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Utility and Professional Attitudes toward Assistive Technology in UAE Special Needs Centers

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Abstract

The attitude of teachers about the use of technology is critical. As a result, when teachers have a constructive outlook toward a new type of assistive technology, they are more likely to make meaningful efforts to successfully integrate it into the teaching-learning process. The way assistive technology is used in the teaching and learning environment is heavily influenced by a special education teacher's attitude. Therefore, the study explored the availability of assistive technology and explored the attitudes of professional of special education towards the use of assistive technologies in special needs centers of United Arab Emirates (UAE). Questionnaires were distributed and 100 responses were received from special education professionals. No statistically significant differences were observed in the attitudes of special education teachers and therapists with respect to their experiences, profession, gender, academic qualification, or locality. Assistive technologies were mostly used in different areas of special education including computer access, spelling, learning, recreation, environmental control, vision and hearing, writing, communication, mathematics, mobility, and positioning and seating. There is a constructive impact on the learning process of the children with special needs considering the expertise of specialist teachers and therapists on assistive technology linked to positive educational outcomes of students with special needs.

Keywords: Assistive Technology, Attitudes, Special Education, Special Needs Centers, Teachers.

Introduction

Individuals with disabilities may use certain forms of technology to accomplish activities that would either be difficult or impossible (Persson et al., 2015). Mobility aids like walkers and wheelchairs, as well as hardware, applications, and peripherals, are examples of assistive technologies that help disabled people access computers and other information technology services (Haux et al., 2016; Martins et al., 2012). To be more specific, assistive technology allows students with special needs more autonomy of their learning, enhances their cognitive abilities, and enables them to complete activities on their own (Winter & O'Raw, 2010).

There is a federal law in the United States of America known as Individuals with Disabilities Education Act (IDEA), which lists the services

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required by a school district to ensure the usefulness of assistive technology for the students within school settings (Siyam, 2019; Rice & Dykman, 2018). To be effective, service providers must have awareness of the various available assistive technologies and the skills to utilize them and to select an appropriate and efficient technology according to the need of a disabled individual (MacLachlan et al., 2018; Abu Alghayth, 2019). Students with hearing impairments may benefit from closed captioning and hearing aids. Wheelchairs, prosthetics, and other mobility aids can support students with mobility problems. From special pencil grips for writing to stairs, handrails, elevators, and mechanical door openers for use in public buildings, adaptive interfaces and structural accommodations of various types may be used to assist students in completing their daily activities (Braham et al., 2019). When used properly, assistive technology enhances opportunities to engage in important educational and developmental activities (Lohmann et al., 2019).

In spite of the dramatic advances in assistive technology, one of the most prominent difficulties that special needs students face is the availability of such technologies (Ismaili, 2017). Only 5–15% people with special needs have access to assistive products globally, and the situation is worst in developed nations (WHO, 2019). The World Health Organization (WHO) seeks to open doors for children with disabilities to access schooling and for disabled people to make a living, overcome hunger, engage in all social activities, and live with dignity through its flagship initiative, Global Cooperation on Assistive Technology (GATE). These are all core priorities of the WHO's global development goals. The preconditions for mainstreaming disability-related development goals include assistive technologies, universal architecture, information and communication technology (ICT), and an accessible/enabling environment (Brolan, 2016).

Despite the positive impact of assistive technologies and advancement in this field, over the years, research on the use of assistive has remained highly limited in the United Arab Emirates (UAE). The attitudinal disposition of teachers plays an essential role towards the use of technology. As a result, when teachers have a constructive outlook toward a new category of assistive technology, they are more likely to make meaningful strides to successfully incorporate it into the teaching-learning process (Onivehu et al., 2017). The attitude of a special education teacher considerably influences the way assistive technology is used in the teaching and learning process. For this reason, the present study identifies the availability of assistive technologies and examines the attitudes of special education teachers towards the use of assistive technology in special needs centers of the UAE, specifically on the basis of following parameters: type of center, locality, profession, academic qualifications, gender, years of experience, and the disability that they serve.

Research Questions

The proposed research questions to study the availability of assistive technology and the attitudes of special education teachers towards the use of assistive technologies in special needs centers of the UAE are as follows:

1. What are the Assistive Technology tools used in special education centers in the UAE?
2. What are the available Assistive Technology services in special education centers in the UAE?
3. What are the attitudes of special education professionals towards the use of assistive technologies in special needs centers in UAE?
4. Are there any statistically significant gender differences in participants' attitude towards the use of assistive technologies in special needs centers in UAE?
5. Do teachers' attitudes towards the use of assistive technologies in special needs centers in the UAE vary with their qualifications, professional experience, type of disability, and/or the emirate in which they work?

Method

The study applied descriptive research design based on a quantitative method. The researchers developed questionnaires about the availability of assistive technology and services and attitudes of special education teachers towards the use of assistive technologies in special needs centers of the United Arab Emirates. The participants of the current study were professionals who work in special needs centers of the UAE. They were randomly selected from five different cities: Abu Dhabi, Sharjah, Umm Al Quawain, Dubai, and Ras Al-Khaimah. A list of 300 special education teachers was prepared in which every 5th member was selected for the study.

The participants in this study responded to an online survey that was designed using the survey monkey. The survey link was sent via e-mail to all special needs centers and the selected participants were asked to take part in the survey by clicking on the link, filling out the survey, and submitting it anonymously. Questionnaires were distributed to all special needs' centers of the UAE, and 100 questionnaires were received completely.

The survey comprised four sections: (1) demographics: (2) attitude towards assistive technology tools (3) utility of assistive technology tools and (4) availability of assistive technology services. The demographic survey collected categorical information related to the location and the type of disability centers and the professional status, academic qualification, gender, and experience of participating teachers and therapists. The items of the section 2 were measured on five points Likert scale whereas items of the section 3 and 4 were measured on Boolean data type scale (1 = Yes, 2 = No). The data obtained for the section 2 and 3 were calculated using rank-based scoring and mean scoring. The minimum score for section 2 was 1 and the highest score was 100. The minimum score for section 3 was 1 and the highest score was 10. The difference in the mean scoring was based on the type of measurement scale selected.

After selecting the items, a panel of national and international university scholars, administrators, and school teachers checked the questionnaire to assess its authenticity. A Cronbach's alpha coefficient was computed and its value was found to be .70 indicating the reliability of data obtained from the instrument.

Data were analyzed using Statistical Package for Social Sciences (SPSS) version 24.0. Descriptive statistics including frequencies and percentages, rank based scores, mean and standard deviation values were used to present the data. One-Way ANOVA was used for identifying differences in the attitudes of special education teachers towards using assistive technology on the basis of types of center, locality, profession, academic qualifications, gender, years of experience, and the disability.

Results

59 females and 18 males took part in this study. Majority of the participants were working in semi-governmental centers (33.0%), followed by governmental and private centers. Out of 100 participants, majority of them were speech therapists (n = 24) and special educators (n = 24) and were the residents of Abu Dhabi (40.0%), and had postgraduate or above education (30.0%).

Table 1.

Demographic Data

Category	Sub-category	n	%
Center Type	Private	17	17.0
	Governmental	26	26.0
	Semi-governmental	33	33.0
	Others	24	24.0
City	Abu Dhabi	40	40.0
	Dubai	20	20.0
	Sharjah	9	9.0
	Ras Al-Khaimah	4	4.0
	Umm Al Quawain	2	2.0
	Other	25	25.0
Profession	Speech therapist	24	24.0
	Occupational therapist	7	7.0
	Special educator	24	24.0
	Other	45	45.0
Academic qualification	Master's degree and above	44	44.0
	BA	30	30.0
	Other	26	26.0
Gender (n = 77)	Female	59	59.0
	Male	18	18.0
	Not mentioned	23	23.0
Years of experience	Less than 4 years	14	14.0
	4-10 years	34	34.0
	10-15 years	4	4.0
	More than 15 years	48	48.0
Disability you work with	Intellectual	9	9.0
	Autism spectrum	50	50.0
	Learning difficulties	4	4.0
	Physical and health	1	1.0
	Speech and language	5	5.0
	Other	31	31.0

Table 2 shows results of the first question of the study, "What are the Assistive Technology

tools used in special education centers of the UAE?" The "Communication boards, books, folders and wallets" ranked highest with 88.9%. Furthermore, "Use of pictures with text", "Electronic books" and "Changes in text size, spacing, color, or background color" ranked 1st, 2nd and 3rd in the Reading domain. In Learning and Studying domain, "Print or picture schedule" ranked 1st, "Low-tech aids to find and organize materials (i.e., index tabs, color coded folders, pocket notebooks/binders" and "Highlight text (e.g. markers, highlight tape, ruler)" ranked 3rd. In Math domain, the electronic math/concept manipulatives and on-screen calculator were mostly used by teachers and therapists. In the Recreation domain, adapted toys and games (e.g. toy with adaptive handle) and recreational computer games/electronic games obtained the highest scores. In Mobility domain, the Walker ranked 1st in the list.

To answer the second question of the study, "What are the available Assistive Technology services in special education centers in the UAE?", means and the standard deviation were calculated and reported in Table 3. The means of participants' responses on the scales ranged between (M=8.1) with standard deviation (SD=0.305) and (M=8.64) with standard deviation

(SD=0.497). "Services provide cash loans to purchase assistive technology tools" ranked 1st with a mean score of 8.64 and "Assistive technology tools rental services" ranked 2nd with a mean score of 8.43. Also, "Maintenance services assistive technology tools" ranked 3rd with a mean score of 8.25. Similarly, "Technical assistance services to adapt or modify the assistive technology tools" ranked 4th with a mean score of 8.2.

Table 4 demonstrates the central tendency and rank order analysis based on the teachers' attitudes toward the use of assistive technology in UAE. Precisely, "Assistive technology tools useful for students" ranked 1st with a mean score of 4.68, and "It is important to use and increase the presence of supporting technological tools in education" ranked 2nd with a mean score of 4.36. Also, "Using assistive technology tools helps to clarify lessons" ranked 3rd with a mean score of 4.33. "Using the tools of assistive technology increases student motivation towards learning" ranked 4th with a mean score of 4.25. Similarly, "Using assistive technology tools increases student's learning opportunities" ranked 5th with a mean score of 4.25.

Table 2.

Rank order of currently utilized assistive technology tools in special education centers of the UAE

Area: Computer Access			
Rank	Tools	Used	Unused
1	Keyboard using accessibility options	59.0	41.0
10	Word prediction software to reduce keystrokes	45.9	54.1
5	Alternate keyboard	42.1	57.9
2	Keyguard	36.8	63.2
4	Track ball, track pad, joystick with onscreen keyboard	35.9	64.1
9	Voice recognition software	30.6	69.4
13	Arabic BIG Keys Keyboard	29.7	70.3
18	Split Keyboard	29.7	70.3
16	Screen Magnifier	27	73
21	Joystick-To-Mouse	24.3	75.7
3	Arm support (e.g. ergonomic support)	21.6	78.4
8	Switch with scanning	21.6	78.4
20	Intellikeys Adaptive Keyboard	18.9	81.1
15	Screen Reader	16.2	83.8
11	Head mouse or head master/tracer with onscreen keyboard	14.3	85.7
14	3M Touchscreen - Heavy duty	13.9	86.1
7	Switch with Morse code	13.5	86.5
12	Hitch Computer Switch Interface for Promethean PC	11.1	88.9
6	Mouth stick or head pointer with standard or alternate keyboard	10.8	89.2
19	Scooped Keyboard	8.1	91.9
Average		*25.6*	*74.5*
Area: AT for Writing and Spelling			
Rank	Tools	Used	Unused
7	Interactive Whiteboards	67.6	32.4
1	Adapted Writing Utensils	59.5	40.5
11	Standard Word Processing Software	57.1	42.9
2	Adapted Paper and Writing Guides	51.4	48.6

8	Printed Graphic Organizers	45.7	54.3
3	Personal Vocabulary and Spelling Dictionaries	44.4	55.6
5	Recorders	44.4	55.6
15	Electronic Worksheets and Tests	42.9	57.1
14	Word Prediction Software	34.3	65.7
4	Handheld Spellcheckers and Dictionaries	33.3	66.7
18	Word processor with word prediction to facilitate spelling and sentence construction	32.4	67.6
9	Portable Word Processors	31.4	68.6
16	Advanced Reading and Writing Aid Software	28.6	71.4
17	Voice Recognition Software	23.5	76.5
6	Handheld Scanners	22.9	77.1
13	Talking Word Processing Software	22.9	77.1
10	Concept Webbing Applications	17.6	82.4
19	Talking word processor for multi-sensory typing	17.6	82.4
12	Graphic Word Processing Software	14.7	85.3
Average		*36.43*	*63.57*

Area: Communication

Rank	Tools	Used	Unused
1	Communication boards, books, folders and wallets	88.9	11.1
4	Single location, single message communication systems	59.4	40.6
5	Single location/message, multi-level communication systems	54.5	45.5
3	Compartmentalized communication system	54.3	45.7
9	Multi-level, multimessage, communication systems	45.5	54.5
10	Device with speech synthesis for typing	45.5	54.5
6	Single location, sequential message communication systems	41.2	58.8
18	Talking Photo Album	40	60
8	Single level, multimessage communication system	39.4	60.6
7	Single location, random message communication systems	36.4	63.6
22	GoTalk Pocket	33.3	66.7
16	iTalk2	32.4	67.6
21	Tobii S32	27.8	72.2
2	Eye gaze frames	27.3	72.7
13	BIG mack Multi-Color	27.3	72.7
15	BIG Step-by-Step Multi-Color	27.3	72.7
12	SuperTalker with adjustable stand	25.7	74.3
11	Talking Brix - 3pk	25	75
14	BIG Step-by-Step Multi-Color with Levels	25	75
17	TalkTrack	23.5	76.5
23	Grid 2 Arabic Communication Software	18.2	81.8
20	Proxtalker ProxPad ChoiseMaker	12.1	87.9
24	BigTrack	12.1	87.9
19	Proxtalker Middle East Kit	11.8	88.2
Average		*34.75*	*65.25*

Area: Reading

Rank	Tools	Used	Unused
19	Use of pictures with text	68.8	31.3
21	Electronic books	61.3	38.7
18	Changes in text size, spacing, color, or background color	58.1	41.9
12	Standard Word Processing Software	45.2	54.8
20	Book adapted for page turning (e.g. page fluffers, 3-ring binder, cardboard in page protector)	38.7	61.3
1	Positioning Aids	34.4	65.6
9	Digital Audio Files	33.3	66.7
10	Text Reading Software	33.3	66.7
8	Alternate Format Books	32.3	67.7
16	Screen Enlargement Software	29	71
17	Screen Reading Software	26.7	73.3
11	PDF Reading Software	25.8	74.2
14	Talking Word Processing Software	25.8	74.2
2	Page Turners	22.6	77.4
5	Word Identification Aids	22.6	77.4

3	Tracking Aids	19.4	80.6
4	Contrast Aids	19.4	80.6
6	Handheld Scanners	19.4	80.6
13	Graphic Word Processing Software	19.4	80.6
15	Advanced Reading and Writing Aids	16.1	83.9
22	Talking electronic dictionary to pronounce challenging words	16.1	83.9
7	Standalone Magnification Aids	15.6	84.4
23	Classmate Reader - a portable digital book reader	12.9	87.1
24	Victor Reader Stream - a portable digital book reader	9.7	90.3
Average		*29.41*	*70.59*

Area: Learning and Studying

Rank	**Tools**	**Used**	**Unused**
5	Print or picture schedule	87.5	12.5
4	Low-tech aids to find and organize materials (i.e., index tabs, color coded folders, pocket notebooks/binders	56.3	43.8
3	Highlight text (e.g. markers, highlight tape, ruler)	51.7	48.3
6	Recorded material (books on tape, taped lectures with number coded index)	45.2	54.8
1	Accessible Instructional Materials (AIM)	26.7	73.3
2	Software for manipulation of objects or concept development	23.3	76.7
Average		*48.45*	*51.567*

Area: Math

Rank	**Tools**	**Used**	**Unused**
1	Electronic math/concept manipulatives	36.4	63.6
4	On-screen calculator	31.3	68.8
2	Tactile or voice output measuring devices (e.g. clock, ruler)	26.7	73.3
8	Abacus or math line	26.7	73.3
5	Calculator with large keys or large LCD print out	25.8	74.2
3	Software with templates for math computation (consider adapted input methods)	16.1	83.9
7	Calculator, with or without print out	13.3	86.7
6	Talking calculator	9.7	90.3
9	Talking Scientific Calculator	9.7	90.3
Average		*21.74*	*78.27*

Area: Recreation

Rank	**Tools**	**Used**	**Unused**
1	Adapted toys and games (e.g. toy with adaptive handle)	61.3	38.7
8	Recreational computer games/electronic games	61.3	38.7
5	Modified utensils (e.g. rollers, stampers, scissors)	58.1	41.9
3	Adaptive sporting equipment (e.g. lighted or bell ball, Velcro mitt)	53.1	46.9
9	Music software on computer/adapted tape recorder, etc	45.5	54.5
2	Use of battery interrupter and switch to operate a toy	38.7	61.3
7	Drawing or graphic program on computer	37.5	62.5
4	Universal cuff to hold crayons, markers, or paint brush	31.3	68.8
6	Ergonomic arm support arm for drawing or painting	29	71
Average		*46.2*	*53.8*

Area: Mobility

Rank	**Tools**	**Used**	**Unused**
1	Walker	45.2	54.8
4	Powered mobility toy	32.3	67.7
5	Powered wheelchair with joystick, head switch, or sip/puff controls	38.7	61.3
2	Grab rails	41.9	58.1
3	Manual wheelchair	48.5	51.5
Average		*41.32*	*58.68*

Area: Environmental Control

Rank	**Tools**	**Used**	**Unused**
2	Use of electronic control unit and switch to turn on electrical appliances (e.g. radio, fan, blender, and so on)	22.6	77.4
3	Radio or ultrasound remote controlled appliances	22.6	77.4
5	Small Mounting Plates	22.6	77.4
1	Light switch extension	19.4	80.6
4	Single Switch Latch & Timer	16.1	83.9

6	Large Mounting Plates	16.1	83.9
7	Battery Operated Scissors	12.9	87.1
Average		*18.9*	*81.1*

Area: Positioning and Seating			
Rank	**Tools**	**Used**	**Unused**
1	Nonslip surface on chair to prevent slipping	43.3	56.7
3	Adapted or alternate chair, side lier, stander	33.3	66.7
4	Custom fitted wheel chair or insert	32.3	67.7
2	Bolster, rolled towel, or blocks for feet	29	71
5	Cling Arm	19.4	80.6
6	Chin Switch	16.1	83.9
Average		*28.9*	*71.1*

Area: Vision			
Rank	**Tools**	**Used**	**Unused**
1	Eye glasses	75	25
3	Large print books	45.5	54.5
2	Magnifier	42.4	57.6
4	Screen magnifier (mounted over screen)	34.4	65.6
5	Screen color contrast	34.4	65.6
8	Screen reader	29	71
7	CCTV (closed circuit television)	28.1	71.9
6	Screen magnification software	25.8	74.2
9	Braille keyboard and note taker	9.7	90.3
10	Braille translation software	3.4	96.6
11	Braille Translator 7.1-	3.2	96.8
12	Juliet Pro Brailler	3.2	96.8
Average		*27.84*	*72.16*

Area: Hearing			
Rank	**Tools**	**Used**	**Unused**
1	Hearing aid	64.7	35.3
2	FM System	32.4	67.6
3	Classroom amplification	23.5	76.5
5	Signaling device (e.g. vibrating pager)	22.6	77.4
8	Mini Voice Amplifier	21.2	78.8
6	TDD/TTY for phone access	15.6	84.4
7	Screen flash for alert signals on computer	12.9	87.1
4	Captioning	6.3	93.8
Average		*24.9*	*75.1*

Table 3.

Rank order of the available assistive technology services in special education centers of the UAE

Ranks	Statements	Mean	Std. Deviation
3	Services provide cash loans to purchase assistive technology tools	8.64	0.497
2	Assistive technology tools rental services	8.43	0.514
6	Maintenance services assistive technology tools	8.25	0.444
5	Technical assistance services to adapt or modify the assistive technology tools	8.2	0.41
10	Coordinating services with specialists and other providers' that are competent in assistive technology in the educational system and Rehabilitation programs.	8.18	0.395
9	Training parents to use assistive technology tools	8.17	0.384
4	Assessment services to determine the appropriate tools and student needs	8.12	0.332
1	Services for purchasing assistive technology tools	8.11	0.32
7	Training services for the individuals who work with special needs students in using assistive technology	8.11	0.32
8	Training students with special needs to use assistive technology tools	8.1	0.305
		8.231	0.3921

Table 4.

Rank order of the attitude of teachers towards the use of assistive technology in special education centers of the UAE

Rank	Statement	Mean	Std. Deviation
1	Assistive technology tools useful for students	4.68	.534
10	It is important to use and increase the presence of supporting technological tools in education	4.36	.708
4	Using assistive technology tools helps to clarify lessons	4.29	.687
6	Using the tools of assistive technology increases student motivation towards learning	4.24	.712
9	Using assistive technology tools increases student's learning opportunities	4.24	.640
15	Assistive technology tools help to develop skills of independence	4.21	.832
3	I enjoy using assistive technology tools during the teaching process	4.19	.759
5	Students learn better when using technology tools	4.17	.834
8	Using assistive technology tools increases student's learning opportunities	4.08	.731
2	Technology tools are used effectively	3.94	.896
14	There is a clear positive effect when using assistive technology tools in the teaching process	3.32	1.352
13	There is no need to use assistive technology tools in the teaching process	2.60	1.420
11	Using assistive technology limits my role as an educator.	2.45	1.250
12	I avoid using assistive technology tools during teaching	2.45	1.276
7	The student feels bored when using assistive technology	2.38	.888
Average		3.71	0.90

ANOVA analysis was performed to answer the fourth and fifth questions: "Are there any statistically significant gender differences in participants' attitude towards the use of assistive technologies in special needs centers in United Arab Emirates?" and "Does the teacher's attitude towards the use of assistive technologies in special needs centers in the UAE vary with their qualifications, professional experience, type of disability, and the emirate they work in?" as shown in Table 5.

Table 5.

Difference between special education teachers' attitude towards using assistive technology based on their centers' type, locality, profession, academic qualifications, gender, years of experience and the disability that they deal with

		Sum of Squares	df	Mean Square	F	Sig.
Center type	Between Groups	.203	2	.101	.529	.592
	Within Groups	9.585	50	.192		
	Total	9.788	52			
Locality	Between Groups	1.202	4	.300	1.778	.150
	Within Groups	7.602	45	.169		
	Total	8.803	49			
Profession	Between Groups	.609	3	.203	1.083	.365
	Within Groups	9.180	49	.187		
	Total	9.788	52			
Academic Qualifications	Between Groups	.091	1	.091	.479	.492
	Within Groups	9.697	51	.190		
	Total	9.788	52			
Gender	Between Groups	.016	1	.016	.083	.775
	Within Groups	9.772	51	.192		
	Total	9.788	52			
Year of Experience	Between Groups	.108	3	.036	.183	.908
	Within Groups	9.680	49	.198		
	Total	9.788	52			
Disability	Between Groups	1.960	5	.392	2.098	.079
	Within Groups	10.652	57	.187		
	Total	12.612	62			

Table 5 reveals that there were no statistically significant differences in attitudes of the special education teachers and therapist towards assistive technology with respect to years of experience, profession, gender, academic qualification, locality and disability that they deal with.

Discussion

The key aim of this study was to look at the availability of assistive technology and special education teachers' attitudes toward its use in UAE special needs centres, as well as to see how years of experience, ethnicity, place, occupation, academic qualification, and the disabilities they work with affected their attitudes. The results of present study are consistent with those of Chukwuemeka and Samaila (2020) and Almekhalfi and Tibi (2012), who found that special education teachers have optimistic views toward the use of assistive technology to assist students with special needs. Findings of Onivehu et al. (2017), Yusuf and Fakomogbon (2008), Ahmad (2018), Yusuf & Fakomogbon, (2008), and Garcia and Seevers (2005) found that special education teachers have optimistic opinions on the use of assistive devices to assist children with special needs. However, the findings of the current study overlapped with Mohamed (2018) who revealed that the attitudes of the teachers were neither positive nor negative.

The results of the sub-questions are consistent with the results deduced by Garcia and Seevers (2005) showing that caste, teaching experience, and teacher qualification had little effect on teachers' attitudes. However, these results coincided with those of Thomas and Stratton (2006), who discovered that gender, teaching experience, age, and years of schooling are all factors that affect teachers' competence and attitude toward technology integration. Gender has also been shown to moderate instructor skill and attitude toward the use of technologies in previous studies (Kadel, 2005; Bebetsos & Antoniou, 2008). Similarly, the actual application of technologies is strongly linked to teaching practice (Gorder, 2008; Buabeng-Andoh & Totimeh, 2012).

There are some limitations of this study. In the first place, the size of the study sample was very limited and for the same reason, it is recommended that the future studies should be conducted on a comparatively larger sample population for more comprehensive findings. In the second place, survey questionnaire was used to collect data from teachers rather than from parents and students. It is, therefore, suggested future researches should conduct focus group interviews with both parents and students to obtain explicit and accurate information about their perceptions and their actual use of assistive technologies.

Conclusion

In conclusion, the study has the usability of assistive technology and the attitudes of professional teachers toward using assistive technology technologies to educate children with disabilities. Based on the results of this study, it can be inferred that a wide range of assistive technology resources and programs are available in UAE special needs centers, and that teachers have a favorable outlook about the use of assistive technology for the same purpose. Most of the centers that educated children with special are well-equipped with assistive technology tools which are practically implemented.

Therefore, it is recommended that updated versions of assistive technologies should be used in the educational settings. Mandatory government policies on assistive technology devices should be adopted to make sure that the quality of the implementation is maintained. Specialist professional training institutions can formulate improved training programs for the usage and implementation of integrative assistive technology to increase the effectivity of the technology and improve the educational outcome. The impact of assistive technology devices on the daily routine activities and academic performances of children with special needs to be investigated in future studies to obtain more clear understanding.

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