Analysis of the Application of Pedagogical Technology to the Learning of Children with ASD

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ABSTRACT:

Educators' subject-matter knowledge and their understanding of the many ways in which technology may be used to enhance student learning can benefit from the usage of pedagogical technology, which is the primary goal of this kind of technology. The goal of this study is to determine the extent to which kids with ASD might benefit academically by adopting various forms of technology into their daily routines. This work makes use of descriptive qualitative research together with the methodology and processes that come with case study research. The emphasis of this study was placed on three institutions that welcome students of all abilities. According to the results of the qualitative research, inclusive schools do not universally possess the resources necessary to successfully incorporate technology into the classroom. The results suggest that this teacher occupies a position that is about equivalent to the center of the acceptable range. This displays the instructor's existing proficiency in the use of technology to enhance the results for their students.

Keywords: Pedagogic Technology, Inclusive Schools, Children with Special Needs

INTRODUCTION

The globe of education and learning is rapidly developing at the current moment due to the rapid development of human civilization in its application of technology. Just one of the many domains in which the advancement of technology has had far-reaching repercussions is the educational system. One is able to make a direct connection between the use of technology in the academic setting and the concept of outcomes and procedures. The purpose of the product is to improve educational experiences by using a wide range of available materials.

Receiving an education is the first step toward reaching one's full potential as a human being. The quality of academic instruction is an area that requires improvement and should be given top importance. According to Nowotny and coauthors (2018) it is generally anticipated that as educational technology progresses, there will be a discernible increase in the educational component on both a global and a regional scale. It is possible to improve the quality of this education in a variety of ways, such as by creating instructional materials that are more effective, increasing the amount of information that students know, and increasing the amount of training that teachers get.

One of the best ways to assure one's continuous presence in society is to educate oneself. Without access to educational opportunities, people would never grow. Additionally, the human species is making progress in many other areas. As a consequence of this, we are no longer in a position to reject the truth that obtaining an education is an essential component of leading a life that is meaningful. The concept of technology is very important to the field of educational technology (Teräs et al., 2020). Technology is not confined to mechanical equipment; rather, it also comprises techniques of organization and control, in addition to theoretical and empirical studies of the ramifications of problems, degrees of difficulty, practicability, and technical ways to resolving them. Comparable to mental processing The word "technology" may refer to both the body of knowledge that is collectively referred to as technical technology as well as the process or frame of mind that is essential to the completion of technological activities (Park et al., 2020). As a result of the significant effects that technology has had on education, teachers are now required to incorporate it into their lessons. The use of information technology in the classroom can help teachers improve their students' learning outcomes by assisting students in better comprehending difficult concepts.

The success of any educational system is heavily dependent on the quality of its teaching staff. Therefore, in order to support the total development of their students, instructors need to have the appropriate mindset and the abilities necessary. It is the obligation of both the student and the instructor to make effective use of the materials that have been supplied for the course. There is no question that the advancement of technology has a substantial influence on the ways in which education is designed and provided. Because the development of scientific technology is so important, it is imperative that educators are always looking for new ways to improve their students' educations by using the most recent advancements in educational practices and pedagogical strategies.

Alashhab and coauthors (2021) stated it is common knowledge that the fast-paced digital era has had a tremendous impact on the expansion of human and industrial lifestyles. What is less well-known is that it has also had a substantial impact on education and the process of learning. Because of the internet, individuals from all over the globe may now get an education of sufficient caliber regardless of where they are physically located. Architecture education and technological advancement should go hand in hand forever. The emergence of novel architectural concepts acts as a continuous driving force behind the progression of educational technology.

LITERATURE REVIEW

Science and Technology Development

Technology is a subject of science characterized by the use of rigorous analysis and reasonable concepts. Since the primary role of technology is to facilitate the completion of human activities in addition to solving issues, it follows that the field of education must utilize technology to enhance the quality of education delivered to pupils. According to Hancock et al. (2020), a technology model that promotes face-to-face studies between senders and receivers using digital technology is one example of how technology has entered the field of communication in the learning process. According to Chang and coauthors (2022), as technology advances and affects all aspects of education, it has also entered the sphere of communication in the learning process.

When used in the realm of education, the word "technology" refers to any and all information transmission techniques. The word "technology" refers to any and all visible and audible classroom aids.

The achievements of modern technology demonstrate the enormous degree of complexity existing in the human mind (Kim et al., 2020). Through the use of technology,

it is believed that students' extracurricular demands and educational responsibilities may be better met (Cakir & Korkmaz, 2019). Soekanto asserts in his argument that the only method for people to gain the information they want is via introspection and logical reflection. It should not come as a surprise that such things are possible with modern technology.

Due to the ever-expanding nature of science and technology, it may be difficult for educators in the current age of globalization to keep up with students' enthusiasm in these fields. According to Mora et al. (2020) it would be much simpler to regulate the world of education if classrooms were equipped with technology; thus, scientists and engineers working in this field need additional support. To fulfill their professional responsibilities effectively, educators must be well-rounded individuals with strong personal, social, and professional skills (Rebele & Pierre, 2019). According to Sydorenko (2020), the capacity for continuous self-improvement in response to changes in one's field of expertise is one of the most essential personal characteristics for a teacher. Teachers must be able to stay up with the latest developments in their respective fields, particularly as science and technology continue to make steps ahead (Gamage et al., 2020).

Students with ASD

Even while it may be everyone's wish to be born without any mental or physical defects, this does not mean that those who are born with particular needs are unable to accomplish the things they set out to do. Children who have ASD, just like children who do not have special needs, have a range of requirements, and one of those needs is the opportunity to learn and develop. Because of the education they get, children, along with children in general, are expected to be able to think in a manner that is both creative and original, as well as successful. According to Cree with other authors (2018) children who have ASD are seen as being exceptional in at least one of the following areas: their physical health, their mental development, or their social behavior.

The purpose of technical progress is to make people's lives better via the development of unique tools and methods as well as the discovery of new ones. In the modern world, technology plays a significant part in the manner in which students learn as well as the subjects that they study. According to Luckin and Cukurova (2019) learning technology, often known as edtech, provides assistance in an organized manner with the planning, execution, and assessment of the whole learning process for the advantage of human learners. It is now commonly accepted wisdom

that advancements in the digital world will be hampered by a concern for the quality of life enjoyed by its users. It is believed that the many innovative tools that have been created to assist students who are having difficulty (including those who have autism spectrum disorders), would make it easier for teachers to execute an effective learning process for kids who have autism spectrum disorders. Barman and Jena claim (2021) that technology-based learning processes that vigorously follow the evolution of verbal and nonverbal talents; it is projected that this pattern of great development will continue.

PEDAGOGICAL NEED IN TECHNOLOGY

When it comes to class design or delivery, pedagogy is something that simply cannot be disregarded since it is an essential component of any educational environment. Amponsah and coauthors (2019) present pedagogy as the study of how to instruct young people to become self-reliant problem solvers so that they may function effectively in the interconnected world of today. If we don't keep up with the rapid advancements in science and technology, we run the danger of having our educational system fall behind. It is very necessary to maintain a level of familiarity with the most recent technological developments in the field of education. The purpose of pedagogy is to assist students in making the most of their potential for learning by actively participating in situations that are significant to their education. The building is designed to house a variety of high-quality educational resources, such as knowledgeable instructors and a vast assortment of printed, audio, video, and digital materials Vlachopoulos and Makri (2019) Children, including those with autism spectrum disorders, who are placed in an environment that is optimized for the goal of learning through the use of technology are more likely to be interested in learning and to have an aptitude for education. This is especially true for younger children.

When it comes to universal design for learning, its principles include multiple representations, and multiple representations and engagement. Multiple presentations refer to the provision of visual and auditory information and choices for changing interfaces, including means of communication, letters, or numbers. Multiple representations refer to providing multiple ways of expressing students' knowledge and skill acquisition. Finally, engagement refers to providing options for increasing motivation to learn and options for internal and external factors such as self-regulation and self-discipline to maintain motivation (Burgstahler, 2001). Taken together, these

principles provide an outline of educational interventions such as goals, methods, materials, and assessments to develop an integrated and flexible approach that can be used by all students. There are many frameworks for improving accessibility and fairness in SD, such as UDL, Universal Design for Education (UDI), and Universal Instructional Design (UID). All terms are often used interchangeably and have similar approaches (Dell et al., 2015).

One illustration of how pedagogical technology has evolved to become an essential component of today's classrooms is the widespread use of audio-visual teaching aids. It has been shown that the implementation of various technological instruments improves the quality as well as the quantity of education. This idea underpins the ongoing development of educational technology as it continues to progress. According to Redmond and Lock (2019), pedagogical technology may be regarded as a theory, a discipline, and a profession in its own right due to the essential understanding of the educational process, of teaching itself, of communication, and the subject matter. The already challenging process of integrating electronic learning with pupils with autism spectrum disorder will be further complicated by this additional obstacle for teachers. Song and So (2021) describe that children that fall somewhere on the autism spectrum may need particular care, in addition to having difficulties focusing and talking.

In light of the aforementioned, the authors of the study aimed to investigate how students with ASD responded to recent advancements in educational technology by studying the incorporation of pedagogical technology into the instruction of students in mainstream schools. This was done in order to investigate how students with ASD responded to recent advances in educational technology. Inclusion is an activity that educates all students, including those who encounter barriers to education. Sheppard and Wieman (2020) public schools are generally the entrance point for children who do not have ASD, and inclusion is an activity that teaches all of those pupils. Inclusive education works toward the realization of the human right to education and ensures that all children have the same opportunity to fulfill their full potential. This is accomplished by making certain that all students, without exception, have access to an education that is of high quality.

METHODS

A qualitative methodology was chosen as the method of investigation for this research. During the course of

this investigation, a descriptive qualitative research project using a case study methodology or approach was carried out. This was done as part of the overall investigation. It was decided to conduct research in the form of a descriptive case study since this method is the most straightforward way to describe natural and unprompted occurrences in the modern world. Primary data were used in order to accomplish the objectives of this study. Questionnaires and learning observation sheets are the two types of techniques and pieces of equipment that are used the most often in this kind of study for the aim of gathering information. This is because the primary goal of this research is to gather information. The size of the sample population is calculated based on the percentage of educators who consented to fill out the instrument questionnaire. The study covered four students who have ASD. If you want the results to be as accurate as possible, you should talk to the participants one-on-one before asking them to fill out the questionnaire. This will allow you to elicit more detailed responses.

RESULTS AND DISCUSSION

According to the results, only one of the four persons who supplied replies in the field of Technology fulfills the high threshold for competence, while the other three fall into the medium criteria range. This was found to be the case in the area of Technology. The results of the study indicated that educators working in inclusive schools fell somewhere in the middle of the three categories. On the other hand, the presentation material that is used in presentations is based on modified versions of media that were made by other individuals (Darmayanti et al., 2022). This content was not developed by the persons giving the presentations. Given all that we've learned up to this point, it should come as no surprise that folks who deliver lectures should benefit from receiving some guidance on how to retain information in a more efficient manner. The next step is to get guidance on how to properly construct educational PowerPoint presentations using Microsoft Office. According to Saar and coauthors (2020), powerpoint presentations and other creative works are encouraged, and there is an emphasis placed on providing lessons that are modified to meet the particular needs of the student population at each unique school.

In today's interconnected society, it is impossible to escape the unavoidable reality that the exponential growth of information technology will continue. There is no way around the fact that this new phenomenon will have some kind of an impact on the educational system.

When it comes to incorporating new technologies into the classroom and other aspects of education across the globe, it is essential that educational institutions everywhere keep pace with the rapid speed of technological advancement in order to meet the demands of the modern world. In order to meet these demands, it is imperative that educational institutions everywhere maintain pace with the rapid speed of technological advancement.

For the purpose of this investigation, the investigators solicited the assistance of four students from a range of educational establishments. One of the criteria used to categorize the participants into one of the two groups was the total number of years of schooling they had completed. The suggestions that were ultimately put into action were grounded in the general agreement reached by the committee. The results of the field study, as well as the discoveries and conclusions that were taken from them, are described here.

PEDAGOGIC TECHNOLOGY CAPABILITY

One of the pupils in the class profited from the instructional method of learning new information by participating in class discussions, which were encouraged. Students have the ability to share their PowerPoint presentations and participate in class discussions via the use of in-focus. According to Saqr with other authors (2018), the teacher acted as a moderator for a discussion in which the students utilized PowerPoint slides, they had prepared to provide their own explanations of the topics discussed in the class. In addition, participants assisted youngsters by helping them realize the issues they were facing via the use of performances that were made by other students (Saqr et al., 2018). According to Sukma and coauthors (2019), individuals are able to recognize material obstacles and are able to pick instructional ways that are appropriate to technology. Based on the components that have been presented, the abilities possessed by participant 1 fall into the Perception Level-Pn group. The participants, however, were unable to give answers on how to employ technology to alter already developed content.

Participant 2 Utilizing data obtained from surveys that participants have previously filled out. In order to better understand the material, teachers often had students give presentations. Participants in this method make use of infocus, whiteboards, markers, and computers in order to improve the students' ability to present by displaying PowerPoint presentations that were created by the students themselves. During the presentation, the teacher will guide students through challenging themes so that the students may use their PowerPoint presentations to explain the complexities of the phenomena covered in the material on their own. Individuals are able to recognize material obstacles and are able to pick instructional ways that are appropriate to technology. Based on the components that have been provided, the abilities possessed by participant 2 belong to the category of perception level (Pn). On the other hand, it seemed that the participants could not comprehend how to alter material utilizing technology.

Student #3 learned via participation in classroom discussions, the use of visual aids, and careful observation of the surrounding environment. Participants in this approach make use of infocus and picture charts to support the process of class discussion by students by displaying PowerPoint presentations that were created by students. According to Le Roux and Nagel (2018), the teacher acted as a moderator for a discussion in which the students utilized PowerPoint slides that they had prepared to provide their own explanations of the topics discussed in the class. Participants engage in group discussions on these topics in order to facilitate students' efforts to delve more deeply into their existing knowledge and the discovery of new material in these subject areas. In addition, participants assisted youngsters by helping them realize the issues they were facing via the use of performances that were made by other students. The abilities associated with the Perception Level-Pn are possessed by Participant 3 since participants at this level are able to perceive material concerns and decide which instructional techniques are most conducive to the implementation of technical solutions. On the other hand, it seemed that the participants could not comprehend how to alter material utilizing technology.

For the purpose of reinforcing the content covered in class, student No. 4 participated in both student presentations of visual aids and group discussions. In order to stimulate conversation inside the classroom, students' PowerPoint presentations along with the animated films that accompany them are exhibited utilizing infocus and the internet. According to Asari with coauthors (2018) the teacher acted as a moderator for a discussion in which the students utilized PowerPoint slides that they had prepared to provide their own explanations of the topics discussed in the class. Participants engage in group discussions on the aforementioned issues in order to provide them the opportunity to independently investigate their own knowledge and find validity in the aforementioned thoughts. In addition, participants assisted youngsters by helping them realize the issues they were facing via the

Table 1. **Technological profile of inclusive school teachers**

Item Examined	Mean	Percentage %	SD	Criterion
Technical problems in computer devices	3.55	71	0.760	**Keep**
The use of technology (computer, laptop, etc.)	3.55	71	0.828	**Keep**
Follow technological developments	3.97	79.4	0.788	**Keep**
Understanding of the basic components of a computer	3.79	75.8	0.777	**Keep**
Data related to learning in digital media	4.08	81.6	0.712	**Tall**

use of performances that were made by other students (Hew et al., 2020). The abilities of Participant 4 are classified as belonging to the perceptual level group because, as we have seen, they include the capability to identify issues with the subject matter of the course as well as the capacity to choose appropriate pedagogical tactics. On the other hand, it seemed that the participants could not comprehend how to alter material utilizing technology.

The presence of educated people who are skilled in various forms of technology is very beneficial to the capacity to use and comprehend the technological systems that are now in place throughout the globe.

According to the data that was just shown in the table, the great majority of educators who work in schools that welcome students with a variety of abilities have gotten ratings that lie somewhere in the middle of the spectrum for their proficiency with technology. This demonstrates that the teacher's knowledge in the area of technology is considered to be excellent; yet, it is predicted that in the future, they will need to expand it more in order to fulfill the expectations that are put on them when they are instructing students in the classroom. The findings of the research make it possible to arrive at the conclusion that inclusive school instructors may be positioned anywhere in the middle of the criteria. Given the results of the investigation, one may arrive at this conclusion with good justification (Schünemann et al., 2019). This provides evidence that the educator already has the abilities required to successfully incorporate technology into a learning environment.

One of the factors that, according to the analysis of the instrument, influences the effectiveness of pedagogical technology is the amount of learning experience that educators acquire as a result of attending seminars organized by the government with the intention of boosting the overall level of educator quality. Hilton claims (2020), this is one of the components that is taken into consideration while analyzing the efficacy of the pedagogical

technology being used. Because of this, the amount of time an individual spends in school should not be directly related to the level of technical skill possessed by that person (Carlson & Isaacs, 2018).

This is due to a number of factors, one of which is that senior teachers' busy schedules prevent them from having the time to learn new things, particularly technological advancements that help support the teaching process while they are in the classroom. This is one of the reasons why this is the case. This is one of the factors that contributed to the issue. This problem is further compounded by a number of other variables that must be taken into account. As a direct result of this, the great majority of more senior instructors continue to use traditional training practices in their classrooms. On the other hand, educators with fewer than ten years of experience in the classroom still have the ability to revolutionize their classrooms via the use of a variety of technology tools (Cooper et al., 2019). This is because the workload of teachers with ten years of experience or more in the classroom is significantly more demanding than the workload of teachers with less than ten years of experience in the classroom. This is due to the fact that the workload of teachers with fewer than ten years of experience in the classroom is significantly less demanding.

CONCLUSION

The majority of teachers in inclusive schools already have a solid understanding of the Instruments of Technological Pedagogical, according to the findings of research that was carried out to determine the capability of teachers in inclusive schools to implement Technological Pedagogical into learning. The research was carried out to determine the capability of teachers in inclusive schools to implement Technological Pedagogical into learning. As a consequence of this, it is feasible to arrive at the

conclusion that their overall capabilities have an average score of 3.77, which puts them in the category of having a score that is classified as having a score that is deemed to be moderate. The results of the teacher's response to technology-laden learning suggest that in order to include technology in the learning process, teaching skills, and other pedagogical factors need to be properly trained and well-prepared.

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