INTERNATIONAL JOURNAL
FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Accessibility of Online Learning for Students with Disabilities Amidst Pandemic

Ernalie Jean R. Acosta[1], Fatima A. Allera[2], Keith B. Cullo[3], Mechaella S. Delamide[4], Blessyl A. Obamos[5], Angelito Cabanilla Jr.[6]

[1, 2, 3, 4, 5, 6]*Cebu Normal University*

Abstract: This comparative study examined the accessibility of online learning for students with disabilities amidst the pandemic in five purposively selected countries: the Philippines, the United States of America (USA), South Africa, Italy, and Australia. A qualitative research design was used to determine and compare the accessibility of online learning in the selected countries in terms of policy, curriculum, teacher-student ratio, accommodations and supports, challenges, and improvements. Results revealed that online learning accessibility varies significantly from country to country in offering national curricula and strategies to provide accessibility and carry out inclusive education amidst the pandemic. It was found that the USA had shown a solid commitment to policy, curriculum, teacher-student ratio, accommodations, and support among the five selected countries. On the contrary, the Philippines show immense challenges in accessing online learning for students with disabilities. It is concluded that limited learning resources, lack of internet connectivity, inadequate digital literacy for teachers and students, and lack of concentration and coordination persisted as significant challenges in achieving quality online learning accessibility in a country. It is recommended that countries facing the same challenges may observe countries having quality and accessible online learning, such as the USA.
Keywords: Online Learning, Accessibility, COVID-19, Special Education, Challenges

I. INTRODUCTION

After the rapid spread of COVID-19, the World Health Organization proclaimed global outbreak on the 11th of March 2020. More than 1.5 billion learners and their families experienced significant disruptions due to school closures worldwide (UNESCO, 2020). Students with disabilities were more subject to the educational, physical, mental, and socio-emotional effects of the pandemic with the transition to online learning.

While the rapid adoption of technologies in delivering public services, such as schools and health care operations, has benefited some, it also has caused difficulties for marginalised communities due to factors such as disability, poverty, or communication difficulties (Kim & Bostwick, 2020). Although almost every student's learning was affected by the pandemic, it was evident that the aftermath ofthe pandemic on different students' learning were different. Students with disabilities were adversely affected, and many found themselves unable to attend a school or obtain the assistance and accommodations they relied on to achieve academic success (Houtrow et al., 2020; Kim & Fienup, 2021).

During a more recent report, UNESCO highlighted that students with disabilities require extra time and resources to take part in learning activities despite the pandemic. Among these resources are digital technologies, constant connection to the Internet, and specifically prepared content and services (with, 2022).

Although online education expands the scope of service delivery to people in outlying locations, not everyone has the same level of access due to limitations in their financial or technical capacities. Due to structural inequalities, there may be limitations placed on the ability of teachers and principals to provide a high-quality education. Lack of online learning opportunities limits students' potential for learning and skill development. COVID-19 has made it difficult for students in accessing the new way of learning, especially those students with disabilities.

Several studies have been conducted on the accessibility of online class amidst the pandemic. However, there were no descriptive analysis conducted on accessibility of online education for disabled students amidst pandemic in five selected countries. The study aimed in investigating in how students with disabilities were able to attend in online classes in USA, Philippines, South Africa, Italy, and Australia in the midst of the pandemic.

Given the current economic situation, it is of the utmost importance to assess the the availability of online education in terms of policy, curriculum, teacher-student ratio, accommodations and supports, challenges, and improvements.

II. RESEARCH METHODOLOGY

This utilizes a qualitative research design in exploring and interpreting data and facts about the accessibility of online learning in special education regarding policy, curriculum, teacher-student ratio, accommodations and support, challenges, and improvements. The subject of this study is the accessibility of distance learning for students with additional needs amidst the pandemic, specifically in Philippines, USA, South Africa, Italy, and Australia.

Policy refers to the existing international, national, or constitutional mandates and national plans that address the accessibility of distance learning in special education during the outbreak.

Curriculum refers to the content areas, strategies, and assessments used for students with additional needs in an online class. The curriculum describes all that is taught in a school system.

The number of students per teacher in an online special education program is known as the teacher-student ratio.

A change in the environment, curriculum structure, or technology refers to accommodation. It enables a student with a disability to complete the tasks at hand. In addition, support can mean different teaching methods, educational services, or materials given to students to help them do well in school, meet their academic obligations, or improve their chances of success.

Challenges are the problems and issues that hinder students with disabilities' capacity to learn effectively or accomplish their life goals through online learning.

The improvements refer to the current situation, which addresses the accessibility of online learning in special education across purposefully selected countries.

The researchers compared the variables from the five different countries through descriptive analysis.

III. RESULTS AND DISCUSSIONS

A. Status of Accessibility of Online Learning for Students with Disabilities Amidst Pandemic

1) Philippines

People with disabilities (PWD) are looked down upon and mistreated because of stereotypes and isolation. Bachelet (2018) said that individuals with disabilities are entitled to the same privileges as others. These are the right to vote, freedom, social safety, access to the legal system, and the opportunity to go to school. Advocates for disabled people's rights told the government to pay the most attention to them and fought for Republic Act 7277, also referred to as Magna Carta for Disabled Persons, to be passed. Fortunately, this law was established to protect people with disabilities from discrimination, give them all their rights, and make society the safest place. Momene (2015) says that making it normal for non-PWDs to try to talk to PWDs is one of the best strategies to eliminate discrimination.

According to the Department of Education (DepEd), public schools that offer special education (SPED) must adhere to the same improved curriculum as other public schools and be part of the Aquino administration's K–12 primary education curriculum reform plan. The K–12 curriculum aims to increase students' proficiency in mathematics, science, and linguistics so they can compete more successfully in the global job market. According to the Department of Education, students will receive higher quality education due to the curriculum's provision of various tracks tailored to the careers that the students hope to pursue in the coming years. Along with a clearer path, K–12 education equips students with the expertise they need to find employment immediately if they choose to do so after senior high school.

Based on DepEd Order No. 77, Series of 2020, the ideal student-pupil ratio in the Philippines is 1:15, according to the SPED Handbook. Regarding accommodations and support, no studies have been conducted in the Philippines.

Students with disabilities in the Philippines often had trouble conveying the specific support they needed to their teachers and peers. Due to their lack of access to some activities, individuals also experience social isolation. Students also had difficulty adjusting to the new norm and the new way of learning, and many had trouble using assistive technology and getting an internet connection. Lastly, students with disabilities have a higher risk of developing cognitive and mental health issues, which makes it harder for them to focus during an online lesson (Dianito et al., 2021)

The study revealed a range of significant findings that one of the most important of which was that students with disabilities experienced obstacles regularly. Even though they have had to deal with several difficult situations and circumstances, students with disabilities have shown remarkable resilience. Their family, as well as their friends, assisted them in whatever manner they could. They started by helping them complete their schoolwork and continuing to motivate and encourage them daily. Their ability to cope is partly supported by their strong sense of responsibility and positive mental attitude. According to the findings, these skills enable students with disabilities to realize personal growth and maintain healthy well-being for themselves.

Because they can think constructively, students with disabilities can look at one part of a problem and turn it into many different aspects (Dianito et al., 2021)

2) United States of America (USA)

Students with disabilities were not granted these rights and protections until after 1973. Section 504 of the Rehabilitation Act established substantial rights for special needs students requesting supports inattending public school. Public Law 94-142, a law that inaugurated in the 90's, grants every child with a disability access to a high-quality public education at no cost to their families adapted to their specific requirements. Individuals with Disabilities Education Act is the reapproval and revision of this statute from 1990. The IDEA Amendments was enacted in 1997 after further changes were made to the original law. Included was the precondition of ongoing supports required of the decree under the A.D.A or Americans with Disabilities Act, which creates safeguards and procedures for learners with disabilities in the classroom that guarantee their right to an appropriate education. The Section 508 of the Rehabilitation Act was subsequently amended in the year 1998 by Congress to mandate that federal agencies assure that learners with disabilities receive equal contact to digital resources together with information similarly to people without disabilities. Standards refer to the detailed technical requirements and grading criteria that determine whether or not a site is Section 508 accredited (Russ & Hamidi, n.d.).

Amending the IDEA in 1997, Congress openly stated the students with disabilities should advance in the general curriculum as typically developing peers. This action aimed to improve educational outcomes for students with and without impairments. Similarly, students with special needs were provided with an individualized curriculum different from those obtained by students of the same age. The general curriculum is also accessible to these students, with a few modifications and adaptations. The teacher-pupil ratio in the United States is 1:1 (NCES Blog | Impacts of the COVID-19 Pandemic, 2020).

Due to change in the instructional environment, students with disabilities faced numerous difficulties. Access to gadgets and high-bandwidth Internet were problems in rural U.S. communities (Running, 2021). Many students received school-issued laptops, but few received specialized devices. Students with disabilities were falling behind due to a lack of an accepting school environment and effective teaching relationships (Long et al., 2021). Moreover, study shows that disabled learners suffer from computer and technical knowledge problems. They face issues with website navigation, attractiveness, and usability. Some parents have complained that their children have suffered academically due to the transition to remote learning, citing ineffective teaching strategies and a resulting knowledge deficit as the main reasons (Tandy & Meacham, 2009). Elementary-aged children with autism or ADHD have more trouble focusing and avoiding distractions at home (Long et al., 2021). Several parents worried that their children's success with remote learning lacked consistency, routine, and structure. Some parents also complained that their children's schools had trouble providing the appropriate adjustments and assistance to students with IEPs or Section 504 Plans. Not all universities use video conferencing for therapy. Due to social isolation, few pupils received one-on-one teaching from a teacher, aide, or paraprofessional. Moreover, no student who received full-time one-on-one assistance in the classroom received the same support with remote learning (Kate Henley Averett, 2021)   .

With the pandemic going on, school districts in the United States have created procedures for the purpose of responding to the needs of children with disabilities in response with mandates requiring schools to provide adequate accommodations and offer appropriate services. Students enrolled in Texas were provided with access to tablets and computers, and WiFi was placed in critical locations around each school to promote online learning at the student's homes. In addition, a teacher offered one-on-one online sessions to another student to aid her with her schoolwork. She also provided behavioral approaches for the student's parents to implement at home (Running, 2021). Other students with disabilities were given accommodations through an individualized strategic approach. This approach involved increased discussion between the teacher and the student in order to ensure that he or she completely comprehended the material, finished the tasks at hand and uploaded the results to the learning management system.

Furthermore, during the epidemic, the Texas Education Agency created a speech-language teletherapy program to help students develop their expressive language, articulation, and social skills. Both Tennessee and Minnesota even provide services to meet the sensory demands of children as well as strategies for parents to assist their children's dysregulation at home during the closure. Services provided are sensory activities, calming spaces, and visual supports (*OKLAHOMA STATE DEPARTMENT of EDUCATION 1*, n.d.)

Despite the rise of educational services that are provided online, the legal responsibilities of IDEA must remain upheld by providing each student with access to a competent and socially responsible group of professionals. Study findings show that when planning accommodations learners with disabilities in the pandemic, it is crucial to consider the children's disabilities and socioeconomic status (Long et al., 2021).

Since a critical component of successful online education implementation is ensuring that students have the resources they need to be successful outside of school, teachers and administrators may do their students a favor by making regular phone calls or even home visits to ensure that students have the resources they need to attend the online class. Rather than seeing the difficulties as obstacles, educators should look at the COVID-19 pandemic as a chance to develop innovative methods of working with students with learning differences.

3)   South Africa

Since 1994, services have been provided to all South Africans equally, following a significant revamp of government policy that began with the establishment of democracy in South Africa. By integrating the provision of education for students with disabilities in that process, Act No. 108 of 1996, the country's founding legislation, created the foundation for an inclusive educational system (Republic of South Africa 1996). According to Section 29 of the Bill of Rights, everyone has the right to "a basic education, which the state by reasonable measures must make increasingly available and accessible." The South African Schools' Act and the Republic of South Africa's 1996 Constitution both protect everyone's right to an education. The Department of Education's (2001) Education White Paper 6 outlines specific policy and implementation targets for the inclusion of those who encounter learning barriers, including children with disabilities (Dalton et al., 2012).

By recognizing and addressing the different obstacles to learning, the National Curriculum and Assessment Policy (CAPS) aims to reduce the gap between students in underfunded schools and those with adequate resources (Wium & Louw, 2015). According to the CAPS guideline, which is based on an inclusive education policy, students who encounter obstacles to learning must get the support they need to learn in regular classrooms (RSA DoE, 2001a; RSA DoE, 2001b).

A single, comprehensive, and succinct policy statement for all the subjects included in the National Curriculum Statement for Grades R–12 is known as a National Curriculum and Assessment Policy Statement (CAPS). The Department of Basic Education introduced it.CAPS provides teachers comprehensive instructions on what to teach and how to assess. Currently, South African special needs schools that cater to intellectually disabled learners are implementing CAPS (Wium & Louw, 2015). In special schools, the average teacher-to-student ratio is 1:11. Basically, special school teachers should give each student with a learning disability individualized attention. However, the quality of education continues to raise questions (Infographic: Special Needs Education in South Africa, 2014).

Due to lockdown procedures, all operations in higher education were shifted online, highlighting how unprepared the country was to accommodate students with disabilities. All students suffered in some way due to the teaching and learning process being moved from traditional classroom settings to online ones. In South Africa, students with disabilities encountered challenges with technical and ecological resources, which impacted the students' inability to participate in online learning (Singh-Pillay & Khumalo, 2021). Students with dyslexia voice their concerns about fast-paced lectures. Problems include the lack of a lecturer's skills to adapt their methods of instruction to meet the information processing requirements and learning preferences of dyslexic pupils (Manase, 2021).

Additionally, during the Covid-19 outbreak in the rural university, students without disabilities were largely focused on receiving educational resources. There were no specific measurements related to students with disabilities that can help with various types of disabilities (Mutongoza & Olawale, 2021). Students with disabilities also struggle with time scarcity due to combining household chores, caring for siblings, and parents' lack of understanding (Singh-Pillay & Khumalo, 2021). The implementation of asynchronous learning also hinders students from succeeding in online education. This is due to the fact that the lack of face-to-face communication made it more challenging for students to access and comprehend the course material and increased the risk of underperformance for those who have learning difficulties, typically rely on one-on-one meetings with lecturers for additional academic support (Manase, 2021).

Some institutions in South Africa utilized dyslexia-friendly fonts and reading and writing software to address the needs of students with impairments, improving the clarity, accessibility, and quality of assignments. As part of the disability accommodations, the institution continues to provide students with disabilities more time and deadline extensions. Some students appreciate online learning due to unrestricted access to recorded lectures and the availability of learning materials without the need for immediate interaction. Students could repeatedly listen to the voiceovers while following the PowerPoint slides that lecturers generated with voiceovers.

The university where these students are enrolled has also developed a data-free online platform where professors may hold virtual classes with students while they communicate and ask questions. Lecturers upload tutorial videos, PowerPoint slides have audio descriptions to accompany the written information, and they take additional steps to make the learning materials more interactive (Manase, 2021).

According to the World Health Organization (WHO), students with additional needs were profoundly affected by the lockdown since the services on which they depend were abruptly cut off (Kim & Fienup, 2021). Results showed that emergency online learning has failed to provide inclusive education. To ensure educational inclusion, educators and students with disabilities must be at the core of plans for prototypes of inclusive education – this will ensure equitable access to technological resources. In addition, teachers must also receive training in order to support learning with technology interfaces that may be foreign to them, particularly those used by students with impairments for online learning. Governments must consider education a fundamental need and should give academic staff and instructors the status of necessary services. Furthermore, educators should also familiarize themselves with the Universal Design for Learning concepts. This is done to make accommodating different learning styles in curriculum design and teaching platforms easier (Mutongoza & Olawale, 2021).

4) Italy

Since the 1970s, Italy has been known worldwide as one of the few countries to seek access to inclusive education for every student with disabilities. Laws 118 of 1971 and 517 of 1977 support the eradication of differentiated instruction and favor access of students with additional in the regular class. Measures such as free transport from home to school, removing architectural barriers that prevent access to the school building, and supporting students with severe disabilities are provided (Madeo, 2010; Troilo, 2013). Also, Law 104 of 1992 says that students with impairments have the right to inclusive education and employment opportunities (Carnovali, 2017).

For Italy's curriculum, the most used strategies are interactive and cooperative. The support teachers declared that it allows students with disabilities to feel part of a group, interact and communicate with peers and teachers, and have personalized activities and digital materials. Also, E-Inclusion in Italy (2021) mentioned that the support teacher starts online activities with the whole class and then focuses on more focused activities in small groups and when the families help with individual instruction.

Every four students with disabilities in a class must have a teacher who is certified by the National Health System in Italy, per Law 517 of 1977. The legislation benefits the target demographic, which has grown to encompass 270,000 students with disabilities, or 3.5% of the total student population (Istat, 2020). Due to the availability of around 203,000 support teachers, most of whom work in public schools. 29.8% of all teachers hired can profit from a teacher-student ratio of 1:3, which is beneficial (MIUR, 2021).

Eighty-five million euros were set aside by the Italian Ministry of Education for online learning initiatives. Many universities have created "Specialized Tutorial Services" following national laws to enhance higher learning inclusiveness (Da Re, 2012). Three main objectives underlie this kind of service. First, tutoring services allow students with impairments in higher education to have equal access to study and learn. Second, initiatives and programs support students with impairments in their right to higher education. Third, these programs ensure everyone has the same access by meeting each person's needs in the best way possible (Maggiolini & Molteni, n.d.). From 2019 statistics about internet access in homes at Italy, ISTAT noted that almost three million students between the ages of 6 and 17 might have trouble learning remotely during a lockdown because they do not have internet connection or devices at home. The absence of technological equipment and IT skills was cited as a barrier and seemed particularly severe in the Italian setting (ISTAT, 2020). On the other hand, peer involvement is anticipated to have a relevant potential among the significant aspects of inclusive participation in online learning. Their minimal presence in the learning processes of students with additional needs taking distance classes points a severe lack of peer support techniques that cannot be ignored, particularly during the lockdown (Fantozzi, 2020). Bei and Holzinger (2020) found that involving students with impairments in communication and learning paths with the entire class boosted their willingness and enthusiasm to learn online. During the pandemic, Italian schools devised various instructional plans for students with additional needs. The schools have arranged in-person learning for high school students with disabilities, but it is optional. They could attend in person or continue their education online. According to a study in 2021, the parents of students with disabilities thought that the chance to learn in person, even though it was not fully inclusive, was substantial for their children to acquire more knowledge.

5) Australia

The Commonwealth, the federal government of Australia, did the Disability Discrimination Act (DDA) of 1992. The Australian Human Rights Commission says that the DDA keeps Australians from being mistreated because of their disability alone. Also, the Commonwealth Attorney-General made the Disability Standards for Education 2005, also called the Standards, to fit with DDA. The Standards make it more transparent and accessible for education and training providers to do what the Act says they should do. Every five years, the Standards are also looked at to see how the Australian government, and especially the Department of Education, could be made better.

The Department of Education, Skills, and Employment led the 2020 Review of the 2005 Disability Standards for Education (Clarke, 2021).

The Curriculum gives teachers, schools, and education authorities the freedom to keep their promise to provide students with additional needs the same access and equity in learning as other students. Australian Curriculum, Assessment, and Reporting Authority (ACARA) helps teachers and children with special education needs use the Australian Curriculum in line with the Disability Standards for Education set by the Disability Discrimination Act (DDA) of 1992. ACARA has asked for advice from several top organizations and agencies to make sure that the language used in the Australian Curriculum is inclusive for children with special education needs (ACARA, 2022).

On the other hand, Australia had 4,030,717 students in schools in 2021, which is 23,743 more students than in 2020. In 2021, there were 13.3 students for every teacher in all schools. In primary schools, there were 14.5 students for every teacher, and in secondary schools, there were 11.9 students for every teacher (Schools, 2021).

Like many other countries during the pandemic, Australian students were compelled to adapt to remote online education quickly. Australian government funding helps make it manageable for students with disabilities to access technology like laptops and Wi-Fi hotspots. School departments have sent 74 laptops and internet access points for students to access online learning (Taylor & Francis Online, 2021). Students whose homes do not have internet or other technological resources were able to receive assistance with the use of partnerships with local mobile service provider. An emergency fund totaling $150 million has been set up by the National Broadband Network to aid service providers in their efforts to help their consumers. Included in this sum is $50 million to help low-income families with children in school (Jimenez, 2021). Some teachers even went as far as going to students' houses to help out with their computers. In addition, two teachers at the same institution stated they printed lectures and personally delivered it to student's home.. Lastly, teachers would routinely call home to check on their students and enlist parental support for distance education initiatives (Taylor & Francis Online, 2021).

Students with disabilities in Australia faced numerous challenges due to the abrupt implementation of remote learning. Students' biggest tech problems are not being able to connect to the Internet and not having enough electronic devices. Not all students with disabilities and educators have access to the necessary technology, which could worsen things. Only some students can access the resources they need to take advantage of online learning, such as a fast Internet connection and a powerful computer. In addition, many students were confused by the regular adjustments, especially those who preferred consistency. Students with disabilities have trouble adjusting to changes in the learning environment and setting (Ferri et al., 2020). During the pandemic, all Australian children and teens who went to school had to experience uncertainty and changes. Many schools have been hesitant to provide students with disabilities the help they need, which has caused people to fall further behind. Students also struggle to interact through online platforms, and several people found the change to remote learning problematic (Dickinson et al., 2020).

Students with additional needs also experience the risk of being alone with other students. Some of these troubles were caused by routine changes that made it harder for students to feel connected, making them less likely to want to learn. Children and teenagers felt alone and did not know why they could not see their families or do what they usually did (Taylor & Francis Online, 2021).

Numerous studies show that the pandemic harms children's development and schooling (Yazcayir & Gurgur, 2021). At this moment, the principal objective is to guarantee that all students have accessibility to education and advance their learning (Lamb et al., 2020). However, teachers could not provide technical support, and students did not use the same platforms outside of school. Teachers also noticed a substantial decline in their students' motivation to dedicate themselves to learning. Teachers also thought that COVID-19, which requires students to stay at home, made it harder for students with special needs to participate than if they had gone to class. Since behavior and academic goals are linked to school involvement, it will always be hard for people with learning difficulties to get involved. The teachers said they cared deeply about helping kids, especially those with special additional needs who were at risk (Page et al., 2021).

Table 1

Accessibility of Online Learning for Students with Disabilities Amidst Pandemic

Country	Policy	Curriculum	Teacher - Student Ratio	Accommodations and Support	Challenge/s	Improvements
Philippines	Republic Act	K-12 Curriculum	1:15	No studies found	Communication	The importance of

	7277 (Magna Carta for Disabled Persons)			conducted in the Philippines	Barriers Social Isolation Adjustment Issues Limitations of Assistive Technologies and Internet Connection Susceptibility to Mental Health Problems	having a strong sense of duty and an optimistic attitude gives learners with disabilities the tools they need to think critically about the problems they face every day.
United States of America	IDEA Section 504 of the Rehabilitation Act of 1973 Americans with Disabilities Act (ADA) Section 508 of the Rehabilitation Act	General Curriculum Individualized Curriculum	1:1	Educational packets Individual online sessions Provided tablets/laptops and wifi access point Regular communication with parents and students Created speech-language teletherapy program	Access to devices and high-bandwidth Internet Technical challenges connected to their computers Lack of guidance and coordination from schools and teachers Difficulty focusing and avoiding distractions Lack of consistency, routine, and structure	Significance of regular, clear communication among both educators and parents
South Africa	Act No. 108 of 1996 Education White Paper 6: Special Needs Education - Building an Inclusive Education and Training System	Curriculum and Assessment Policy Statement	1:11	Dyslexia-friendly fonts and reading and writing software More time and extensions for submitting assignments Unrestricted access	Technical Ecological Resources Lecturers Lack of Skills Limited Format for Learning Material	Emergency online learning has not provided an excellent education for everyone

				to recorded lectures Developed a data-free online platform	Home-Study Balance Asynchronous Learning	
Italy	Law 118/1971 Law 517/1977 Law 104/1992	Interactive and Cooperative Strategies	1:3	Specialized Tutorial Services	Gadgets or internet connection at home are inadequate Lack of IT expertise and technical equipment ownership Lack of peer support practices	Hybrid: In-person Learning or Online Learning
Australia	Disability Discrimination Act 1992 (The Act) Disability Standards for Education 2005 (The Standards) Final Report of the 2020 Review of the Disability Standards for Education 2005	Australian Curriculum	1:13	Provided laptops and internet access points Visited students' homes to provide technical support Delivered work packs to students' home Communicate regularly with students' parents	Technological challenges Student engagement and changes to routine Schools have been slow to implement the necessary support Struggles to engage through online platforms Social Isolation	Online school interconnection for students with special needs

B. Discussion on the Accessibility of Online Learning for Students with Disabilities Amidst Pandemic
1) Policy
Laws and policies existed to uphold peace and balance. In the Philippines, people with disabilities (PWD) were neglected and mistreated because of stereotypes and isolation. Meanwhile, the rights and protections for students with disabilities in the USA were granted after 1973, and in 1992, the Commonwealth in Australia created the Discrimination Act of 1992 (DDA). While in 1994, South Africans were equally provided with the services since the beginning of their democracy. Moreover, earlier in the 1970s, Italy sought access to inclusive learning for students with additional needs. Laws and policies were made for PWD to have quality education, enjoy the same privileges as everyone else, and become a part of the community. In the Philippines, Magna Carta for Disabled Persons was established. On the other hand, IDEA, up until now, has been utilized in the USA. South Africa's founding legislation, Act No. 108 of 1996, laid the groundwork for an inclusive educational system (Republic of South Africa 1996). Moreover, in Italy, laws support the eradication of differentiated instruction so that SWANS can access the general classroom setting. Lastly, the Disability Discrimination Act of 1992 (DDA) protects Australians from discrimination based solely on their disability, according to the Australian Human Rights Commission.

Table 2
Policy

Policy				
Philippines	South Africa	United States	Italy	Australia
Republic Act 7277 (Magna Carta for Disabled Persons)	Act No. 108 of 1996 Education White Paper 6: Special Needs Education - Building an Inclusive Education and Training System	IDEA Section 504 of the Rehabilitation Act of 1973 Americans With Disabilities Act (ADA) Section 508 of the Rehabilitation Act	Law 118/1971 Law 517/1977 Law 104/1992	Disability Discriminatio Act 1992 (The Act) Disability Standards for Education 2005 (The Standards) Final Report of the 2020 Review of the Disability Standards for Education 2005

2) Curriculum

In special education schools, the curriculum must be flexible to accommodate the students' multiple abilities and allow teachers to organize and adjust instruction. As evidenced by the data gathered, numerous curricula are being used in the selected countries. Public schools offering special education (SPED) in the Philippines shall implement the K–12 curricula as part of the Aquino administration, based on the Department of Education (DepEd). When amending the Individuals with Disabilities Education Act (IDEA) in the USA in 1997, Congress openly stated that students with disabilities should use the general curriculum accessible with a few modifications and adaptations and that an individualized curriculum should be provided. Meanwhile, South Africa's Department of Basic Education was implementing the National Curriculum and Assessment Policy Statement (CAPS), whose ultimate goal is to progress, sustain, and assist the education system in South Africa for the twenty-first century. In Italy, general and special education teachers concluded that the most effective strategies should be based on interactive and cooperative methods. This was done to ensure that students with special needs could feel like they were a part of a group while also being able to communicate with fellow students and teachers.

Furthermore, following Disability Standards for Education mandated by Australia's Disability Discrimination Act of 1992 (DDA), the leading organizations and agencies in Australia should ensure that the language used in the Australian curriculum is inclusive for children with special education needs. This will give these children the same access to education as other students and the same level of participation in the educational process.

Table 3
Curriculum

Curriculum				
Philippines	South Africa	United States	Italy	Australia
K-12 Curriculum	Curriculum and Assessment Policy Statement	General Curriculum Individualized Curriculum	Interactive and Cooperative Strategies	Australian Curriculum

3) Teacher-Student Ratio

The number of students to teachers in an online special education program is known as the teacher-student ratio. It is observed that the teacher-student percentage varies in the selected countries, as it ranges from 1:1 to 1:15. In the Philippines, according to the SPEd Handbook from DepEd, the ideal teacher-student ratio is 1:15. According to the Pennsylvania Department of Education in the United States of America (USA), the ratio of teachers to students with autism is not less than one teacher or aide for each student, or 1:1. In South Africa, the average teacher-to-student ratio is 1:11. Basically, special school teachers should give each student with a learning disability individualized attention (Infographic: Special Needs Education in South Africa, 2014). Moreover, every four students with disabilities in a class must have a teacher certified by the National Health System in Italy, per Law 517 of 1977. Because of the law, students with impairments can now take full advantage of a 1:3 teacher-student ratio (MIUR, 2021). On the other hand, in Australia in 2021, there were 13.3 students for every teacher. In primary schools, there were 14.5 students for every teacher, and in secondary schools, there were 11.9 students for every teacher (Schools, 2021).

Table 4
Teacher-student ratio

Teacher-student ratio				
Philippines	South Africa	United States	Italy	Australia
1:15	1:11	1:1	1:3	1:13

4) Accommodations and Support

More than seven million learners eligible for special services have been cut off from their classroom support caused of the coronavirus known as COVID-19. Countries worldwide have established support to provide necessary assistance to learners with disabilities as a direct result of legal rules requiring schools to make reasonable changes for students with disabilities and provide appropriate assistance. United States, South Africa, Australia, and Italy are few countries that have taken steps to guarantee that students with disabilities have access to technology as well as the internet they need to participate in online classes.

In the Philippines, no studies has shown that disabled students were provided with accommodations or additional support to make online learning accessible. On the other hand, U.S. school districts have been providing home-based education packets to students in Arizona who lack access to either electricity or the internet (Running, 2021). Students also had access to laptops, tablets, and desktop PCs, and wifi was installed in residential areas. Australian students with disabilities received the exact accommodations and assistance. When asked how they delivered the lessons to the students, two educators from the same school stated they printed them out and drove them there, while the rest of the school provided 74 laptops and internet connection points.(Charteris et al., 2021). Teachers also extend support in the form of one-on-one online sessions with learners. In addition, parents were given behavioral strategies to use at home (Running, 2021). To help other students with impairments, educators took a more tailored strategic approach. In this approach, the instructor and student worked together to ensure the student understood everything, completed all assignments, and submitted them through the LMS. Teachers in Australia contacted all of their students' households to verify that they had received the Google Classroom invites, checked in on their students regularly out of concern for their students' welfare, and enlisted their support to implement online education (Charteris et al., 2021). Lastly, the Texas Education Agency developed a speech-language teletherapy program during the pandemic to aid students' progress in expressive language, articulation, and social skills. Lastly, Tennessee and Minnesota provide programs to address the sensory demands of children, as well as techniques for parents to aid their children's behavior at home during the closure. These services are available to residents and non-residents of the state. Activities that stimulate the senses, environments that promote calm, and visual support are all part of the service offered.

Meanwhile in South Africa, some universities utilized dyslexia-friendly fonts and reading and writing software to accomodate the needs of disabled students, improving the clarity, accessibility, and quality of lessons. Another accommodations granted to students students with disabilities was extended due dates and extensions in completing their assignments. Some students appreciate online learning due to unrestricted access to recorded lectures and the availability of learning materials without the need for immediate interaction. Moreover, lecturers created PowerPoint slides that included voice overs, which students were able to listen to multiple times while following along with the slides.

The university where these students are enrolled has also developed a data-free online platform where professors may hold virtual classes with students and communicate with them. Additionally, lecturers upload tutorial videos, include audio recordings of the presentation slides to explain the materials written, and take additional steps to make the learning materials more interactive (Manase, 2021).

While countries like the United States, Italy, and South Africa have taken various measures to assure students with disabilities access to online learning opportunities, countries like Philippines, which have a minimal budget for special education, have made no such accommodations or provided any such support. Clearly, there is a tremendous need for additional resources or a budget allocation to accommodate the needs and give online learning access to students with disabilities in the Philippines. Therefore, the administration should determine the needs of the student population and allocate resources accordingly.
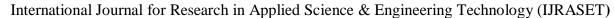
Table 5
Accommodations and Support

Accommodations and Support				
Philippines	South Africa	United States	Italy	Australia
No studies found conducted in the Philippines	Dyslexia-friendly fonts and reading and writing software More time and extensions for submitting assignments Unrestricted access to recorded lectures Developed a data-free online platform	Educational packets Individual online sessions Provided tablets/laptops and wifi access points Regular communication with parents and students Created speech-language teletherapy program	Specialized Tutorial Services	Provided laptops and internet access points Visited students' homes to provide technical support Delivered work packs to students' home Communicate regularly with students' parents

5) Challenges

The COVID-19 pandemic exposed challenges, risks, and inequalities in the education of students with disabilities within and across countries. One billion people with disabilities worldwide are among those most severely afflicted by COVID-19, according to the United Nations (2020).

In the Philippines, students with disabilities experience difficulties in communicating their specific needs to teachers and classmates. Most students struggled to communicate appropriately with their teachers and classmates during this online setup. Students with additional needs also feel social isolation due to limited access to certain activities. After switching from in-person to online courses, the students found it challenging to adjust to the new norm and new modes of learning. In addition, the COVID-19 pandemic increased hurdles for students with disabilities as a result of a lack of access to essential tools (Worldbank, 2020). Students face issues with assistive technology and stable internet connectivity since not all students are privileged to have access to it. Lastly, students with disabilities also experience a risk for mental health problems. Most students felt isolated and were at risk for mental health problems. Some students with disabilities have difficulty when it comes to maintaining their concentration during an online class (Dianito et al., 2021).

In the USA, due to the change in the instructional environment, students with disabilities face numerous difficulties. Access to gadgets and high-bandwidth Internet were problems in rural U.S. communities (Running, 2021).

Many students received school-issued laptops, but few received specialized devices (Long et al., 2021). Moreover, study shows that disabled learners suffer from computer and technical knowledge problems. They face issues with website navigation, attractiveness, and usability (Removing the Barriers for Students with Disabilities: Accessible Online and Web-Enhanced Courses, 2022). Students with disabilities also have trouble focusing and avoiding distractions at home especially those with autism and ADHD (Long et al., 2021). In addition, students experienced a lack of consistency, routine, and structure in the implementation of remote learning. Some parents also complained that their children's schools had trouble providing the appropriate adjustments and assistance to students with IEPs or Section 504 Plans. Due to social isolation, few pupils received one-on-one teaching from a teacher, aide, or paraprofessional. Moreover, no student who received full-time one-on-one assistance in the classroom received the same support with remote learning (Kate Henley Averett, 2021)   .
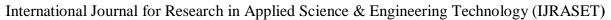
In South Africa, students with disabilities encountered challenges with technical and ecological resources, which impacted the students' inability to participate in online learning (Singh-Pillay & Khumalo, 2021). Dyslexic students voiced concerns about fast-paced instructors. Problems include lecturers' lack of expertise to adapt their methods of instruction to meet the information processing requirements and learning preferences of dyslexic pupils (Manase, 2021). Students with disabilities also experienced limited format for learning materials that support their individual needs. This data supports the assertion made by Zongozzi (2020), who claims that during the pandemic, students with disabilities were prevented from accessing educational materials, excluding them from online teaching and learning (Mutongoza & Olawale, 2021). Students with disabilities struggle with time scarcity due to combining household duties, caring for siblings, and the parent's lack the understanding that being at home during the lockdown means the online academic program continues (Singh-Pillay & Khumalo, 2021). Moreover, students with disabilities also face difficulties in asynchronous learning, in which students do academic tasks without directly communicating with lecturers (Smith & Basham, 2014). The absence of face-to-face interaction between the learners and the lecturers made it challenging for the students to raise questions about academic concerns and receive prompt, thorough answers (Manase, 2021).

Based on 2019 data on internet access in Italian households, ISTAT predicted that around 3 million pupils between the ages of six and seventeen could struggle with online learning during a pandemic due to a lack of connectivity or gadgets at home. The absence of technological equipment and IT skills was cited as a barrier and seemed particularly severe in the Italian setting (ISTAT, 2020). On the other hand, peer involvement is anticipated to have a relevant potential among the significant aspects of inclusive participation in online learning. As a result, their minimal presence in the learning processes of learners with disabilities taking online courses points to a severe lack of peer support techniques that cannot be ignored, particularly during the COVID-19 pandemic (Fantozzi, 2020). In this context, the study by Bei and Holzinger (2020) found that involving students with impairments in communication and learning paths with the entire class boosted their willingness and enthusiasm to learn online.

Similar to the Philippines, United States, South Africa, and Italy, students with disabilities in Australia also face technological challenges. Internet connectivity and a lack of electronic devices are the two fundamental technical problems. In addition, many students needed clarification on the regular adjustments, especially those who preferred consistency. Schools in Australia have been slow to provide appropriate accommodations for students with disabilities. All Australian children and teenagers enrolled in school during the pandemic experienced uncertainties and disruptions. Many schools have been hesitant to implement suitable support mechanisms for children and adolescents with disabilities, which has led to people falling further behind (Dickinson et al., 2020). Students also struggle to interact through online platforms, and they found the change to remote learning problematic (Dickinson et al., 2020). Furthermore, students with disabilities also encountered social isolation. Students had feelings of loneliness and occasionally struggled to understand why they were unable to see their friends, relatives, or engage in their usual activities. (Page et al., 2021).

Table 6
Challenges

Challenges				
Philippines	South Africa	United States	Italy	Australia
Communication Barriers	Technical Ecological	Access to devices and high-bandwidth	Gadgets or internet connection at home	Technological challenges

Social Isolation Adjustment Issues Limitations of Assistive Technologies and Internet Connection Susceptibility to Mental Health Problems	Resources Lecturers Lack of Skills Limited Format for Learning Material Home-Study Balance Asynchronous Learning	Internet Technical challenges connected to their computers Lack of guidance and coordination from schools and teachers Difficulty focusing and avoiding distractions Lack of consistency, routine, and structure	are inadequate Lack of IT expertise and technical equipment ownership Lack of peer support practices	Student engagement and changes to routine Schools have been slow to implement the necessary support Struggles to engage through online platforms Social Isolation

6) Improvements

It is evident in the five countries that the government, specifically the education sector, experiences obstacles. Most especially, students with disabilities had difficulty transitioning from traditional classes to distance learning. Despite obstacles, the findings show the resiliency of students with disabilities in the Philippines and the USA. They look at COVID-19 as a chance for them to develop innovative methods to meet the needs of the children. Teachers in Australia also claimed and acknowledged to have a strong commitment to teaching and assisting students with additional needs (Page et al., 2021). During pandemic, the Italian government also put in place different ways to teach students with disabilities with the advice and support of the parents. However, in South Africa, emergency online learning has not provided an excellent education for everyone. Findings show that the South African government must consider the importance and fundamental needs of education and they must also provide necessary services by giving the right accommodation and by familiarizing the Universal Design for Learning concepts (Mutongoza & Olawale, 2021).

Table 7
Improvements

Improvements				
Philippines	South Africa	United States	Italy	Australia
The importance of having a strong sense of duty and an optimistic attitude gives learners with disabilities the tools they need to think critically about the problems they face every day	Emergency online learning has not provided an excellent education for everyone	Significance of regular, clear communication among both educators and parents	Hybrid: In-person Learning or Online Learning	Online school interconnection for students with special needs

IV. CONCLUSION

The widespread outbreak has impacted various countries, including students with and without disabilities. In response, numerous nations have implemented online learning. The study reveals that online learning accessibility varies significantly from one country to another in offering national curricula and utilizing strategies to provide accessibility and carry out inclusive education amidst the pandemic. The study found that the USA had shown a solid commitment to policy, curriculum, teacher-student ratio, accommodations, and support among the five selected countries. On the contrary, the Philippines show immense challenges in accessing online learning for students with disabilities. It is concluded that limited learning resources, lack of internet connectivity, inadequate digital literacy for teachers and students, and lack of concentration and coordination persisted as significant challenges in achieving quality online learning accessibility in a country. It is recommended that countries facing the same challenges may observe countries having quality and accessible online learning, such as the USA.

REFERENCES

[1] 508 and WCAG: What's the Difference? - Braille Works. (2021, February 4). Braille Works. https://brailleworks.com/508-and-wcag-whats-the-difference/
[2] Accessible Quality Higher Education for Students with Disabilities in a South African Open Distance and e-Learning Institution: Challenges. (2022). International Journal of Disability, Development and Education. https://www.tandfonline.com/doi/abs/10.1080/1034912X.2020.1822518
[3] Asare, A. O., Yap, R., Truong, N., & Sarpong, E. O. (2021). The pandemic semesters: Examining public opinion regarding online learning amidst COVID-19. Retrieved from https://onlinelibrary.wiley.com/doi/full/10.1111/jcal.12574
[4] Australian Curriculum, Assessment and Reporting Authority (ACARA). (2012, November). Guidance for using the Australian Curriculum with students with special education needs. http://www.saasso.asn.au/wp-content/uploads/2012/11/Guidance-for-using-the-Australian-Curriculum-with-students-with-special-education-needs.pdf
[5] Australian Government. (1992). Disability Discrimination Act 1992. Federal Register of Legislation; Attorney-General's Department. https://www.legislation.gov.au/Details/C2016C00763
[6] Australian Government. (2005). Disability Standards for Education 2005. Federal Register of Legislation. https://www.legislation.gov.au/Details/F2005L00767
[7] Berrocal, M. (2022). Online Special Education in the United States and Peru: A Comparison of Responses to COVID-19. Digital Commons @ Butler University. https://digitalcommons.butler.edu/bjur/vol8/iss1/6/
[8] Carnovali, S. (2017). The Right to Inclusive Education of Persons with Disabilities in Italy. Reflections and Perspectives. ATHENS JOURNAL of EDUCATION, 4(4), 315–326. https://doi.org/10.30958/aje.4-4-1
[9] Clarke, M. (2021). 2020 Review of the Disability Standards for Education 2005 - Department of Education, Australian Government. Department of Education. https://www.education.gov.au/disability-standards-education-2005/2020-review-disability-standards-education-2005
[10] Curriculum Assessment Policy Statements. (2020). Education.gov.za. https://www.education.gov.za/Curriculum/CurriculumAssessmentPolicyStatements(CAPS).aspx
[11] DDA guide: What's it all about | Australian Human Rights Commission. (n.d.). Humanrights.gov.au. https://humanrights.gov.au/our-work/disability-rights/dda-guide-whats-it-all-about
[12] Department of Education, Skills and Employment. (2015). Disability Standards for Education 2005 | Department of Education and Training. Education.gov.au. https://www.education.gov.au/disability-standards-education-2005
[13] DepEd ORDER no. 77, s. 2010 GUIDELINES ON THE ALLOCATION/DEPLOYMENT OF NEW TEACHING, TEACHING-RELATED AND NON-TEACHING POSITIONS FOR FY 2010. (2010, June 4). Retrieved from https://www.deped.gov.ph/wp-content/uploads/2010/06/DO-No.-77-s.-2010.pdf
[14] Dianito, A. J., Espinosa, J., Duran, J., & Tus, J. (2021). A Glimpse into the Lived Experiences and Challenges Faced of PWD Students towards Online Learning in the Philippines Amidst COVID-19 Pandemic. Retrieved from https://www.researchgate.net/profile/Jhoselle-Tus/publication/349310433_A_Glimpse_into_the_Lived_Experiences_and_Challenges_Faced_of_PWD_Students_towards_Online_Learning_in_the_Philippines_Amidst_COVID-19_Pandemic/links/602a0410299bf1cc26c7f0aa/A-Glimpse-into-the-Lived-Experiences-and-Challenges-Faced-of-PWD-Students-towards-Online-Learning-in-the-Philippines-Amidst-COVID-19-Pandemic.pdf?_sg%5B0%5D=started_experiment_milestone&origin=journalDetail
[15] Dickinson, H., Smith, C., Yates, S., & Bertuol, M. (2020). Not even remotely fair Experiences of students with disability during COVID-19 For Children and Young People with Disability Australia.https://www.parliament.vic.gov.au/images/stories/committees/paec/COVID-19_Inquiry/Submissions/2c._Children_and_Young_People_with_Disability_Australia.pdf
[16] Dickinson, H., Smith, C., Yates, S., & Bertuol, M. (2020). Not even remotely fair Experiences of students with disability during COVID-19 For Children and Young People with Disability Australia. https://www.parliament.vic.gov.au/images/stories/committees/paec/COVID-19_Inquiry/Submissions/2c._Children_and_Young_People_with_Disability_Australia.pdf
[17] Disguised Blessings amid Covid 19: Opportunities and Challenges for South African University Students with Learning Disabilities. (2021). ResearchGate. https://doi.org/10.24085/jsaa.v9i1.1431
[18] E-inclusion: online special education in Italy during the Covid-19 pandemic. (2021). Technology, Pedagogy and Education. https://www.tandfonline.com/doi/full/10.1080/1475939X.2020.1856714
[19] Erickson, M. J., & Larwin, K. H. (2016). The Potential Impact of Online/Distance Education for Students with Disabilities in Higher Education: Results from a Meta-Analytic Investigation and Existing Research. International Journal of Evaluation and Research in Education (IJERE), 5(1), 76. https://doi.org/10.11591/ijere.v5i1.4525
[20] Fostering school connectedness online for students with diverse learning needs: inclusive education in Australia during the COVID-19 pandemic. (2021). European Journal of Special Needs Education. https://www.tandfonline.com/doi/full/10.1080/08856257.2021.1872842

[21] Giangreco, M. (2012). Integrazione Scolastica in Italy: Implications for American Integrazione Scolastica in Italy: Implications for American Schooling of Children with Disabilities Schooling of Children with Disabilities Giangreco Sabbatical Report 1 Integrazione Scolastica in Italy: Implications for American Schooling of Children with Disabilities. https://scholarworks.uvm.edu/cgi/viewcontent.cgi?article=1027&context=cessfac

[22] Gumede, L., & Badriparsad, N. (2022). Online teaching and learning through the students' eyes – Uncertainty through the COVID-19 lockdown: A qualitative case study in Gauteng province, South Africa. Radiography, 28(1), 193–198. https://doi.org/10.1016/j.radi.2021.10.018

[23] Hardy Mutongoza, B. (n.d.). Whitewashed Tombs: Emergency Online Learning Through the Experiences of Students with Disabilities at a Rural South African University The Barcelona Conference on Education 2021 Official Conference Proceedings. Retrieved November 12, 2022, from https://papers.iafor.org/wp-content/uploads/papers/bce2021/BCE2021_61989.pdf

[24] Ianes, D., Demo, H., & Dell'Anna, S. (2020). Inclusive education in Italy: Historical steps, positive developments, and challenges. PROSPECTS, 49(3-4), 249–263. https://doi.org/10.1007/s11125-020-09509-7

[25] Italy: Students with Disabilities Included in Covid-19 Education Plans. (2021, June 15). Human Rights Watch. https://www.hrw.org/news/2021/06/15/italy-students-disabilities-included-covid-19-education-plans

[26] Jameson, J. M., Stegenga, S. M., Ryan, J., & Green, A. (2020). Free Appropriate Public Education in the Time of COVID-19. Rural Special Education Quarterly, 39(4), 875687052095965. https://doi.org/10.1177/8756870520959659

[27] Jimenez, B. A. (2021). A Tale of Two Countries: An International Perspective on Non-Traditional Special Education - Elif Tekin-Iftar, Bree A. Jimenez, Hatice Deniz Degirmenci, 2021. Rural Special Education Quarterly. https://journals.sagepub.com/doi/full/10.1177/8756870520982297

[28] Kamga, S. D. (2020). COVID-19 and the inclusion of learners with disabilities in basic education in South Africa: A critical analysis. African Human Rights Law Journal, 20(2). https://doi.org/10.17159/1996-2096/2020/v20n2a9

[29] Kate Henley Averett. (2021). Remote Learning, COVID-19, and Children with Disabilities - Kate Henley Averett, 2021. AERA Open. https://journals.sagepub.com/doi/10.1177/23328584211058471

[30] Lamb, S., Maire, Q., Doecke, E., Macklin, S., Noble, K & Pilcher, S. (2020) Impact of learning from home on educational outcomes for disadvantaged children. Centre for International Research on Education Systems and the Mitchell Institute, Victoria University

[31] Long, E., Vijaykumar, S., Gyi, S., & Hamidi, F. (2021). Rapid Transitions: Experiences with Accessibility and Special Education during the COVID-19 Crisis. Frontiers in Computer Science, 2. https://doi.org/10.3389/fcomp.2020.617006

[32] Maggiolini, S., & Molteni, P. (n.d.). University and Disability: An Italian Experience of Inclusion. Journal of Postsecondary Education and Disability, 26(3), 249. https://files.eric.ed.gov/fulltext/EJ1026887.pdf

[33] Mascheroni, G., Saeed, M., Valenza, M., Cino, D., Dreesen, T., Zaffaroni, L., & Kardefelt-Winther, D. (2021). Learning at a Distance Children's remote learning experiences in Italy during the COVID-19 pandemic. https://files.eric.ed.gov/fulltext/ED619436.pdf

[34] Mpungose, C. B. (2020). Emergent transition from face-to-face to online learning in a South African University in the context of the Coronavirus pandemic. Humanities and Social Sciences Communications, 7(1). https://doi.org/10.1057/s41599-020-00603-x

[35] Naicker, S. M. (2019). History of Special Education in South Africa and the Challenges of Inclusive Education. Oxford Research Encyclopedia of Education. https://doi.org/10.1093/acrefore/9780190264093.013.434

[36] NCES Blog | Changes in Pupil/Teacher Ratios in 2020: Impacts of the COVID-19 Pandemic. (2020).Ed.gov.https://ies.ed.gov/blogs/nces/post/changes-in-pupil-teacher-ratios-in-2020-impacts-of-the-covid-19-pandemic

[37] Nkosinathi Zongozzi, & Sindile Ngubane. (2021, July 7). Online learning can be hard for students with disabilities: how to help. The Conversation. https://theconversation.com/online-learning-can-be-hard-for-students-with-disabilities-how-to-help-158650

[38] NTOMBELA, S. (2020). TEACHING AND LEARNING SUPPORT FOR STUDENTS WITH DISABILITIES: ISSUES AND PERSPECTIVES IN OPEN DISTANCE E-LEARNING. Turkish Online Journal of Distance Education, 18–26. https://doi.org/10.17718/tojde.761919

[39] Online learning accessibility during the COVID-19 pandemic | Proceedings of the 18th International Web for All Conference. (2021). ACM Other Conferences. https://dl.acm.org/doi/10.1145/3430263.3452445

[40] Page, A., Charteris, J., Anderson, J., & Boyle, C. (2021). Fostering school connectedness online for students with diverse learning needs: inclusive education in Australia during the COVID-19 pandemic. European Journal of Special Needs Education, 36(1), 1–15. https://doi.org/10.1080/08856257.2021.1872842

[41] Reimagining South African higher education in response to Covid-19 and ongoing exclusion of students with disabilities. (2022). Disability & Society. https://www.tandfonline.com/doi/full/10.1080/09687599.2021.2004880

[42] Retrieved from Philstar Global website: https://www.philstar.com/other-sections/education-and-home/2012/06/28/822098/public-sped-schools-follow-enhanced-curriculum-k-12

[43] Revised National Curriculum Statement Grades R-9 (Schools). (n.d.). https://wcedonline.westerncape.gov.za/ncs/rncs.pdf

[44] Riaan. (2019, June). A Short History of Special Needs Education in South Africa - Japari School. Japari School. https://japari.co.za/special-needs-education/

[45] Ro'fah, Hanjarwati, A., & Suprihatiningrum, J. (2020). Is Online Learning Accessible During COVID-19 Pandemic? Voices and Experiences of UIN Sunan Kalijaga Students with Disabilities. Indonesia.

[46] Ronda, R. A. (2012, June 28). Public SPED schools follow an enhanced curriculum of K + 12.

[47] Schools, 2021. (2022, February 23). Australian Bureau of Statistics; Australian Bureau of Statistics. https://www.abs.gov.au/statistics/people/education/schools/latest-release

[48] Sideropoulos, V., Dukes, D., Hanley, M., Palikara, O., Rhodes, S., Riby, D. M., Samson, A. C., & Van Herwegen, J. (2021). The Impact of COVID-19 on Anxiety and Worries for Families of Individuals with Special Education Needs and Disabilities in the UK. Journal of Autism and Developmental Disorders, 52(6), 2656–2669. https://doi.org/10.1007/s10803-021-05168-5

[49] Smith, C., Tani, M., Yates, S., & Dickinson, H. (2022). Successful School Interventions for Students with Disability During Covid-19: Empirical Evidence from Australia. The Asia-Pacific Education Researcher. https://doi.org/10.1007/s40299-022-00659-0

[50] South Africa | INCLUSION | Education Profiles. (2022). Education-Profiles.org. https://education-profiles.org/sub-saharan-africa/south-africa/~inclusion

[51] South African curriculum. (2012). Smartkids. http://smart-kids.pearson.com/south-african-curriculum

[52] SPECIAL EDUCATION AND DISTANCE LEARNING Supporting Students Through the Pandemic. (2020). https://files.eric.ed.gov/fulltext/ED609307.pdf

[53] State, O. (n.d.). https://www.govinfo.gov/content/pkg/ERIC-ED466857/pdf/ERIC-ED466857.pdf

[54] Stenhoff, D. M., Pennington, R. C., & Tapp, M. C. (2020). Distance Education Support for Students With Autism Spectrum Disorder and Complex Needs During COVID-19 and School Closures. Rural Special Education Quarterly, 39(4), 211–219. https://doi.org/10.1177/8756870520959658

[55] Tandy, C., & Meacham, M. (2009). Removing the Barriers for Students with Disabilities: Accessible Online and Web-Enhanced Courses. Journal of Teaching in Social Work, 29(3), 313–328. https://www.learntechlib.org/p/72567/

[56] Tekin-Iftar, E., Jimenez, B. A., & Deniz Degirmenci, H. (2021). A Tale of Two Countries: An International Perspective on Non-Traditional Special Education. Rural Special Education Quarterly, 40(2), 85–94. https://doi.org/10.1177/8756870520982297

[57] The Right to Education for Children with Disabilities in South Africa: SECTION27's action from national research and litigation strategies to international advocacy. (2015). Iniciativa Por El Derecho a La Educación. https://www.right-to-education.org/es/node/412

[58] Whitewashed Tombs: Emergency Online Learning Through the Experiences of Students with Disabilities at a Rural South African University. (2021). ResearchGate; ResearchGate. https://www.researchgate.net/publication/356894267_Whitewashed_Tombs_Emergency_Online_Learning_Through_the_Experiences_of_Students_with_Disabilities_at_a_Rural_South_African_University

[59] Yazcayir, G., & Gurgur, H. (2021). Students with Special Needs in Digital Classrooms during the COVID-19 Pandemic in Turkey. Pedagogical Research, 6(1), em0088.

[60] https://doi.org/10.29333/pr/9356

INTERNATIONAL JOURNAL
FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)