2016). According to the 5<sup>th</sup> version of Diagnostic & Statistical Manual of Mental Disorders (DSM-5), ASD is a case or a situation of disability in two key areas, first: social

communication and interaction, and second stereotypical behaviors and limited repetitive activities. Children with ASD suffer from cognitive disorder, inability to build the structural composition of language, and poor language stock (Gladfelter & Barron, 2020) which lead to difficulties in communication and socialization, and make it more difficult for them to be taught (Bishop, 2010). The difficulty of ASD may also increase due to its association with multiple and different disabilities in its size and method from one child to another and even within the

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same child, but there is an agreement among researchers on the disability aspects, such as poor attention, difficult verbal and non-verbal communication, and the tedious stereotypical conducts (Naber, et al, 2008).

Many studies confirm that a lot of children with ASD have troubles in verbal language (Anderson, et al., 2007) where some literature assumes that most autistic children acquire language during preschool years, and mostly at the age of five (Howlin, et al, 2009).

Expert researchers referred to using two types of language intervention among autistic children, where the first type focuses on the use of verbal strategies for sounds, words, and sentences to examine children abilities to express themselves (Gutstein & Sheely, 2002; Lovaas, 1987) while the second type of intervention focuses on the use of computer techniques. Researchers noticed existence of attractiveness and interaction with these techniques from autistic children, which enhance their communication skills (Goldsmith & LeBlanc, 2004).

The importance of technology-based interventions with ASD children indicates that segment often needs external incentives to initiate, maintain, or end the behavior where the modern technology includes different interactions such as acoustic, suggestive, physical, written, illustrated, and signed interactions (MacDuff & McClannahan, 2001). Due to the increase in number of ASD children, it is necessary to find a new and effective way to develop their skills and help them to adapt and contribute to societies (Rias & Dehkordi, 2013).

Results of studies have varied about the use of modern techniques by special education teachers to teach children with special needs, where the study of (Cagiltay, et al., 2019) showed a reduction in the use of modern technologies by special education teachers while the study of (Attia, 2019) confirmed that those teachers face great difficulty to employ modern technologies on students with learning disabilities. In this regard, Attia (2019) indicated the need to harness modern computer technologies in the service of people with special needs to achieve goals of special education, which requires the availability of a number of important elements such as the qualified teacher trained on the use of these techniques, as well as the availability of purposeful methods of technology. Therefore, this study came to detect the utilization level of computer techniques by teachers of special education centers to give ASD students verbal and non-verbal communication skills.

## Study Problems & Questions

Researchers noticed through their field and educational job and through the frequent teaching and supervising of students' field training courses; the major of measurement & diagnosis of ASD as one of the middle diploma programs taught at Irbid University College, as well as through direct communication of researchers with students enrolled in special education centers and complaint of their parents about the absence and shortcomings of verbal communication behaviors and their inability to jointly pay attention to effects and motives presented to them, which made these children show alternative and abnormal communication behaviors in a way to express their needs, such as screaming (Al-Ohali, 2015), as well as the obvious effects in the delay of autistic child to acquire the required language skills for growth, because growth is an overlapping process where each aspect in it have an effect on other different aspects (Al-Zuriqat, 2010). Accordingly, researchers define the study problem in answering the following questions:

Q.1: What is the utilization level of Computer techniques by teachers of special education centers that give ASD students the verbal communication skills; at H. K of Jordan?

Q.2: What is the utilization level of Computer techniques by teachers of special education centers that give ASD students non-verbal communication skills; at H. K of Jordan?

Q.3: Are there statistical significant differences at level ( $\alpha=0.05$ ) in the utilization level of Computer techniques by teachers of special education centers that give ASD students the verbal communication skills, due to gender, qualification, and experience variables at the H.K of Jordan?

Q.4: Are there statistically significant differences at level ( $\alpha=0.05$ ) in the utilization level of Computer techniques by teachers of special education centers that give ASD students the non-verbal communication skills, due to gender, qualification, and experience variables at the H.K of Jordan?

## Study Objectives & Importance

This study seeks to identify the utilization level of computer techniques by teachers of special education centers to give students with ASD the verbal and non-verbal communication skills; at the H.K of Jordan. Study also aims to demonstrate statistical significance differences in the utilization level of computer techniques by teachers of special education centers that give students with ASD the verbal and non-verbal communication skills; at the H.K of Jordan due to gender, qualification, and experience variables.

The educational literature of current study, previous studies, and instruments and reached results consider a real contribution to the future researches in this field, and it's also an addition to the Arab library and human knowledge, as well as the benefit that will be bestowed on the service recipients with autism spectrum disorder at the special education centers. Finally, guide those who serve this category for the need to employ these techniques while providing the behavioral, therapeutic, and educational interventions to people with autism spectrum disorders (Al-Zuriqat, 2010).

## Theoretical Frameworks & Methods

### 1. Study Terms

**Computer Technologies:** a method to employ technical programs in order to increase the effectiveness of educational process and raise its efficiency through its re-planning, re-organizing, re-implementing, and re-evaluating of educational outputs. It's an integrated system of Hardware, Software, procedures, and processes employed effectively and efficiently by teachers in the educational process (Al-Nadawi, 2012).

**Autism Spectrum Disorders:** it's a qualitative deficiencies that appear in three areas of growth, which are social interaction, verbal and non-verbal communication, and a range of behavioral patterns, interests, and limited repetitive and stereotypical activities that must appear completely before the age of three (DSM IV-TR, 2000).

**Verbal Communication Skills:** it's the ability to use and understand words, sentences, and thoughts and also to process and express audio information with spoken words (Al-Zuriqat, 2010).

**Non-Verbal Communication Skills:** it's the ability to deliver or receive information without the spoken language, and include behavioral or expressive channels such as facial expressions, body movements, and sound variations. It has multiple forms that all come from the body, whether it was an appearance, instrument, or space (Yegmore, 2019).

### 2. Literature

**Autism Disorder:** Autism is defined by the U.S. Law for Education of Disabled Individuals as an evolutionary disability that has expressive impacts on verbal & non-verbal communications, and also social interaction where its symptoms significantly appear before the age of three and negatively affect the performance of child education (Al-Zuriqat, 2010).

**Central Characteristics of Autism:** many literatures such as (Al-Zuriqat, 2010; Al-Dhaher, 2009) refer to four main characteristics that distinguish an autistic child from other disabilities and disorders, which are disability and deficiency of social interaction, disability and deficiency of verbal and non-verbal communication, restricted behavior, interests, and activities, and the stereotypical and ritual behavior. The Autistic people have significant communication difficulties in comparison with the ordinary children, they show a lack of understanding and difficulties in making voices of speech and expression, and they have difficulties in social interaction as a result of the late mental development that accompanies most cases of autism (Rapin & Tuchman, 2008), which causes autistic children to avoid communicating with others and obstructs their acquisition of new verbal skills (Niederer, 2013).

**Verbal & Non-Verbal Communications:** they consider the main channels that individuals use it to express their feelings, ideas, desires, and needs (Jordan & Powell, 1995). The effective communication requires multi skills, whether verbal or non-verbal such as meaning, greeting, expression, participation in social interaction, mutual communication, and the social aspects of language (Al-Zuriqat, 2010) where communication and language cannot be separated. Language requires communication and includes verbal and non-verbal language because the communication process includes two main aspects, which are verbal & non-verbal communication (Borg, 2009). Children with autism have deficiency in the language skills, due to a particular cognitive defect where these children suffer from a wide range of cognitive disabilities that include the verbal disability, which makes their speech development much slower than the ordinary child and their understanding of language are poor in comparison with the normal child, which requires a review of interventions used in the education of people with autism (Mody & Belliveau, 2013).

**Computer Techniques:** (Al-Saud, 2002) defines it as a collection of tools and devices used in education, where the use of this term includes modern educational methods, such as Internet, digital machines, and other means of communication.

### Advantages and Justifications for Using Computer Techniques in Education

- The processes that computer techniques provide, such as the follow-up, strengthening and feedback by knowing the right answers, recording marks and reinforcements, increasing learners'

confidence in themselves, and inspiring up their motivation towards learning.

- The assistance of computer techniques to attract learner attention and solve special learning problems among students who suffer minor retardation or communication skills problems.
- The appropriateness of computer techniques for many modern educational trends, such as learning by discovery.
- The high speed of computer techniques in executing operations.
- The great dynamic and activeness that computer techniques give to the educational situation.
- The interactivity of computer techniques and multiple learning methods; each and every time it used to provide suitable learning environment for different ages. (Azuma, 2001; Al-Caleati, 2008; Salama, 2002).

### **Role of Computer Techniques in Gaining Verbal & Non-verbal Communication Skills**

The interest to use computer techniques in education of special needs' students and to facilitate the communication with them, where studies indicate the ability of computers to help students raise their academic level and solve some of the academic problems facing them, such as reading, writing, and calculating. It also helps in the creation of friendships and social relationships, and even in implementation of educational plan (Al-Qaryouti, 2002). The used materials have great importance to education of Autism Disorders' children, where computers and its techniques encourage those children to participate in computer activities and enjoy its applications in the educational process (Abidoğlu, et al, 2017).

Computers have positive impact on the performance of ASD children in responsiveness areas and other educational areas. The computer-aided education increases verbal communication between Autistic children and provides peer-to-peer communication between them, which enhance other social skills at different situations (Randoss, et al., 2011 & Bölte, et al., 2010).

### **3. Study Limitations**

Objective Boundaries: to identify the utilization level of computer techniques by teachers of special education centers to gain verbal and non-verbal communication skills in autism, as one of the special education categories.

Human Boundaries: represented in teachers of special education centers.

Temporal Boundaries: the current study conducted during the second term of 2021.

Spatial Boundaries: governorates of northern Jordan (Irbid, Jerash, Mafraq, Ajloun).

Instrument: the psychometric-properties represented in validity & reliability.

### **4. Study Procedures**

This study fall under the analytical descriptive studies, therefore researchers used the descriptive analytical method as a scientific approach that allows information to be collected about the studied phenomenon without the intervention of researchers.

### **5. Study Population**

The study society consists of all (1,200) male and female teachers at the special education centers in H.K of Jordan, according to statistics of Social Development Ministry and the Supreme Council of persons with disabilities during (2019/2020) academic year.

### **6. Study Sample**

The selection of samples require to follow a precise methodology where through it a statistically representative sample of study society will be selected to help answer study questions in a scientific way (Majid, 2018). Accordingly, researchers selected (400) male and female teachers from special education centers in the northern provinces of Irbid, Mafraq, Jerash, and Ajloun; at the H.K of Jordan who accounted for (33%) from the original society. Table (1) below shows characteristics of study sample:

**Table 1.**  
*Frequencies and percentages of study variables*

Category		Frequency	Percentage
Gender	Male	120	30.0
	Female	280	70.0
Qualification	Diploma	217	54.3
	Bachelor	122	30.5
	Master	61	15.3
Experience	Less than 5	233	58.3
	From (5-10)	113	28.3
	Greater than 10	54	13.5
Total		400	100.0

## 7. Study Instrument

The questionnaire represent the main method to collect quantitative preliminary data by asking a set of questions designed to reach facts for the research, where the questionnaire allows to collect quantitative data in a unified way; in order for it to be internally reliable, coherent, and valid for analysis. For current study purposes, researchers build a questionnaire that contains two aspects; where first one related to the role of computer techniques in gaining verbal communication skills and has (13) items while the second related to computer techniques' role for getting non-verbal communication skills and has (11) items.

To verify the questionnaire validity, researchers presented it on a group of experts and to ensure its reliability and verify its scale they used the test-retest method, and re-implemented it after two weeks on a group of (30) male and female teachers; from outside the study sample, and then calculated Pearson Correlation Coefficient in both times. Study also calculated scale reliability using internal consistency method; according to Cornbach Alpha Equation. Table (2) shows internal consistency according to Cornbach Alpha, reliability retest, and overall degree where these values consider appropriate for study purposes.

**Table 2.**

*Cornbach Alpha Coefficient, internal consistency & reliability test-retest, and overall degree*

Aspect	Test-Retest Reliability	Internal Consistency
Role of computer techniques to gain the verbal communication skills	0.92	0.89
Role of computer techniques to gain non-verbal communication skills	0.86	0.83

In order to judge arithmetic means, researchers adopted the Likert Fifth Scale to test study tools, by giving a degree for each item (strongly agree, agree, neutral, disagree, strongly disagree) which translated to (5, 4, 3, 2, 1) respectively. Researchers used the following equation to calculate the scale:

$$\text{Scale Max Limit (5) – Scale Min Limit (1)} \\ \text{Number of Categories required (3)}$$

Therefore, arithmetic means will be classified as follows:

- Less than 2.33 considers low degree
- 2.34-3.67 considers medium degree
- 3.68 and more considers high degree

## 8. Study Variables

This study includes the following variables:

Independent Variables:

- Gender: it has two categories (Male, Female)
- Qualification: it has three levels (Diploma, Bachelor, Master)
- Years of Experience: it has three categories (5 yrs. and below, 5-10 yrs., more than 10 yrs.)

Dependent Variables:

- The utilization level of Computer techniques to gain verbal and non-verbal communication skills.

## Previous Studies

There have been many studies that addressed impact of computer use on children with ASD, which include:

The study of (Zain Al-Deen, 2020) sought to identify trends of special education teachers toward using technology to teach special needs' students, in light of Corona Pandemic. Study sample consists of (120) male and female primary school special education teachers in Egypt, where researchers implemented the scale by employing technology to teach students with special needs. Results showed high degree of special education teachers toward using technology to teach special needs' students, in light of Corona Pandemic.

The study of (Attia, 2019) aimed to identify the reality of using the educational techniques by teachers of pupils with learning disabilities in the computer resource rooms, by selecting a sample of (50) male and female teachers who teach students with primary learning disabilities. Study results showed that most items of questionnaire were at low degree; therefore the sample members find it very difficult to use teaching techniques inside computer labs. The study also found statistically significant differences between arithmetic means of learning disability teachers' responses to primary school students with difficulties using educational techniques to stimulate the mental abilities of pupils with learning disabilities, due to training courses variable while the study found differences, due to experience variable.

The study of (Valencia, et al., 2019) aimed to detect technology impact on people with ASD through a methodical analysis of (94) literature,

which showed that technology use in educational settings can help to develop many skills of people with Autism. These methods consider aspects of users' experience, ease of use, and accessibility, where game elements may be used to enrich the educational environments. The systematic literature review shows that development and evaluation of Autistic users' systems and applications consider very encouraging and the utilization of technological advances, such as VA, AI, VR, and reality enhancement provide a comfortable environment that promotes continuous learning of people with Autism.

(Cagiltay, et al., 2019) performed a study that aimed to reveal utilization level of education techniques at private education, from the standpoint of teachers in Turkey. Researchers selected a sample of (27) male and female teachers from (6) different schools in Ankara, Turkey and conducted semi-organized interviews with them. Study results indicated that teachers' use of technology for educational purposes have been very limited, due to unavailable infrastructure support.

The study of (Abidoğlu, Ertuğruloğlu & Büyükeğilmez, 2017) aimed to identify significance of computer-aided education for ASD children, and to achieve these goals researchers conducted interviews with experts from private and public educational centers; at the national education ministry in Turkish Republic of Northern Cyprus. Study results confirmed that computers provide reliability, regularity, and benefit, motivate readiness without practicing unnecessary pressure, and allow children to control their learning process.

The study by (Rias & Dehkordi, 2013) sought to detect impact of computer utilization on social skills enhancement among a sample of (5-8) years Autistic children, by designing a game dedicated to improve the social skills and by conducting a note card for participants to understand their behaviors through participating in the game. Study results showed that computer can contribute to the improvement of social skills among autistic children.

(Al-Sharif & Khalifa, 2014) conducted a study to find effectiveness of Multimedia programs on improving memory of Autistic children at KSA, and to achieve study objectives researchers selected a sample of (10) ASD students and divided them into controlled and experimental groups, and implemented the training program on them. Results showed effectiveness of Multimedia programs on improving the memory of Autistic children.

The study of (Siddeiq, 2007) aimed to reveal the impact of a proposed program to

develop non-verbal communication skills among autistic children in Riyadh, and to achieve the study goal researcher selected a sample of (38) children and divided them into two groups, one controlled and the other experimental and also prepared a list of non-verbal communication skills, and after implementing the program results showed the existence of a statistical significant differences in improving the skills of joint attention, attributed to the training program.

Through this presentation of previous studies, researchers noticed that most studies talked about Computer utilization impact on the education of ASD children and its targeted educational aspects while the current study focuses on an important aspect related to teachers who deal with Autism students. Therefore, an exact difference shows between the current study and previous studies where current study focuses on the utilization level of Computer techniques by teachers of ASD students to improve their verbal and non-verbal communication skills, and because of shortage in previous studies related to the topic, this study can serve as a foundation for upcoming studies in this field.

## **Study Results, Discussions & Recommendations**

### **1. Results**

This study sought to identify the utilization level of Computer techniques by teachers of special education centers that give ASD students verbal and non-verbal communication skills; at the H.K of Jordan, and here is a presentation of most important results:

***First Question: What is the utilization level of Computer techniques by teachers of special education centers that give ASD students the verbal communication skills; at the H.K of Jordan?***

To answer this question, researchers calculated arithmetic means and standard deviations for utilization level of Computer techniques by teachers of special education centers that give ASD students the verbal communication skills; at the H.K of Jordan as shown in table (3) below:

**Table 3.**

*Means and standard deviations for utilization level of Computer techniques by teachers of special education centers that give ASD students the verbal communication skills*

Rank	Number	Items	Mean	STDEV	Level
1	1	Computer techniques contribute to introduce the autistic children to letters' sounds	3.63	0.941	Medium
2	12	Computer techniques give autistic children spoken language skill to express their needs	3.62	1.063	Medium
3	2	Computer techniques give autistic children letters' spelling skills	3.61	1.075	Medium
4	6	Computer techniques help autistic children to divide words into sections	3.55	0.951	Medium
5	4	Computer techniques help autistic children to divide words into letters	3.54	0.970	Medium
6	11	Computer technologies contribute to give autistic children skills for using (yes, no) in the right position	3.43	1.076	Medium
7	3	Computer techniques give autistic children the skills to differentiate between sounds	3.39	1.114	Medium
8	7	Computer techniques enhance autistic children word-composition skills	3.28	1.115	Medium
9	8	Computer techniques help autistic children to determine starts and ends of words	2.94	1.281	Medium
10	9	Computer techniques help autistic children to understand the spoken words	2.72	1.333	Medium
11	5	Computer techniques help autistic children by giving them skills to divide sentences	2.67	1.410	Medium
12	13	Computer techniques enhance autistic children abilities to answer questions	2.00	1.139	Medium
13	10	Computer techniques enhance the ability of autistic children to express thier thoughts with interconnected sentences	1.99	1.131	Low
<b>Role of computer techniques in giving Autistic children the verbal communication skills</b>			<b>3.11</b>	<b>0.692</b>	<b>Medium</b>

Table (3) shows arithmetic means between (1.99-3.63), where item (1) stated "Computer techniques contribute to introduce the Autistic children to letters' sounds" came first at a mean of (3.63), item (12) stated "Computer techniques give Autistic children spoken language skill to express their needs" came second with a mean of (3.62), while item (2) that stated "Computer techniques give Autistic children letters' spelling skills" came third at a mean of (3.61) but item (10) stated "Computer techniques enhance the ability of Autistic children to express thier thoughts with interconnected sentences" came last at a mean of (1.99). The mean for computer

techniques role that give verbal communication skills as a whole amounted to (3.11).

**Second Question: What is the utilization level of Computer techniques by teachers of special education centers that give ASD students the non-verbal communication skills; at the H.K of Jordan?**

To answer the question, researchers calculated arithmetic means and standard deviations for utilization level of Computer techniques by teachers of special education centers that give ASD students the non-verbal communication skills; at the H.K of Jordan, as shown in table (4) below.

**Table 4.**

*Means and standard deviations for utilization level of Computer techniques by teachers of special education centers that give ASD students the non-verbal communication skills*

Rank	Number	Items	Mean	STDEV	Level
1	7	Computer techniques enhance the ability of autistic children to interact with other easily	3.58	0.944	Medium
2	4	Computer skills enhance autistic children ability on simulation	3.46	1.171	Medium
3	1	Computer techniques enhance autistic children ability to know signals & gestures	3.39	0.983	Medium
4	10	Computer techniques enhance autistic children skills to use the head gestures to communicate with others	3.32	0.969	Medium
5	9	Computer contributes to the development of autistic children ability to exchange smiles with others	3.16	1.258	Medium
6	8	Computer techniques enhance the autistic children skills to use certain signals to express their needs	2.95	1.241	Medium
7	2	Computer techniques enhance the ability of autistic children to use body language to express joy or sadness	2.80	1.246	Medium
8	5	Computer techniques help autistic children to respond appropriately to other people's movements such as handshakes	2.67	1.204	Medium
9	3	Computer techniques increase the ability of autistic children to understand the facial expressions (acceptance or rejection)	2.58	1.381	Medium
10	6	Use of computer techniques increase the autistic children ability to understand the facial expressions to connect with others	2.52	1.069	Medium
11	11	Use of computer techniques enhances the autistic children skills by using head gestures to communicate with others	2.15	1.086	Low
<b>Role of computer techniques in giving Autistic children the non-verbal communication skills</b>			<b>2.96</b>	<b>0.653</b>	<b>Medium</b>

Table (4) shows arithmetic means between (2.15-3.58), where item (7) stated "Computer techniques enhance the ability of Autistic children to interact with other easily" came first at a mean of (3.58), item (4) stated "Computer skills enhance Autistic children ability on simulation" came second with a mean of (3.46), and item (1) stated "Computer techniques enhance Autistic children ability to know signals & gestures" came third at a mean of (3.39), but item (11) stated "Use of computer techniques enhances Autistic children skills using head gestures to communicate with others" came last with a mean of (2.15). The arithmetic mean for Computer techniques role that give non-verbal communication skills as a whole equaled (2.96).

***Third Question: Are there any statistical significant differences at level ( $\alpha=0.05$ ) at the utilization level of Computer techniques by teachers of special education centers that give ASD students the verbal communication skills; at the H.K of Jordan, due to gender, qualification, and experience variables?***

To answer question, researchers calculated arithmetic means and standard deviations for utilization level of Computer techniques by teachers of special education centers that give ASD students the verbal communication skills; at H.K of Jordan, due to gender, qualification, and experience variables as shown in table (5) below:

**Table 5.**

Means and STDEV for utilization level of Computer techniques by teachers of special education centers that give ASD students verbal communication skills, due to gender, qualification, and experience variables

Categories		Mean	STDEV	Number
Gender	Male	3.14	0.736	120
	Female	3.09	0.674	280
Qualifications	Diploma	3.13	0.728	217
	Bachelor	3.08	0.633	122
	Master	3.08	0.687	61
Experience	Less than 5	3.10	0.709	233
	From 5-10	3.05	0.611	113
	Greater than 10	3.22	0.774	54

Table (5) shows apparent variation between means and standard deviations for utilization level of Computer techniques by teachers of special education centers that give ASD students the verbal communication skills, at H.K of Jordan, due to gender, qualification, and experience variables. The ANOVA analysis used to show statistical significance differences between means, which show in table (6) below:

**Table 6.**

ANOVA for impact of gender, qualification, and experience on utilization level of Computer techniques by teachers of special education centers that give ASD students of Jordan the verbal communication skills

Source of Variance	SS	DF	MS	F-Value	Sig.
Gender	0.091	1	0.091	0.189	0.664
Qualification	0.347	2	0.174	0.361	0.698
Experience	1.196	2	0.598	1.242	0.290
Error	189.699	394	0.481		
Overall	191.248	399			

Table (6) shows the following:

**Table 7.**

Means and STDEV for utilization level of Computer techniques by teachers of special education centers that give ASD students non-verbal communication skills, due to gender, qualification, and experience variables

Categories		Mean	STDEV	Number
Gender	Male	3.00	0.660	120
	Female	2.94	0.651	280
Qualifications	Diploma	2.97	0.697	217
	Bachelor	2.95	0.601	122
	Master	2.95	0.603	61
Experience	Less than 5	2.97	0.697	233
	From 5-10	2.92	0.571	113
	Greater than 10	3.02	0.628	54

- Non-existence of statistical significant differences at level ( $\alpha=0.05$ ), due to impact of gender where F-value amounted to (0.189) with (0.664).
- Non-existence of statistical significant differences at level ( $\alpha=0.05$ ), due to impact of qualification where F-value amounted to (0.361) with (0.698).
- Non-existence of statistical significant differences at level ( $\alpha=0.05$ ), due to impact of experience where F-value amounted to (1.242) with (0.290).

**Fourth Question: Are there any statistical significant differences at level ( $\alpha=0.05$ ) in utilization level of Computer techniques by teachers of special education centers that give ASD students the non-verbal communication skills; at the H.K of Jordan due to gender, qualification, and experience variables?**

To answer question, researchers calculated means and standard deviations for utilization level of Computer techniques by teachers of special education centers that give ASD students the non-verbal communication skills; at the H.K of Jordan due to gender, qualification, and experience variables that show in table (7) below:

Table (7) shows apparent variation between arithmetic means and standard deviations for utilization level of computer techniques by teachers of special education centers that give ASD students non-verbal communication skills; at the H.K of Jordan due to gender, qualification, and experience variables. ANOVA used to reveal the statistical significance differences between means, which appear in table (8) below:

**Table 8.**

*ANOVA for impact of gender, qualification, and experience on utilization level of Computer techniques by teachers of special education centers that give ASD students of Jordan non-verbal communication skills*

Source of Variance	SS	DF	MS	F-Value	Sig.
Gender	0.244	1	0.244	0.567	0.452
Qualification	0.046	2	0.023	0.053	0.948
Experience	0.351	2	0.176	0.408	0.665
Error	169.664	394	0.431		
Overall	170.346	399			

Table (8) shows the following:

- Non-existence of statistical significant differences at level ( $\alpha=0.05$ ), due to impact of gender where F-value amounted to (0.567) with (0.452).
- Non-existence of statistical significant differences at level ( $\alpha=0.05$ ), due to impact of qualification where F-value amounted to (0.053) with (0.948).
- Non-existence of statistical significant differences at level ( $\alpha=0.05$ ), due to impact of experience where F-value amounted to (0.408) with (0.665).

## 2. Discussions

The summary of results that study arrived to whereas follows:

- The utilization level of computer techniques by teachers of special education centers that give ASD students of Jordan the verbal & non-verbal communication skills was at medium degree. The result can be understood in light of literature's indication that certain factors affect teachers' utilization of computer techniques in the teaching process, which are divided into

two sets of factors; one is internal and the other is external. Internal factors have been identified as teachers' attitudes, motivations, and efficiencies toward Computer utilization in the classroom while external factors identified as curriculum, technical infrastructure, training, and school culture. Literatures contain many studies that examined factors of educational materials (Abbitt, 2011; Olly, Mims, Shepherd & Inan, 2010). There is also still a widespread disagreement in educational literature about teachers' situations and opinions on the use of Computer techniques for special educational needs' students, especially computer-based materials that support the alternative ways to interact with these devices (Smith & Okolo, 2010). In light of the above, it's possible to say that the low level of computer techniques utilization by the special education teachers in special education centers due to interlocking reasons, some of it related to teachers themselves such as poor qualification and poor ability to use technology, and some other related to the infrastructure and unavailability of modern technologies in special education centers. This result supported by studies of (Attia, 2019 & Cagiltay, et al., 2019), which confirmed a low use of modern technology by teachers in special education centers.

- Study results showed nonexistence of statistical significant differences, due to variables of gender, qualification, and experience and this result can be attributed to similarity of circumstances; at the special education centers in H.K of Jordan, in terms of potentials and qualification. Therefore, similarity of these potentials led to the concealment of differences between sample members.

## 3. Recommendations

- The need to conduct training courses for special education teachers on the way to employ modern computer techniques to educate people with autism.
- The need to prepare educational software on verbal and non-verbal communication skills to implement it on students with autism disorder.
- The need to conduct experimental studies on the nature of verbal and non-verbal communication skills with other groups of special needs.

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