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RESEARCH PAPER

Benefits of Integrating Technology for Children with Intellectual Disability in Learning Skills: A Quantitative Inquiry Based on the Perspectives of Govt. Special Education Teachers of Sahiwal and Bahawalpur Divisions of the Punjab

Dr. Hina Fazil *[1]Muhammad Asif Faiz[2]

1. Assistant Professor, Institute of Special Education, University of the Punjab, Lahore, Pakistan, hinafazil.dse@pu.edu.pk
2. Junior Special Education Teacher (MCC Field) Govt. Special Education Centre For 03-Remaining Disabilities Okara, Punjab, Pakistan

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ABSTRACT

With the development of the technology, it is finally integrated in the sector of special education, for teaching and learning process of children with special needs. It enables students to understand difficult concepts and their practical application in life. It also helps children with intellectual disabilities in learning social skills, daily living skills and leisure activities. The study was descriptive to discover the benefits under-consideration phenomena. The objectives of this research were to know the perspectives about benefits of integrating technology in the teaching and learning process of children with intellectual disability. Through the random sampling method, 55 special education teachers were selected for the data collection employed in two divisions of Punjab Province Sahiwal and Bahawalpur. A self-made close ended questionnaire (reliable at .99) used for data collection. Results indicate that the integration of technology can make the process of teaching to children with intellectual disabilities easy and more effective. The perceptions of Govt. special education teachers (BPS16 & 17) working in the Sahiwal and Bahawalpur divisions are quite same about the integrating technology in the teaching-learning process of children with ID. This is significant for the achievement of the students with intellectual disabilities.

Keywords	Children with Intellectual Disabilities, Integration of Technology, Special Schools

Introduction

Globally 15% of people have different types of disabilities. There are 110-190 million people in the world who have disabilities the main cause of significant in functioning (WHO, 2011). Around two hundred million have intellectually disabled people and an IQ level below 75, which shows 2.6% of the world's population (Lise, 2019). Pakistan's population is near about one hundred sixty million, 45% below 18, and the intellectual disabilities are higher than expected. The prevalence of intellectual disability is estimated to be 65/1000 for mild intellectual disability and 19.1/1000 for severe intellectual disability (Mirza, 2009).

Children with intellectual disabilities have significant limitations, including difficulty understanding new or complex information, slow cognitive processing times, difficulties with social functioning, difficulties in communication, social skills,

learning new skills, and difficulty understanding abstract concepts. Like other groups of disabilities, there are varying degrees of severity of intellectual disabilities. These include intellectual impairments and functional limitations, the disability being caused by an individual's personal background, functional limitations, and the nature of the social environment. In some, the problem is caused by genetic disorders that severely affect their mental, social, and other functional abilities. Compared with others, people with mild intellectual disabilities can learn life skills and be able to live relatively independent lives (Schalock, 2010).

United Nations Convention on the Rights of Persons with Disabilities (CRPD) emphasizes that it is the responsibility of all governments to provide support for disabled people to maximize functioning, live independently, and fully participate in society Hendriks (2007). The World Report on Disability (2011) also stated that persons with disabilities do not have equal chances to get an education, health care, and get jobs. Disabled people need help and assistance in their daily, social and economic life, and then they will be able to play role in the community. They can't achieve these targets without the lack of assistive services (Márton, 2013).

Technology can play a vital role in the learning of students with disabilities at home and school, in removing educational barriers and eliminating social exclusion. Technology also enables disabled students to enjoy the full benefits of a school curriculum and participate in different activities and educational arrangements. Technology also has potential to enable children with disabilities to improve their skills and enjoy their lives (UNICEF, 2016). Furthermore, properly matched technology can play important role in children's learning process, it can provide help to complete assigned tasks by the class teacher and enable children with special needs to build their confidence and flourish at school (Burgstahler, 2003).

By technology, learning skills can be improved and knowledge acquisition can be facilitated. It is essential for students to know about technology and how to use it. Then they can be able to gain to compete with others in 21st-century and play their role in society. Technology is playing an intrinsic role in motivating many students, is also highly customizable, it is particularly well suited to support students with disabilities in the all-around development of academics, personality grooming, and another aspect of their life (Devi, 2019 & Lynch, 2022).

Technology Integration in education enhances student learning and their experience and also supports teaching practices within schools. Technology different type's utilization in the class including a virtual class creates a learning environment for the learners, who fully involve and engaged in learning objectives (Ranasinghe, 2009). The technology implementation also creates a pathway in the classroom climate for students with special needs to learn according to their own pace and unique needs. Teachers can achieve their targets and engage their students when they integrate technology into the class and also can provide assistance to the students in learning according to their capabilities (Rathore, 2015).

Literature Review

Technology is playing a significant role in every life of aspect. Similarly, it has brought a change in the education sector as well; it is also providing support to the teacher to create instructional materials (Ankiewicz, 1995). Now a teacher can integrate technology with resources for the betterment of his students' daily routine work and well manage his class. It can also enable students to learn and work

together. It has become very easy for the teacher to engage and get their attention in the classroom while teaching (Jhurree, 2005).

Although is difficult to achieve the goal of perfect technology integration. Technologies keep changing with time so it is important that teachers are also aware of this change so that they can teach the children well. Integration of technology is a continuous process, and its main objective is to bring change in the learning process and improvement. It is also important to develop a technology culture that embraces technology for its successful integration, for example calling online meetings, sending messages via email, or encouraging students and teachers to use electronic calendars for scheduled meetings, it encourages a technology culture (Schmitt, 2002).

Reasons behind the need for integration technology

There are several reasons technology should be a central part of learning for students. Successful technology integration into the class can engage students and a teacher can achieve their objectives. Here are some ideas on how we can engage our students and enliven our lesson.

Technology supports different learning styles

Students cannot learn the same way and retain information at the same pace. Technology provides an opportunity for to teachers modify teaching techniques and information according to the children's needs. Technology also allows a student to complete his assigned tasks at his own speed (Costley, 2014).

Students become more engaged in class

According to Sawang, (2017) through the integration of technology, students not only become more engaged but a teacher can control their class too. It becomes very easy for a teacher to complete his lessons on time with the help of technology. The effectiveness of the integration of technology change classroom dynamics and it also motivates students in learning.

Improve student outcomes

Instructional technologies are highly dynamic to enhance educational impact, aiming to help students succeed in their educational goals. Teachers also need to be flexible in terms of changing technologies; they need to know about technology tools so they can properly assess student learning and engagement. Teachers may face difficulties in understanding technology, but a systematic way to understand the use of technology ensures providing guidance and support to teachers. Therefore, it is important to ensure systematic support and guidance of teachers in this regard. In this way, technology integration can be improved and teachers gain confidence (Carstens, 2021).

Helping students to learning skills through technology

Student learning that can be enhanced with the use of technology. Special students can achieve greater success and experience when they are allowed to work according to their own abilities. In this way, integrated technology helps these students (Akcil, 2021).

Develop Creative thinking through technology

In the last past few years, the learning environment has changed through emerging technologies. Technology is providing a rich environment for teachers to use digital technologies and tools, which not only help them in teaching but also provide an opportunity to support the development of thinking in students (Avci, 2019). For example, the use of technology is providing to facilitate child brainstorming activities, provides access to learning, fosters creative thinking in problem-solving processes, and eases difficulties within their daily lives (Burkhardt & Lubart, 2010).

Curriculum improve with the help of technology

It is not an easy task to integrate technology and create a learning environment for students with disabilities. It is required deep analysis of the curriculum and checking the teaching methodology. Technology helps in the modification of curriculum which can meet the unique of a child. technology in the curriculum presents an active and collective learning experience to students, in this way they can easily understand curriculum complexity, it also motivates and attainment of learning (Costley, 2014)

Helping students learn through media technology

Students can learn through media technology. Child learning can be improved with the different use educational technology sources use. They can learn through TV programs, and use apps on a smart phone or tablet, there are also some other elements that can help out in child learning, developing their minds, and enabling them to learn new things through media (Jadhav, 2022).

Use as a classroom tool

Teachers and professionals have started using technology in the teaching of their students. Technology assists teachers to reach different kinds of learners in their classes, provides reinforcement and expands their knowledge, and also stimulates students to think in a new way. With the passage of time teachers are adopting technology, they are using technology to teach their children in a better way, they are also able to get access more students (Ganimian, 2020).

Preparing students for future technology careers

Day by day technology is growing and flourishing, so the demand of skillful people is increasing, who know about the use of technology. Now it has become necessary, that we educate students about career technology, improve their skills and professionally trained to solve future problems. Children should be encouraged to acquire knowledge and skills about technology that will be important need for the future (Yalcinalp & Avci, 2019).

Technology can Improved multitasking

Studies depict that children can learn how to multitask more effectively use with the help of technology. Although multitasking does not allow you to focus on one point, first students should learn how to listen and how to type and make notes in multitasking activities, students can achieve this success with the help of technology (Ganimian, 2020).

Visual-spatial development can improve

According to Omar, (2019) with the help of technology visual spatial could be improved, and technology like video games is used to train young children and students. Visual-spatial skills with video games can be improved through practicing and it can also improve their abilities. The skill is required in visual-spatial when reading a map, puzzles, and other things.

Improved problem solving and decision making

Technology can help out the students in problem solving and provide help how to make decision and sort out those problems that can they faced in learning. Students can solve their assignments and can understand lesson while using Google search engine, YouTube and online teaching (Lizzappi, 2015).

Material and Methods

Several researchers have already applied quantitative research with a survey method to achieve the research objectives. Through the quantitative method, the results could easily be generalized, compared, and summarized because this method mostly relies on random sampling. Survey research is more structured compared to qualitative research since in this process several interviews are conducted by the researcher. The survey is a well-planned exercise that grants us to collect data from the concerned population directly. Simply put, surveys are a means of gathering data. Kraemer (1991) explains three essential differentiating qualities of survey research a quantitative representation of particular aspects of a certain population's subjective and external validity. The survey is a quantitative way of data gathering, giving a researcher the ability to collect data from a large sample of the population. Furthermore, the survey grants us to quantitatively investigate specific features of a population. In this way, we can directly ask an individual for information to collect data. The basic goal of conducting a survey is to collect trustworthy and valid data in an organized format; it can simply evaluate and report on, similar to other techniques of data collecting.

Population and sample

The population of the study was the special educationist employed at two divisions Sahiwal and Bahawalpur. Researchers have carefully chosen 55 special educationists working in public schools with by applying a random sampling technique.

Table 1
Sample Distribution

Variables		F	%	N
Gender	Male	17	30.9	55
	Female	38	69.1	
BPS	16	31	56.4	02
	17	24	43.6	
Division	Sahiwal	24	43.6	02
	Bahawalpur	31	56.4	

Research instrument for data collection

Researchers have developed a 5point close-ended questionnaire with reliability at Cronbach Alfa 0.99 for participants. The instrument has 8 subscales: cognitive skills, management skills, reading, writing/ functional academic skills, communication skills, social skills, emotional/behavioral competency skills, and motor skills regarding the integration of technology in teaching-learning process of ID children. The tool was pilot tested on 10 teachers and after expert approval; it was used for data collection. The online survey was done after formal consent from the school heads.

Results and Discussion

Researchers have coded the obtained data on SPSS and analyzed it by applying statistical procedures. The data was analyzed to concise the information. Descriptive and inferential statistical procedures were applied to make out the differences and relationships between different variables.

Table 2
Mean of learning skills through technology

Learning skills	Mean	Std. Deviation	N
Cognitive skills score	21.4364	4.33660	55
Management skills score	21.1273	4.58684	55
Functional academic (reading, writing, Numeracy) score	53.7636	13.75980	55
Communication skills score	12.4182	3.49439	55
Social skills score	16.2545	4.57942	55
emotional /behavioral score	7.7818	2.61542	55
Motor skills score	7.7273	2.50521	55

The above table expresses that the mean (53.763) of Functional academic (reading, writing, Numeracy) is highest then Cognitive skills score and management skills mean (21.43 & 21.12) is one second highest. The lowest mean (7.727 & 7.78) motor skills and emotional /behavioral score. According to teachers' viewpoints the integration of technology will be more effective Functional academic (reading, writing, Numeracy) skills then Cognitive skills and management skills.

Table 3
Correlation between learning skills through technology integration

Learning skills	Correlation	Learning through technology
Cognitive skills score	Pearson Correlation	.879
	Sig. (2-tailed)	.051
	N	55
Management skills score	Pearson Correlation	.914**
	Sig. (2-tailed)	.000
	N	55
Functional skills academic score	Pearson Correlation	.867**
	Sig. (2-tailed)	.000

	N	55
Communication skills score	Pearson Correlation	.787**
	Sig. (2-tailed)	.000
	N	55
Socials kills score	Pearson Correlation	.785**
	Sig. (2-tailed)	.000
	N	55
Emotional behavior score	Pearson Correlation	.782**
	Sig. (2-tailed)	.000
	N	55
Motor skills score	Pearson Correlation	.761**
	Sig. (2-tailed)	.000
	N	55

Correlation is significant at the 0.05 level (2-tailed).

The above table explains that there are significant relationships found among different learning skill areas (Cognitive skills score: r=.879,P=.051, Management skills score: r= 0.914,P=.000, Functional skills academic score: r= 0.886,P=.000, Communication skills score: r=.787,P=.000,Emotional behavior score: r=.782,.000, and Motors kills score: r= .761,0.000 N=55) and teachers views about Learning through technology.

Table 4
Difference about technology integration based on teachers' gender

Learning skills	Gender	N	Mean	Std. D	Std. Error Mean	t	df	P
Cognitive score	Male	17	21.1765	4.14179	1.00453	-.295	53	.769
	Female	38	21.5526	4.47031	.72518			
Management skills score	Male	17	21.5294	4.25907	1.03298	.432	53	.668
	Female	38	20.9474	4.77011	.77381			
Functional academic score	Male	17	55.5294	12.75793	3.09425	.633	53	.529
	Female	38	52.9737	14.27810	2.31621			
Communication score	Male	17	13.2353	3.11307	.75503	1.164	53	.250
	Female	38	12.0526	3.63130	.58907			
Social skills score	Male	17	16.8235	3.81175	.92448	.613	53	.543
	Female	38	16.0000	4.91000	.79651			
Emotional behavior score	Male	17	8.2353	2.04724	.49653	.858	53	.395
	Female	38	7.5789	2.83446	.45981			
Motor skills score	Male	17	8.2941	2.08461	.50559	1.125	53	.266
	Female	38	7.4737	2.65836	.43124			

The above table depicts hence the P value is greater than .05 therefore, (Cognitive skills score: t=.432,df=53,P=.668, Management skills score: t=.633,df=53,P=.529, Functional skills academic score: t=.-295,df=53,P=.769, Communication skills score: t=.1.164,df=53,P=.250,Emotional behavior score: t=.613,df=53,P=.543, and Motor skills score t=1.125,df=53,P=.266)the opinions of male and female teachers are same about integrating technology for children with IDD in learning different skills.

Table 5
Difference about technology integration based on teachers' BPS

Learning skills	Gender	N	Mean	Std. D	Std. Error Mean	t	df	P
Cognitive score	16BPS	31	21.2581	4.35100	.78146	-.218	52	.828
	17BPS	23	21.5217	4.44020	.92585			
Management skills score	16BPS	31	20.6452	4.97023	.89268	-.758	52	.452
	17BPS	23	21.6087	4.08700	.85220			
Functional academic score	16BPS	31	52.2903	14.76752	2.65232	-.811	52	.421
	17BPS	23	55.3913	12.58693	2.62456			
Communication score	16BPS	31	11.9677	3.79898	.68232	-1.021	52	.312
	17BPS	23	12.9565	3.09660	.64569			
Social skill score	16BPS	31	15.5484	5.01224	.90023	-1.286	52	.204
	17BPS	23	17.1739	3.95028	.82369			
Emotional behavior score	16BPS	31	7.4516	2.82653	.50766	-1.055	52	.296
	17BPS	23	8.2174	2.35404	.49085			
Motor skill score	16BPS	31	7.4194	2.72976	.49028	-1.022	52	.311
	17BPS	23	8.1304	2.22188	.46329			

The above table depicts hence the P value is greater than .05(Cognitive skills score: t=-.218,df=52,P=.828, Management skills score: t=-.756,df=52,P=.421, Functional skills academic score: t=1.021,df=52,P=.312, Communication skills score: t=-1.286,df=52,P=.204,Emotional behavior score: t=1.055,df=52,P=.296, and Motor skills score t=1.022,df=52,P=.311)therefore, the opinions of teachers on BPS 16 and BPS 17 are same about integrating technology for children with IDD in learning cognitive skills, management skills, functional academics, communicational skills, social and behavioral skills, and motor skills.

Table 6
Difference about technology integration based on two division of Punjab

Learning skills	Gender	N	Mean	Std. D	Std. Error Mean	t	df	P
Cognitive score	Division	N	Mean	Std. Deviation	Std. Error Mean	-.091	53	.927
	Sahiwal	24	21.3750	3.38555	.69107			
Management skill score	Bahawalpur	31	21.4839	5.00580	.89907	.291	53	.772
	Sahiwal	24	21.3333	3.53451	.72148			
Functional academic score	Bahawalpur	31	20.9677	5.31340	.95432	1.204	53	.234
	Sahiwal	24	56.2917	9.47068	1.93320			
Communication score	Bahawalpur	31	51.8065	16.21608	2.91249	1.168	53	.248
	Sahiwal	24	13.0417	2.59563	.52983			
Social skill score	Bahawalpur	31	11.9355	4.03266	.72429	1.064	53	.292
	Sahiwal	24	17.0000	3.41353	.69678			
Emotional behavior score	Bahawalpur	31	15.6774	5.29394	.95082	.749	53	.457
	Sahiwal	24	8.0833	1.83958	.37550			
Motor skill score	Bahawalpur	31	7.5484	3.09665	.55617	1.037	53	.305
	Sahiwal	24	8.1250	1.75233	.35769			

The result is obvious (as P values are higher than the set criteria .05) (Cognitive skills score: t=-.091,df=53,P=.927, Management skills score: t=.291,df=53,P=.772, Functional skills academic score: t=1.168,df=53,P=.248, Communication skills score: t=1.064,df=53,P=.292,Emotional behavior score: t=.749,df=53,P=.457, and Motor skills

score t=1.037,df=53,P=.305) that the perceptions of Govt. special education teachers working in the Sahiwal and Bahawalpur divisions are quite same about the integrating technology in the teaching-learning process of children with ID.

The integration of technologies is being promoted and supported because the promotion and support of successfully integrated technology will lead to enhancing the learning of intellectual disabilities students and the result of this successful outcome will occur. According to Pillay, (2000) & Quinn, (1996) integration of technology influences the education and also shows that the use of technology is playing an important, and useful role. Burgstahler (2003) expressed that technology can assist to improve cogitative, management, reading, writing/functional academic, communication, social, emotional/behavioral competency and motor skills. Bahr, (1996) & Bryant, (1998) emphasizes that a sense of belonging and mutual cooperation in the classrooms for children with special needs is developed and promoted through technology. Integration of technology develops the completion of school tasks and supports improving motivation. Adebisi (2015) opined that technology supports the teaching of instructions to special students; it also helps out to reduce the workload and stress on teachers. Technology also offers students with special needs the capacity to build their own learning experiences and help them in classroom activities. They can enjoy their developing peers, and a sense of belonging develops, they can also share activities with other children and educational experiences.

According to Brunner, (1992) & Ediger, (1999) technology integration into the curriculum can bring a change in the learning process, and it also shows that improves students' learning and results in it successful outcomes. With knowledge of technology, teachers can better solve students' problems, and bring about positive changes in children's attitudes. Baek, (2008) & Gilakjani, (2013). Ranasinghe, (2009) gives his point of view when teachers present with the opportunity to use technology in class, they get good results. Through the integration of technology, students could be engaged in their learning, and the center of attention will increase. Technology also encourages educators to create a learning environment in the class that mirror student daily life and the reality of his future. Sabzian, (2013) says that technology use allows students to work at their own pace in daily life; it also allows students with special needs to learn, improve their skills and be ready for life beyond the class.

Conclusion

As per responses of teachers this study concludes that because of integrating technology the Functional academic, Cognitive skills and management skills will surely improve. There are significant relationships found among different learning skill areas and teachers views about Learning through technology. All male and female teachers have the same opinions about the positive role of integration of technology in the teaching-learning process of children with IDD working in the Sahiwal and Bahawalpur divisions at BPS 16 and 17.

Recommendations

This research suggests that the integration of technology can be beneficial for students with intellectual disabilities if teachers fully implement the suggestions and recommendations learning process.

1. It is recommended teachers should be well aware of the integration of technology while teaching students with intellectual disabilities, and then they will be able to get the proper attention of these students in the class.

2. Teachers can identify the barriers faced by students with intellectual disabilities during performing their daily life skills. This study suggests that these barriers can be remedied through the integration of technology.

3. The government should provide funds for the purchase of the latest technology for students with intellectual disabilities.

4. This research recommends that proper technology integration in the classroom can increase the students' motivation, foster a sense of peer acceptance and improve productivity in the class

5. Teachers should be ready for technology skills, and then will be able to get the attention of their students in the classroom and get better results.

6. Teachers should be known that every child's needs are distinctive, and that assistive technology should be matched according to the needs of children.

7. This study recommends that the main purpose of this teachers' training program should be for teachers to spend time researching and reading the recommended textbook and to gain current knowledge about the global use of assistive technology for students with special needs.

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