COVID 19, technology-based education and disability: The Case of Mauritius

Emerging practices in inclusive digital learning for students with disabilities

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Abbreviations and acronyms

CWD	children with disabilities
DPI	Disabled Peoples' International
DPO	disabled peoples' organization
ICT	information and communication technology
GIUs	Government Integrated Unit
MIE	Mauritius Institute of Education
MoETEST	Ministry of Education, Tertiary Education, Science and Technology
NGOs	non-governmental organizations
NYCBE	Nine Year Continuous Basic Education
ODL	open and distance learning
OERs	open educational resources
RCEA	Roman Catholic Education Authority
SeDEC	Service Diocésain de L'Éducation Catholique
SENA	Special Education Needs Authority
SENRDC	Special Education Needs Research and Development Centre
SEN	special education needs
SDG	Sustainable Development Goal
UNCRC	United Nations Convention on the Rights of the Child
UNCRDP	United Nations Convention on Rights of Persons with Disabilities

The education system in Mauritius:
An overview

The Government of Mauritius strongly supports the right to education and confirms this with its firm commitments to promote education. Children in the Republic of Mauritius have had the privilege to enjoy free education through secondary level since 1976, through post-secondary level since 1988, and, as of the academic year of 2019, free higher education in public tertiary education institutions.[1] The education system in Mauritius is largely based on the British system, as Mauritius was a former British colony. Education in Mauritius is compulsory from ages 5 to 16. This law aligns with the fundamental principles of the right to education for all children, ensuring that the students have a certain level of literacy, numeracy, and life skills to lead a decent life. The present education system allows a pupil to study for two years at the pre-primary level. This sub-sector builds the foundations upon which all future learning depends.

Major educational reform: Nine Year Continuous Basic Education

Mauritius witnessed a major and comprehensive change with the Nine Year Continuous Basic Education (NYCBE) reform that took place in 2017. It established a sound foundation for learning and self-development, with a strong emphasis on the holistic development of the child. The NYCBE[2] is guided by six major pillars: curriculum change, innovative pedagogies, meaningful assessment, continuous professional development, conducive learning environment, and system governance and accountability. It is equally important to highlight that the reform is guided by Sustainable Development Goal (SDG) 4, which ensures inclusive and equitable quality education for all and promotes lifelong learning.

NYCBE and special education needs

The NYCBE is grounded in a holistic philosophy that emphasizes both greater equity and equality of learning opportunities for all students, enabling them to unleash their true potential, regardless of geographical location or socio-economic background.

It is crucial to emphasize that Objective 4 of the NYCBE clearly stipulates that learning opportunities must be provided to all students, including those with special education needs (SEN), for them to attain high levels of achievement according to their abilities and strengths.

In the context of the educational reform, all the children identified as having SEN will have the opportunity to access education to the extent possible in the most appropriate educational settings, including mainstream and SEN schools. This educational system does not force all children to reach the highest level of the NYCBE (Grade 9), where appropriate assessment procedures will determine up to what level a child would be able to succeed in the school. Altogether, through necessary adaptations, interventions, modifications, and accommodations, this new system is in place to create greater learning opportunities for children with disabilities to unleash their true potential.

The NYCBE also allows early diagnosis of students with learning difficulties; early interventions assist those learners through the early support programme, requiring remediation in a timely and effective manner. Hence, support teachers/paraprofessional teachers have been recruited and trained to assist the class teacher in teaching pupils facing learning difficulties. Bearing equity, inclusion, and access in mind, the extended stream also forms part of a similar approach, where, after Grade 6, students who would not have reached the required standard will still move on to a regional secondary school. However, these students will enter an extended four-year stream with the same curriculum as the mainstream three-year programme.

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1   https://education.govmu.org/Documents/educationsector/Documents/2019/Communique%20250119.pdf.
2   https://education.govmu.org/Documents/educationsector/nys/Documents/NYCBE%20Booklet.pdf.

Brief overview of SEN education in Mauritius

Laws and policies on disability

It is acknowledged that there are a number of laws in the Republic of Mauritius that relate specifically to the rights of persons with disabilities. Key legislation includes the Trust Fund for Disability Act, 1988; Equal Opportunity Act, 2008; Training and Employment Act, amended 2012; National Council for the Rehabilitation of the Disabled Act, 1986; and Lois Lagesse Act, 1983. Mauritian law promotes employment opportunities and career advancement for persons with disabilities in the labour market through the passing of the Training and Employment of Disabled Persons Act 1996[3] ('the Act').

Definition of a disabled person

A disabled person is defined under the Act as a person certified as such by the Training and Employment of Disabled Persons Board, an institution established for the purposes of ensuring compliance with the Act. Two conditions must be met so as to be certified as a disabled person:

1. have a long-term physical disfigurement or physical, mental, or sensory disability, including a visual, hearing, or speech functional disability, which gives rise to barriers or prejudices impeding his/her participation at an equal level with other members of society in major life activities, undertakings or fields of employment that are open to other members of society;

2. be willing and able to work.

The law states that every employer is under an obligation to employ a number of persons with disabilities, representing 3 per cent of his/her workforce. The employer has a duty to provide suitable employment to a person with a disability which is adapted to his/her disability. As per Section 14 of the Act: 'No disabled person shall be employed on work which, having regard to the nature of his disability, is not suitable.'

Definition of special educational needs

As per the Special Needs Strategy document 2017,[4] the term 'special educational needs' has a legal definition, referring to children who have learning problems or disabilities that make it harder for them to learn than most children of the same age. Many children will have SEN of some kind at some time during their education. Gifted learners also have SEN, as they require acceleration of curriculum and curricular practices.

In its commitment to the philosophy of an inclusive-driven approach, the Ministry of Education, Tertiary Education, Science and Technology (MoETEST) embarked on a series of inclusion-driven affirmative initiatives for learners with disabilities. The Republic of Mauritius signed the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) on 25 September 2007, which requires the education system of Mauritius to be responsive to the education needs of all learners, including those with SEN, and ratified it (with reservation) in January 2010. (The three reservations made to the UNCRPD were: article 9 on Accessibility, Article 24 on Education, and Article 11 on Situations of risk and humanitarian emergencies.) The first report on the implementation of the UNCRPD in line with Article 35 was submitted in 2012. As a signatory/adherent to the following international agreements/declarations, the Government of Mauritius is committed to establishing an inclusive education system in the country:
- UN Convention on the Rights of the Child (UNCRC) (1989),
- Jomtien World Declaration on Education for All (1990),

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3   https://www.ilo.org/dyn/natlex/docs/WEBTEXT/45308/65039/E96MUS01.htm
4   https://education.govmu.org/Documents/educationsector/Documents/Special%20Education%20Needs/SEN_Strategy_2017_Final.pdf.

- Salamanca Statement and Framework for Action (UNESCO, 1994),
- Dakar Framework for Action (Dakar World Education Conference, UNESCO, 2000),
- UNCRPD (2006).

The 2016 amended version of the 1968 Constitution of Mauritius makes provisions regarding non-discrimination on the basis of race, place of origin, political preference, colour, creed, or sex (Section 3) without explicitly laying down the right to education. Similarly, the constitution restricts the rights to vote and be elected for some persons with disabilities and contains outdated terminology – such as 'persons of unsound mind' – in Articles 34 (1) and 43, echoed in the Electoral Law, Local Government Act (1989), Section 29, Rodrigues Regional Assembly Act (2001) Section 5, Subsection 2. These restrictions call for amendments. However, this fundamental right was supported by other legislative and policy frameworks aligning with the National Human Rights Commission. It is equally significant to point out that the right to education is explicitly stipulated in the Universal Declaration of Human Rights[5] (1948), along with many other international human rights instruments. The right to education was further echoed in the 2008 Equal Opportunities Act, which states that education institutions do not have the right to discriminate against any person, denying or limiting access to or participating in education, unless the person requires special services or facilities (Article 17).

In the same spirit, within the education legislative framework, the amended 2014 version of the 1957 Education Act became the main legal document regulating the formal education system reiterating/reaffirming the right to access to schools with non-discrimination on the basis of race or religion (Section 35).

In 2006, the MoETEST developed the Special Needs and Inclusive Education Policy with broad consultations at all levels in a multisectoral approach. The policy and strategy document was guided by the principles of inclusion and equity and sets out a new approach for the development of all children and youth by ensuring equal opportunities with supportive environments, along with services for learners with disabilities designed to gradually integrate them into mainstream education. A greater flexibility in the age of admission to primary school and in the completion of lower primary and upper primary were also possible. This policy document introduced a paradigm shift, adopting a needs-based approach while ensuring equal access to learning opportunities for learners with SEN, based on a three-pronged approach (*Figure 1*).

Figure 1: Three-pronged approach

Approach 1: **Mainstream integration**	Approach 2: **Integrated classrooms**	Approach 3: **Special needs education/ specialized schools**
• Children with mild or moderate intellectual or sensorial impairments can receive education in regular schools • Support of ancillary staff and/ or teachers and a consultancy service is required • Agreement with parents/ guardian • Proper assessment requirements	• Children with more severe disabilities receive education in specialized settings within regular public schools or in special education class/ unit or resource room	• Appropriate assessment is required • A medical certificate attesting disability or psychological status that proves their learning disability is required for such measures • Children who are not able to attend regular schools are entitled to receive education in special education schools, according to their needs

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5   https://www.un.org/en/about-us/universal-declaration-of-human-rights.

The Policy Framework and Strategy Document 2017 on Inclusive Education for Children and Youth with SEN in Mauritius: Concept to Reality, which is both responsive and sensitive towards learners with disabilities, correlates with the policy directions of SDG 4 and the National Curriculum for NYCBE through the six E's of the philosophy of inclusion. These are: equity; equal access; equal opportunity; equal dignity; effective communication; and embrace culture. The three R's of inclusion - reach, respect, and relationship - are also embedded in the policy document. The goal of this document is to maximize and optimize inclusive practices to facilitate and achieve inclusion of all learners with SEN in the Republic of Mauritius by 2030. Hence, the policy has been designed to fulfil its commitment to 'ensure inclusive and equitable quality education and promote lifelong learning opportunity' by 'leaving no child behind'. In this context, it is important to emphasize that the most current Education and Human Resources Strategy Plan 2008–2020[6] also reiterates the right for learners with disabilities to be included into the regular school system at all education levels.

The Disability Bill – anticipated by the SEN sector – is in the consultation process; on 22 February 2021, the Minister for Social Security announced that it would be introduced at the national assembly as soon as possible[7]. The Disability Bill will be adopted to apply the principles of the UNCRPD in Mauritius.

Norms and standards in the SEN schools

The norms and standards[8] for SEN schools provide a classification of disabilities, standards, and requirements for learning provision in SEN schools/education institutions specifically targeted at children with SEN.

It is important to point out that the age of a child admitted in a SEN school is now between 5 and 20. The recommended ratios for effective and efficient teaching and learning have been reviewed as follows:
• The recommended teacher/pupil ratio is 1:7.
• The recommended teacher/assistant teacher ratio is 2:1.
• The recommended pupil/carer ratio is 15:1.
• The recommended classroom/caretaker ratio is 8:1.

Exceptions will be made depending on the level of impairment; in which case the above ratios may be reviewed by MoETEST.

Special needs education in Mauritius

The education system in the Republic of Mauritius has been responsive to learners with SEN. A major milestone in the history of special education was the enactment of three acts of parliament which gave birth to three special education schools in the 1940s. These schools are still run by non-governmental organizations (NGOs) but funded by the government. The schools are:
• the School for the Deaf, founded by the Society for the Welfare of the Deaf (1965);
• the School for the Blind, founded by the Society for the Welfare of the Blind, which was later renamed Lois Lagesse Trust Fund (1946);
• the School for Educationally Sub-Normal Children, founded by the Mauritius Mental Health Association (1958).

In 1970s, it was the parents who organized themselves into an NGOs. This was supported by the first Labour Government (post-independence 1968–1982). In the early years, SEN schools were run by NGOs. Parastatal bodies and NGOs began to provide specialized care, education, and training to children with disabilities, adolescents, and adults. Later, in 1981, the government took the initiative to celebrate the International Year for Disabled Persons to provoke reactions from civil service with a hope of encouraging the public service to react.

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6   https://uil.unesco.org/document/mauritius-education-and-human-resources-strategy-plan-2020-issued-2009
7   https://gis.govmu.org/News/SitePages/La-ministre-Daureeawoo-r%C3%A9affirme-l'introduction-du-Disability-Bill-%C3%A0-l'Assembl%C3%A9e-nationale.aspx.
8   https://education.govmu.org/Documents/educationsector/Documents/Special%20Education%20Needs/6.%20Norms%20and%20Standards.pdf.

Although affirmative efforts were made by the government and NGOs, education for SEN learners was not apparent. However, after the Salamanca Convention (1994), the government's commitment towards strengthening the education of children with disabilities was reinforced. With a view to further improve access to education for learners with SEN, the first integrated unit was set up in 1995, which was aligned with the UNCRPD. In 2005, a policy of compulsory education until the age of 16 brought into focus educational provision for out-of-school children and, in particular, those who had dropped out of school and those with SEN.

Special Education Needs Authority

The Special Education Needs Authority[9] (SENA) has been set up to provide the appropriate regulatory framework for learners with SEN and to facilitate the implementation of government policies on SEN. One of the major responsibilities of the authority is to harmonize the promotion of programmes and policies for the education and holistic development of persons with SEN, in line with the UNCRC and the UNCRPD. The regulations governing the registration for SEN institutions, their teaching and non-teaching staff, and any other resource person, have been reviewed and are in the process of being completed. With a view to facilitate an inclusive, equitable and effective education system, the Norms and Standards for Special Education Needs Institutions have been prepared.

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9   https://education.govmu.org/Documents/educationsector/Documents/Special%20Education%20Needs/Special%20Education%20Needs%20Authority%20Act.pdf.

Classification and prevalence of disabilities

Classification of disabilities and children with disabilities

According to the Policy on Inclusive Education 2017,[10] disabilities have been classified into eight categories (*Table 1*). Children with disabilities (CWD) have been classified according to their learning needs. *Table 2* presents this classification; this is in place to ensure inclusion in the learning process.

Table 1: Classification of disabilities into eight categories

	Categories of disabilities
1	Physical disability (mobility problems, spinal cord injuries, spina bifida, hemiplegia, cerebral palsy)
2	Social, emotional, and behavioural disturbance (attention deficit hyperactivity disorder, schizophrenia, anxiety disorders, antisocial personality disorders)
3	Intellectual and neurological impairment (Down's syndrome, Williams syndrome, dyslexia, dysgraphia, dyscalculia, epilepsy)
4	Visual impairment
5	Hearing impairment
6	Multiple disabilities (skeletal deformities, sensory disorders, seizure disorders)
7	Other health-related disabilities (cancer, Lyme disease, lupus, multiple sclerosis)
8	Autistic spectrum disorder (autism, Asperger's syndrome, pervasive developmental disorders)

Table 2: Classification of children with disabilities according to learning needs

Category	Learning needs
Category I: Mild/Moderate	Children with mild/moderate learning needs, including the gifted and talented, can study in a general class with some special inputs. (45% of CWD belong to this category)
Category II: Moderate	Children with mild/moderate disabilities (who require some counselling services) can study in general mainstream class. (30% of CWD belong to this category)
Category III: Severe	Children with moderate/severe disabilities, needing resource assistance including corrective aids and periodic help in academic areas, will study in SEN schools. (15% of CWD can be classified in this category)
Category IV: Severe/Profound	Children with severe/profound disabilities, who require direct attention from special teachers, can be placed in SEN schools (10% of CWD come under this category).
Children from the non-formal sector who remained unidentified would be included in the system through identification, assessment, and appropriate placement.	

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10   https://education.govmu.org/Documents/educationsector/Documents/Special%20Education%20Needs/SEN_Strategy_2017_Final.pdf.

Prevalence of disability in SEN schools in Mauritius

Figure 2 identifies intellectual impairment as the most common disability among students enrolled in SEN schools.

Figure 2: Enrolment in SEN schools by type of impairment and gender, 2020
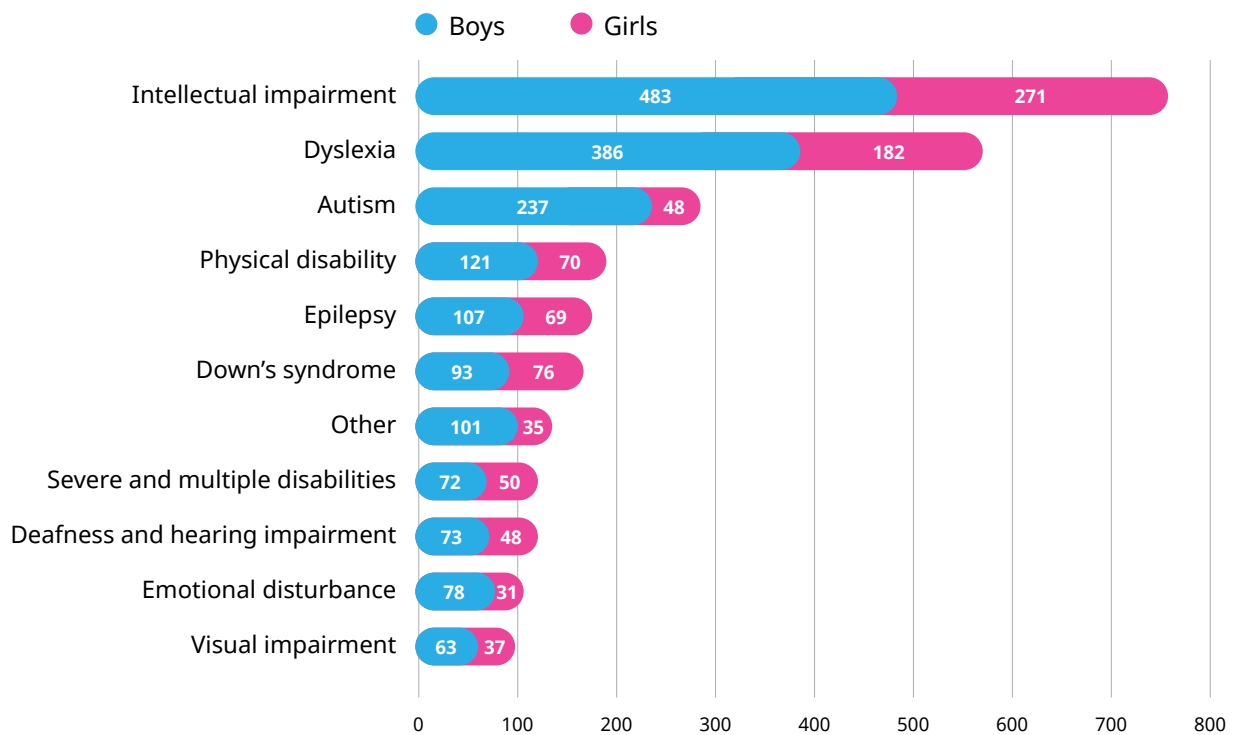
Figure 2 illustrates that learning disabilities among students enrolled in SEN schools is highest compared with other disabilities. Autism is also reported as a common disability among learners in SEN schools. Added to that, it is evident that boys suffer from a higher rate of disability compared with girls enrolled in SEN schools. The least common disability is visual impairment. *Figure 3* shows that the enrolment rate in SEN schools is 67 per cent male students and 33 per cent female.

Figure 3: Enrolment in SEN schools by gender, 2020

Source: Statistics Mauritius (2020).

As per the Education Card report, developed by the MoETEST, there were 72 SEN schools in March 2019, the majority of which were run by NGOs in collaboration with the Roman Catholic Education Association (RCEA).

Overall data in SEN education

Figure 4: Expenditure on education as a percentage of total government expenditure (2018–2021)
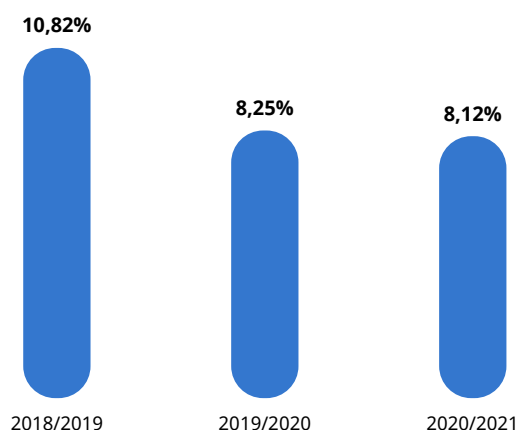
Source: Statistics Mauritius (2020).

Figure 4 illustrates government expenditure on education for 2018/2019, 2019/2020, and 2020/2021. There was a drop of 2.57 per cent from 2018/2019 to 2019/2020. Despite the unprecedented COVID-19 crisis that has negatively impacted world economies (including Mauritius), there was only a slight decrease of 0.13 per cent in the education sector from 2019/2020 to 2020/2021. These data also portray the government's commitment to invest in education and to enhance development in this sector (*Figure 5*).

Figure 5: Government expenditure on education by sector, 2018/2019 – 2020/2021
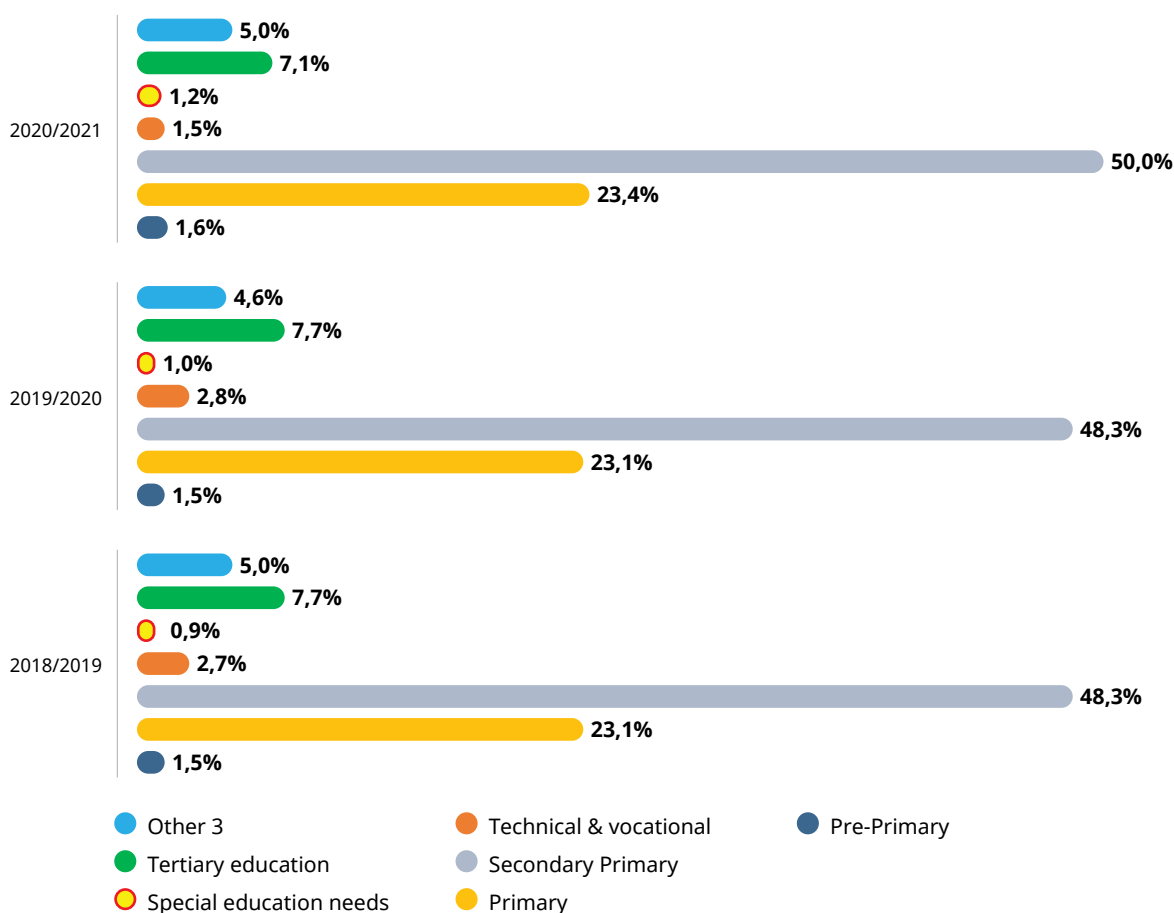
Source: Statistics Mauritius (2020).

There was a constant increase in government spending in the field of SEN, from 0.9 per cent to 1.0 per cent and, finally, to 1.2 per cent for 2020/2021. It is equally important to highlight that this was possible even though expenditures in the education sector saw a slight decrease due to the negative financial impact of the pandemic.

Enrolment in SEN schools

Figure 6: Enrolment of male and female students in SEN schools, 2015–2020

● Male   ● Female

	2015	2016	2017	2018	2019
Male	1 477	1 606	1 681	1 745	1 832
Female	824	909	913	911	958

As statistics noted in *Figure 6* show, enrolment for boys is consistently higher than that of girls in SEN schools. These data corroborate the data on disability type, where the number of boys suffering from those disabilities exceeds that of girls. *Figure 7* and *Figure 8* present related data.

Figure 7: Age group distribution of SEN learners, 2015–2020

● 3-5 age group
● 6-10 age group
● 11-15 age group
● 16-20 age group
● 21 & over

	2015	2016	2017	2018	2019
3-5 age group	100	98	73	74	86
6-10 age group	693	813	853	862	938
11-15 age group	857	950	1 068	1 090	1 130
16-20 age group	437	499	507	477	542
21 & over	214	155	93	542	94
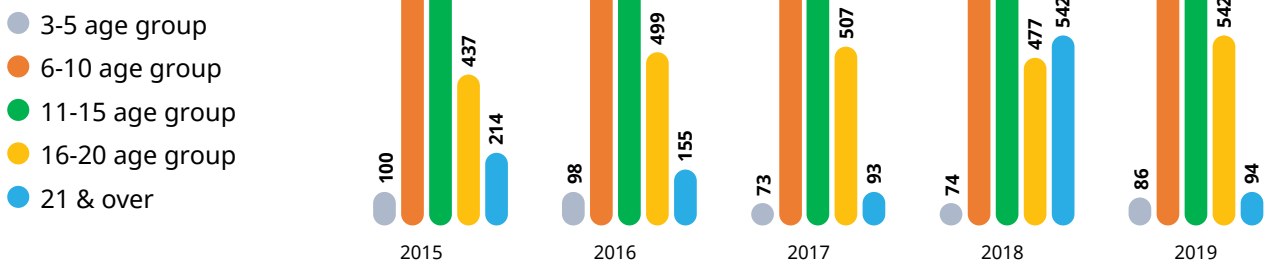
The data reveal that the age group of 11–15 was the largest age group of learners with SEN for five consecutive years (2015–2019). Similarly, learners with SEN who are 21 years and over was high in 2018, compared with other years.

Figure 8: Number of teaching staff from 2015–2019

● No. of teaching Staff

	2015	2016	2017	2018	2019
No. of teaching Staff	387	404	411	444	468
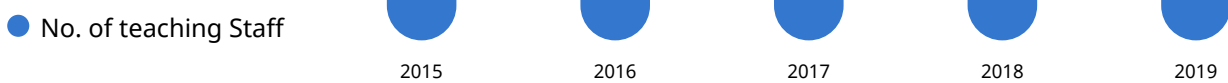
There was a gradual increase in the number of teaching staff from 387 (in 2015) to 468 (in 2019). This represents an approximate rise of 3.8 per cent in the recruitment of teaching staff in SEN schools since 2015.

Figure 9: Distribution of SEN schools by district and type of administration, 2020

● NGO /RCEA integrated   ● Government integrated unit

District	NGO /RCEA integrated	Government integrated unit
Plaines Wilhems	20	7
Flacq	5	3
Port Louis	6	1
Rivière du Rempart	5	2
Grand Port	4	3
Rivière du Rempart	5	2
Pamplemousses	2	3
Black River	3	-
Moka	2	1
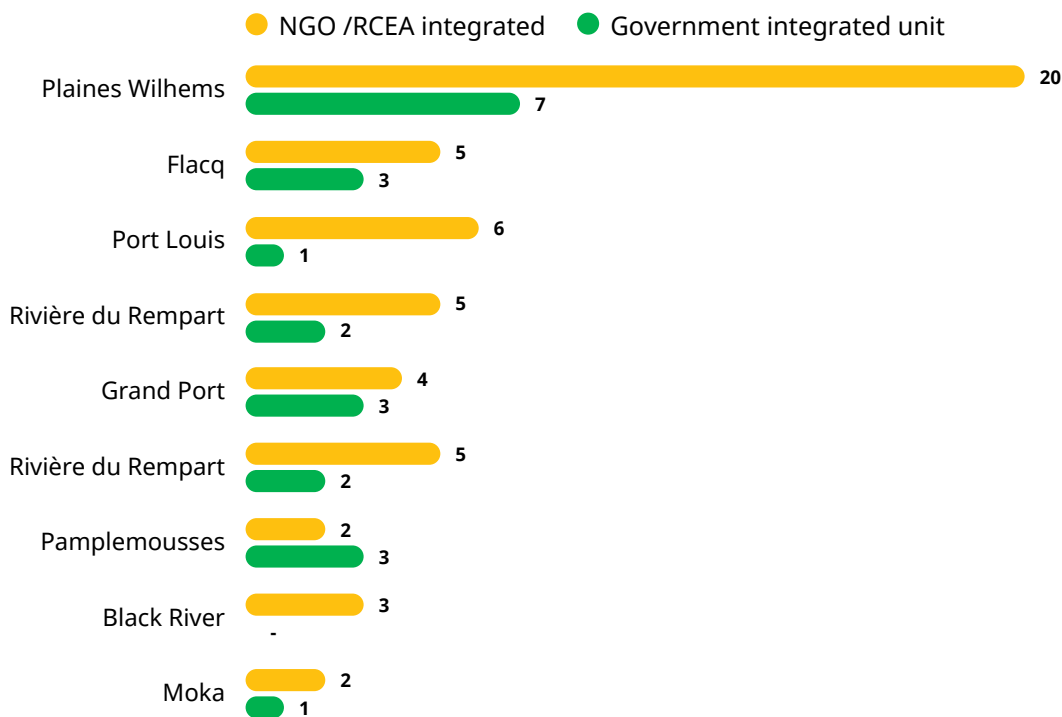
Source: Statistics Mauritius (2020).

As *Figure 9* shows, it is apparent that more SEN schools are run by NGOs/RCEA than by the government in all nine districts of Mauritius. The district of Plaines Wilhems has the highest number of SEN schools, while the districts of Black River, Moka, and Savanne have the fewest SEN schools. Here, it is vital to point out that the district of Plaines Wilhems has the largest population among the nine districts. It is also worth noting that there is no Government Integrated Unit in the district of Black River. SEN schools run either by the government or by NGOs/RCEA are distributed throughout the districts of Mauritius.

Figure 10: Enrolment in SEN schools by gender and district, 2020

● Female   ● Male

District	Female	Male
Plaines Wilhems	404	855
Flacq	107	213
Port Louis	123	182
Rivière du Rempart	54	121
Grand Port	51	118
Rivière du Rempart	47	101
Pamplemousses	50	93
Black River	45	63
Moka	13	33
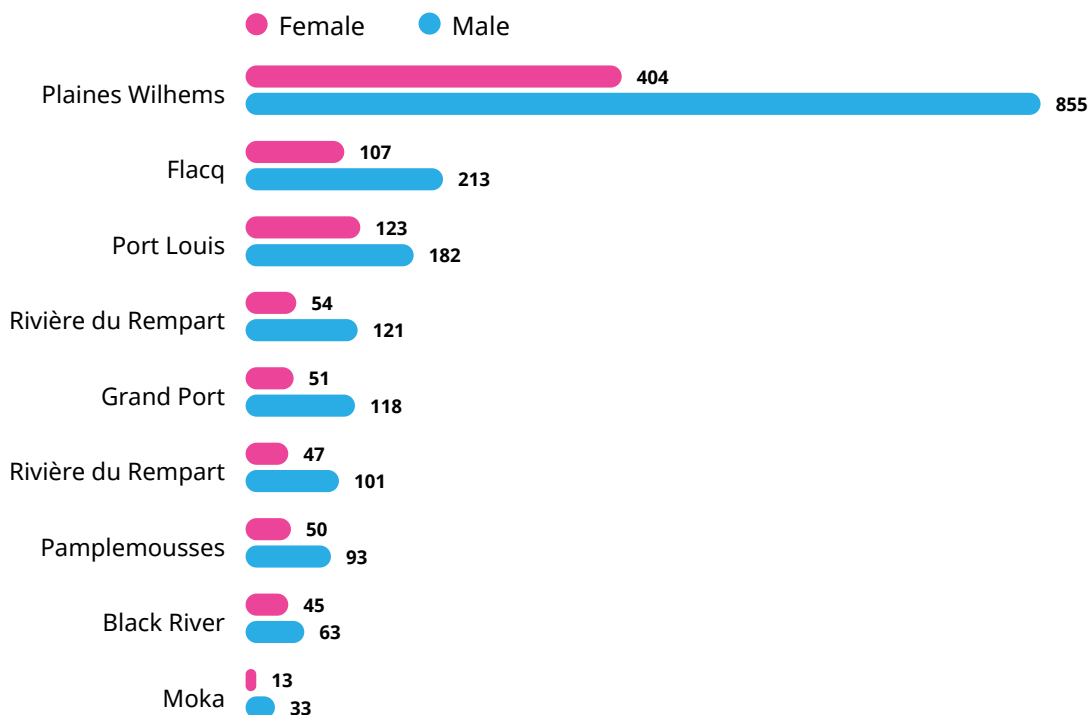
Source: Statistics Mauritius (2020).

The district of Plaines Wilhems has the highest enrolment in SEN schools while the district of Moka has the lowest. These data match that of the distribution of SEN schools in the districts. The enrolment of boys exceeds that of girls in all the districts. In six of the districts, the ratio of boys to girls is 2:1 (*Figure 10*).

Figure 11: Personnel in SEN schools by gender, 2020
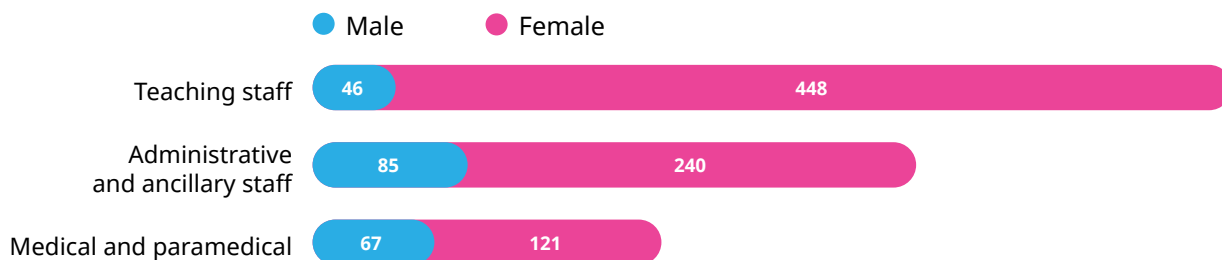
Source: Statistics Mauritius, 2020.

In Mauritius, teaching is a female-dominated profession. More than 90 per cent of the teaching staff in SEN schools are female. Similar observations are made with regard to the administrative and ancillary school staff, as well as the medical and paramedical personnel. See *Figure 11*.

Figure 12: Personnel in SEN schools, 2018–2020

- Teaching staff
- Administrative and ancillary staff
- Medical and paramedical

Source: Statistics Mauritius (2020).

There was a slight increase in the number of teaching staff, along with an increase in administrative and ancillary school staff, from 2018 to 2020 (*Figure 12*). However, there was a slight drop from 97 to 95 medical and paramedical personnel from 2018 to 2019. Then, in 2020, the number nearly doubled in that group.

COVID-19 and learners with disabilities

According to Prensky (2001), the digital age is the era whereby individuals are grouped based on the period they were born and their relationship with digital technologies. Hence, the term 'digital natives' was coined to denote people born during or after the advent of digital technologies. Kivunja (2014) estimated this digital period as being the year 1980 and referred to it as the birth year of the digital natives.

Digital natives tend to be 'fluent' with digital technologies such as computers, video games, email, mobile phones, and the internet. Prensky (2001, 1) argued that technology had radically altered the ways that today's students learn, which explains why they 'think and process information differently than their predecessors'. In the same year, Prensky (2001) claimed that digital natives are multitasking learners, a sentiment echoed by Veinberg (2014). In contrast, those born before that period were referred to as 'digital immigrants'

as they lived in an analogue period before moving to a digital world (Joy, 2012)[11]. Nevertheless, they have embraced several aspects of the new technologies and are more likely to take up digital media as a secondary source of information (Prensky, 2001). Interestingly, DeGraff (2014)[12] claimed that digital natives tend to view the world in a way where everyone is equal and that there are no hierarchies or boundaries, while digital immigrants are more likely to divide the word into hierarchies and set boundaries driven by structural institutions such as marriage, religion, and government.

Key implementers of open and distant learning (ODL) solutions – such as MoETEST, Mauritius Institute of Education (MIE), NGOs, Disabled Peoples' International (DPI), Special Education Needs Resource and Development Centres (SENRDCs), Government Integrated Units (GIUs), and disabled persons' organizations (DPOs) – strongly believe that learners with disabilities deemed to be digital natives are more responsive to technology. Indeed, this case study revealed a positive correlation between learners with disabilities and their interactions with technology as compared with a negative correlation between some teachers and most parents (categorized as digital immigrants) during the pandemic.

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11   https://edition.cnn.com/2012/12/04/business/digital-native-prensky/index.html
12   https://jeffdegraff.com/blog/2014/06/digital-natives-vs-digital-immigrants/

Objectives and methodology

Objectives

The research was guided by the following objectives:

- Outline the main contributions of institutions in facilitating integration of information and communication technology (ICT) in SEN education during the pandemic crisis.
- Examine the relevance, efficiency, and effectiveness of technological innovations employed in SEN education.
- Analyse the major barriers impeding the implementation of ODL solutions in SEN education.
- Determine the promising innovative technological practices and whether they are potentially sustainable and replicable in a post-COVID environment.
- Propose policy recommendations to promote and encourage innovative and pervasive use of ODL solutions for learners with disabilities as a post-COVID recovery plan.

The objectives assisted in formulating the following key research questions:

- What were the major contributions of the identified institutions in facilitating integration of ICT in SEN education during the pandemic?
- Were the technological innovations employed in SEN education equitable, inclusive, relevant, efficient, and effective?
- What are the main barriers impeding the implementation of ODL solutions in SEN education?
- What are the promising innovative technological practices that are potentially sustainable and replicable in post-COVID environment?
- What are the policy recommendations to promote and encourage innovative and pervasive use of ODL solutions for learners with disabilities as a post-COVID recovery plan?

Methodology

The study aimed to understand the relevance, effectiveness, and efficiency of the use of ODL solutions during the COVID-19 pandemic. An understanding of these areas is necessary to determine promising innovative technological practices and recommend policy interventions for learners with disabilities for sustained ODL practice in post-COVID environments.

A case study method was used, allowing the researcher to investigate the use of ODL solutions for learners with disabilities during the pandemic, and to formulate recommendations for a post-COVID recovery plan for the effective and efficient use of technology in an inclusive and equitable manner. The case study approach also enabled the researcher to elicit rich data relating to the range and reach of disability-inclusive ODL solutions. This was supported with concrete examples that illustrate the achievements and the challenges encountered in ICT implementation during COVID-19 and was used to recommend a recovery plan for sustained ODL practices in post-COVID environments.

The two data collection instruments used were online questionnaires, followed by online interviews.

The participating institutions were MoETEST, NGOs, Government Integrated Units (GIUs), SENRDCs, DPI, DPOs, the United Nations, Inclusion Mauritius, and MIE.

Findings

In a bid to provide access to learning opportunities using ODL solutions, active participation among a number of institutions was evident. Within the government sector, collaboration took place among MoETEST, MIE, GIUs, and SENRDCs in partnership with Open University and the Mahatma Gandhi Institute. NGOs worked in collaboration with Disabled Peoples' International, Service Diocésain de L'Éducation Catholique (SeDEC), DPOs, Inclusion Mauritius, ACTogether, and the National Productivity and Competitiveness Council. The goal of the collective effort was to ensure continuity of learning that is accessible, inclusive, and equitable.

Learners with disabilities were able to use ICT to continue their studies from home. The enthusiasm, level of confidence, and intrinsic motivation of learners engaged them cognitively in the learning process. In this manner, a gradual change in learners' attitudes towards ICT was noticeable, resulting in a positive impact on the learning process. In doing this, most of the learners with disabilities were able to incrementally take control of their learning. It was observed that learners were able to better communicate with their peers; this improved their communication and social skills. In contrast with in-school situations, learners often benefited from the support of additional teachers (other than their class teacher) with close monitoring from the school and paramedical teams. The emotional support, which was crucial for learners with disabilities during the disruption of the routine school life, together with continuous support and monitoring, made it possible for these learners to sustain ODL practices.

All key stakeholders concurred with the interventions of ODL solutions to democratize access to learning for students with SEN and firmly believed that all children should have the same rights and opportunities for learning, whether during COVID or non-COVID situations. This novel approach to learning will open new avenues to the way learners with disabilities learn, assisting them in a progressive manner to achieve better results and engage in lifelong learning modalities.

However, the impact of technology on learners with severe and profound disabilities was not positive. These learners were neither interested nor engaged with the technology. In fact, in certain cases, the screen time and exposure to the screen also resulted in hyperactive behaviours.

It is important to highlight that, even in the absence of an ICT policy in SEN education, the use of ICT is promoted by SEN institutions.

Despite the innovative initiatives of key stakeholders at different levels as a response to COVID-19 to ensure continuity of education through ODL solutions, a discontinuity of those efforts was observed post-COVID. Most of the SEN institutions continued the conventional mode of teaching and learning upon

'The use of technology was harnessed to motivate and engage children in interactive learning activities and promoted their cognitive and social skills.'
Project officer, NGO.

'Technology unlocks latent ability for those with communication difficulties.'
Manager, NGO.

'Increased ICT confidence among students motivates them to use the internet at home for schoolwork and leisure interests.'
The MoETEST team.

'Technology made it possible for lessons to be enhanced with individual learning events.'
The MoETEST team.

'ODL solutions allowed teachers a greater flexibility to apply differentiation in their instruction.'
The MoETEST team.

'The success of innovative attempts to use technology is attributed to all who responded positively to a sudden change.'
Director, NGO.

'ICT enables greater learner autonomy.'
The MoETEST team.

the reopening of schools. One of the major reasons cited was that Mauritius was declared COVID-safe. However, the cause and effect of the disruption of those initiatives were also related to non-COVID situations as the existing diverse factors; the lack of leadership, resources, training, and willingness to change was still impeding the sustainability of ODL practices. It is equally important to note that the tendency to return to normal life – to return to the comfort zone – was considered as a preferable option.

On the other hand, lessons learned from the pandemic enabled some NGOs to scrutinize their school teaching and learning strategy of inbuilt ODL solutions to better prepare for uncertainties and mitigate any further disruption of education. These NGOs are embarking on ODL migration in their organizations from the next academic year that aim to view the learner as a whole by empowering the immediate SEN community. This phase-wise approach consists of an inclusive series of ODL events that will be introduced for beneficiaries including teachers, learners, school personnel, and parents. The ODL events consist of:

- professional development of trainers in the use of ODL solutions,
- training of learners with disabilities in the use of ODL solutions in their learning,
- basic ICT skills short courses for school personnel and parents,
- hosting an e-learning portal to connect all stakeholders.

Taking into consideration the significance of a smooth transition from the traditional to the ODL mode, distance mode drill sessions have also been planned, leading to the actual running of distance modes of learning once or twice per month. The drill sessions will simulate the actual ODL sessions to understand the operating processes and identify associated opportunities and challenges to further enhancements.

At the level of MIE, a sign language expert has been recruited as a resource person to develop inclusive learning resources; video productions will also include sign language, for example. In addition to this, primary books are being translated into Braille, and secondary books will also be translated. It is firmly believed that translation is the initial step, but a form of adaptation is crucial. Two major changes addressed in (post-COVID) SEN teacher education programmes were the mode of delivery and the method of assessment. Most of the modules were conducted on Microsoft Teams, and in some cases social media (WhatsApp) and Zoom software were used. The mode of assessment has been adapted to include more coursework and project presentation, and a greater use of technology was encouraged for assessment of large groups of students.

'Mindset change is a determining variable to trigger and sustain change.'
Director, MIE.

'We learnt the hard way and that was an opportunity to self-evaluate and improve further.'
Teacher, NGO.

'The technology universe is constantly evolving and transforming the world of education. As a result, it is crucial to understand how to teach differently to learners who learn differently in this digital age.'
Manager, NGO.

'Wishful thinking is appreciated; the right policy is no doubt fundamental but a change in mindset supersedes all.'
Director, MIE.

Technological innovations in SEN education: Relevance, effectiveness, efficiency, impact, and sustainability

Within the scope of the unprecedented crisis caused by the pandemic, and limited access to resources, various ODL solutions were initiated at different levels, namely: MoETEST, MIE, NGOs, DPOs, and DPI, and at a personal level by teachers to provide adequate and timely support to learners with disabilities. These efforts from different quarters, and at different levels, culminated in innovations in technology identified as unique, meaningful, impactful, relevant, efficient, effective, and potentially sustainable in post-COVID environments.

The SEN Unit of the MoETEST played an instrumental role in ensuring the continuity of learning for students with disabilities. The SEN Unit stepped in at the outbreak of the pandemic and consulted with various stakeholders to support learners with SEN effectively and efficiently. The ministry sent an expression of interest to all SEN teachers who wished to participate in the production of educational videos; many of them reacted promptly and enthusiastically to this request. The SEN Unit encouraged SEN teachers to communicate with their pupils and parents through e-learning platforms, social groups, and social media. A skeleton team was in constant contact with all SEN teachers through respective school heads.

The MoETEST entrusted MIE to develop materials for virtual learning during lockdowns. MIE was at the forefront and was pivotal in the design, adaptation, and production of learning materials to ensure continuity of learning for learners with disabilities.

The panel members used WhatsApp and Microsoft Teams to communicate and collaborate while producing digital resources. 'On-the-spot learning' took place as the SEN panel had to master video-making techniques, adapt educational resources, and produce relevant, activity-based videos to engage learners with instructional activities. A series of vetting measures was inbuilt in the design, development, and implementation phases to ensure the delivery of quality videos. The online learning materials were designed with an evaluation approach in mind where diagnostic and formative questions, along with a self-assessment grid, were incorporated in the activities. The evaluation element of the learning tools and videos consisted of multiple choice or structured questions that students were to answer on their own in a set time before being given the solution; this allowed them to immediately be informed if they had successfully answered or not. Other videos, aimed at improving fine motor skills, included tests to ensure that students were able to synthesize their knowledge and produce desired final outcomes. These videos were broadcast on the national television on weekdays on specific

'Each child has a special need and we have to be responsive and act responsibly.'
Manager, NGO.

'We were caught unaware, and we were in the learning mode as much as in the production mode.'
Director, MIE.

'In an unsettled situation, effort from everyone is important and how to learn differently is most essential.'
Teachers, NGO.

'The pandemic resulted in reorienting the role of teachers.'
Director, NGO.

'The SEN panel used a lot of ingenuity, creativity, and resourcefulness based on their own expertise to plan network and developed video materials.'
Director, MIE.

channels at different times of the day to maximize reach and efficiency. This further facilitated access to learning for students who did not have mobile devices and/or internet connectivity in their homes. The videos were also available on the MIE portal, which was accessible anytime, and from anywhere.

Around 32 videos were produced during the confinement period, varying in terms of grades, levels, subjects, and topics, as well as objectives and targeted areas of development. For example, some videos targeted primary school readiness and addressed topics such as Myself, My Senses, My Family, and My House. A wider array of videos encompassing prayer, breathing exercises, and breathing techniques through demonstration; Mother's Day and Father's Day; and design techniques for creative greeting cards for parents were also developed. It is important to point out that some of the videos were bilingual (English and Creole) to facilitate learners' understanding. Two informative videos on COVID-19 were also developed to provide greater awareness of COVID-19 and to enable learners with disabilities to deepen their understanding about the virus and the precautionary measures that they should be taking.

The context of NGOs (active members of DPOs or DPI) differed given that there was a disparity among leadership of the heads of the organizations, existing learning environments, technological resources, availability of digital tools, number of trained teachers in ICT, digital literacy of teachers, and parents, along with differences relating to learners' families and their socio-economic backgrounds. Hence, the contributions and experiences of each NGO were unique in the use and exploration of ODL solutions, both during and after COVID. Not all NGOs were able to embrace ODL, as many learners with SEN hailed from vulnerable families; this hindered access to this novel mode of learning. Nonetheless, it is worthwhile highlighting that a number of NGOs used the support of technology to reach out to learners, ensuring that they were able to connect with their learning at a distance. All the NGOs affirmed that WhatsApp was the most appropriate technological tool that was accessible, useful, relevant, effective, and efficient given its ease of use and popularity among parents. In fact, WhatsApp was identified as the tool that eased the transition from traditional face-to-face teaching to ODL during the lockdown. This substantiated the appreciation and acceptance level of parents of the new mode of learning during the pandemic crisis; indeed, the collaboration of parents was key during the confinement period. Similarly, laudable initiatives of certain NGOs are acknowledged as these organizations closely monitored the evolution of the crisis in the world and they prepared online teaching and learning strategy also referred to 'Online Learning Strategy' or 'Home Schooling Programme – Let's get Digital' prior to the lockdown in Mauritius.

A set of procedures guided the implementation of this innovative approach to teaching and learning. The initial phase involved the verification and updating of contact details of all parents, teachers, school administration, and paramedical teams. Guided by the philosophy of distributed leadership style, different

'As an NGO, we are much freer to take action and implement it in a much quicker way compared with being in the government sector.'
Project coordinator, NGO.

'Every action needs to be legal and for the benefit of the school.'
Manager, NGO.

'We had to embark on digital platforms to cope with the disruption of traditional pedagogical methods amid the coronavirus crisis.'
Manager, NGO.

WhatsApp groups with different responsibilities at different levels were created, namely: (a) WhatsApp group for parents/teachers and paramedical team; (b) personalized WhatsApp group based on learners' profile; and (c) WhatsApp control group consisting of teachers, school management, and paramedical team. Parents were invited and encouraged to start using their WhatsApp group twice a week to be updated with school-related information prior to the announcement of the curfew. In certain specific cases, the Zoom application was also used by schoolteachers for communicating with some parents. With a view to support all learners in an inclusive and equitable manner, teachers prepared homework to be done during the confinement period and submitted hard copies of those to learners, following up through phone calls as an alternative way to reach parents who did not have access to WhatsApp or Zoom in order to monitor the progress of those learners.

The educational activities consisted of parent–child engagement activities, fine and gross motor exercise tasks, games, empowerment, and fun activities and were done under the guidance of the school team in collaboration with parents. It is interesting to note that similar efforts were made for learners with disabilities who were in the pre-primary and pre-vocational sections. Upon the official announcement of a complete lockdown, ODL was initiated by the respective organizations where teachers sent the timetables of all classes to the parents and solicited their support during those sessions. The same philosophy of the timetables during school time was practised so as not to overly unsettle the learners.

The first two weeks was the immersion phase. Parents played a vital role in the informal learning where they were responsible for taking pictures of the completed tasks and videotaping kinaesthetic activities and sending these to the teachers. The normal school calendar was followed, and during the holiday break, no online sessions were held. The set goal to ensure continuity of learning for students with disabilities in an inclusive and equitable manner was attained and those organizations involved celebrated the technological innovations: they are looking forward to replicating similar approaches in a more reinforced manner in the near future.

> *'The SEN sector is one of the sectors which is now fast evolving. But the ministry is still in the development phase of an appropriate curriculum, inclusive environment, and also recognition of the work of NGOs in the SEN sector.'*
>
> **Manager, NGO.**

Barriers in the context of Mauritius

One of the strongest messages attributed to the unprecedented COVID-19 crisis was the recognition of existing barriers constraining successful use and sustainability of technology in inclusive and equitable education. Although the government has continuously advocated for the integration of technology in teaching and learning, the impact has been small. Likewise, MIE has also been supportive of this approach but with insignificant effect.

A number of barriers related to COVID-19 and non-COVID environments have been identified at different levels that still hinder the effective use of ODL in education of learners with disabilities. These are classified as:

- physical barriers, where the inclusive ODL learning environments and digital resources were not accessible;
- content barriers focusing on technology-supported pedagogy, as along with the assessment for and of ODL;
- financial barriers: for example, SEN NGOs face financial constraints to cover the cost of technological infrastructure and specialized hardware and software. The families of learners with disabilities are more likely to experience socio-economic disadvantage which may impede access to digital devices or the internet;
- cognitive barriers for learners with severe to profound disabilities;
- competence and skill barriers where the teaching team lacks digital skills to adopt ODL solutions to adapt learning – the parents' lack of knowledge of technology use can also prevent them from participating in online activities;
- instructional barriers including leadership of institutions and support from them;
- mindset barriers related to resistance to change and to work collectively and attitudes towards technology.

The importance of urgently addressing these barriers was more apparent during the sudden disruption of education caused by the pandemic.

'We cannot succeed if we abide by the normal 8 a.m. to 3 p.m. teaching hours within the four walls of the classroom.'
Director, MIE.

'Inequality in the SEN sector still prevails. Inequality of fund distribution and recognition of SEN staff in terms of salaries and benefits continue to be widespread. NGOs do not have direct government funding to equip all SEN schools with required, essential, and basic digital tools and facilities. Financial support from the government is crucial if we want to sustain the access to technology and learning for learners with disabilities.'
Manager, NGO.

COVID-19 and learners with disabilities: Post-COVID-19 recovery for policy and practice

COVID-19 has revealed vulnerabilities, but at the same time has unleashed the resourcefulness, creativity, and critical minds of people in all fields including education.

The pandemic pushed teachers to engage in self-learning so that they could teach differently in this society as it faced rapid technological transformations. Teachers were left on their own to infuse their experiences to creatively design and develop adapted pedagogical resources for learners with disabilities to engage them in the learning process. Thus, teachers identified a need for adjustment to their existing practice and enrolled in free online courses, explored creative free software, and consulted relevant YouTube channels and open educational resources (OERs). Inevitably, teachers connected with other teachers to share good practices and acted as critical friends. By finding the most convenient ways to design, develop, and deliver meaningful, relevant, and interactive lessons as part of ODL, a shift from consumers to producers of personalized short videos were observed among many teachers.

Some other interesting findings in areas of technology and access to learning for learners with disabilities relating to post COVID-19 recovery for policy and practice were noted:

- exploiting the full potential of technology in SEN education;
- promoting access to quality technological infrastructure and hardware and software for the design, development, implementation, and delivery of SEN-friendly pedagogical resources using ODL solutions;
- the availability of digital devices to learners to access learning resources and engage in ODL;
- basic training in ICT skills to help parents support their child and participate in informal learning remotely;
- encouragement of a collective approach in terms of sharing of good practices among SEN institutions.
- effectiveness of providing relevant and current professional development programmes to teachers to keep pace with the changing teaching and learning environments so that they might become more confident in using technology.

It was noted that learners and teachers in NGOs should receive the digital devices – such as tablets – as was the case in government schools, SENRDCs, and integrated units. It was firmly believed that there should be an equal sharing of resources among all learners and teachers, irrespective of their organizations.

'COVID-19 brings along the seeds of hope to further unlock human potential, nurture relationships and values in a unified manner and explore new possibilities to unlearn so as to relearn.'

Director, NGO.

'The pandemic crisis calls for collective actions.'

Director, NGO.

'Before COVID-19, I knew how to prepare teaching aids and used video resources mainly from YouTube, but now I can confidently produce adapted videos for my pupils.'

Teacher, Government Integrated Unit.

'We should be proactive and see how the world is changing, build up tools and materials which can cater for learners with disabilities at a distance.'

Manager NGO.

'Mauritius is small and thus manageable. If proper policies, regulations, and a regulatory body are set, wonders can happen for learners with disabilities.'

Manager, NGO.

Recommendations for the role of technology for learners with disabilities in a post-COVID environment/recovery plan in Mauritius

The identified gaps for sustained ODL solutions in SEN education were categorized as:

- national ICT policy for SEN education,
- curriculum design and material development,
- teaching and learning process,
- infrastructure and connectivity,
- professional development,
- school–home partnership,
- quality assurance,
- unified implementation strategy,
- working with partners.

The gaps identified were used to write recommendations for improving access to and quality of education of students with disabilities during the pandemic with the help of ODL solutions (*Figure 13*).

Figure 13: Recommendations for ODL solutions in SEN education

National ICT policy for SEN education

The Education Act 1957 was amended during the pandemic crisis through the COVID-19 (Miscellaneous Provisions) Act 2020 to provide, among other things, for the dispensing of distance education and online learning programmes during the temporary closure of educational institutions. Although this was regarded as a commendable decision, a number of recommendations were put forward to ensure that diversity, access, equity, and inclusion are ingrained in ODL practices. The MoETEST should advocate for a national ICT policy for SEN education, drafted in consultations with all key stakeholders in the SEN sector. This top-down policy decision will strengthen technology integration within SEN education.

It was acknowledged that in this digital era, technology is a catalyst for teaching and learning and is associated with several benefits for those students who are digital natives. The experiences gained during the pandemic reinforced the understanding of the urgent need to implement ODL in current teaching practices. However, it was emphasised that tailor-made ODL solutions for specific disabilities should be focussed on the capacity building of teachers, assistant teachers, carers, and heads of schools – and that customized and ongoing training should be a priority. It further highlighted that a mindset shift is required to enable a smooth transition from the traditional classroom to an ODL integrated approach within the teaching and learning ecosystem.

Accessibility, equity, usability, reliability, affordability, efficiency, and inclusion – the attributes of quality education – should be thoroughly considered when designing any ODL solutions. In brief, ODL solutions for learners with disabilities should be guided by a SEN-centred approach.

> *'The first step in successful technology integration is recognizing the change that may need to happen within us and our approach to teaching and learning.'*
>
> **The MoETEST team.**

Adapted SEN curriculum

In line with the various government initiatives and support for SEN education, it has been emphasized that an adapted curriculum for SEN learners is long overdue. Hence, an urgent call for reinforcing the existing mechanism, where attention should be given to incorporating adapted ODL solutions for learners with specific disabilities in the new curriculum. Alongside this, the use and contextualization of existing OERs and digitalization of disability-friendly resources should be an integral part of the curriculum.

An equitable and inclusive approach in the design and development is strongly felt to the point that the SEN curriculum panel at MIE has to invite panel members on a rotating basis, ensuring that diverse perspectives and experiences are incorporated. In doing this, a broader number of SEN educators will be trained. MIE's engagement in the translation and of primary books in Braille for visually impaired students is viewed as significant. However, an inclusive approach should be broadened to include all disabilities to democratize access to resources for SEN learners. Similarly, the integration of sign languages in digital resource

production is highly recommended. It is also proposed to have formative assessments to allow learners to demonstrate learning in a variety of ways. It is further suggested that guides be developed for school leaders, teachers, psychologists, occupational therapists, and parents to explicitly demonstrate the SEN curriculum implementation process and define the roles and responsibilities of each key stakeholder for a unified and an integral inclusive approach. Research in making informed decisions across all levels should be part of the curriculum and carried out in a systematic and timely manner.

Teaching and learning continuum

Experiences gathered from the distance mode of learning adopted during COVID-19 has proven that a shift from conventional teaching to ODL is possible. It is highlighted that the type and degree of disabilities of learners vary. Hence, teachers' guides should illustrate a continuum of learning including all cognitive, affective, and behavioural changes throughout a wide array of disability-specific ODL-based activities to guide them in designing and implementing an inclusive learning environment. Moreover, the existing individualised educational plan should be reviewed to integrate disability-specific ICT skills and competencies with short-, medium-, and long-term objectives to accommodate SEN learners.

For successful integration of technology, it is strongly advisable to have trained teachers, motivated learners; adapted learning content, activities, and environment; a supportive school ethos, and parental involvement. As such, teachers' preparedness, enhanced confidence, and higher levels of competence in using ODL solutions in their teaching will be achieved in an incremental manner: this can also positively influence the mindset shift of teachers in embracing technology. A community of practice should be encouraged and nurtured within school culture to promote the sharing of good practices and to create new knowledge to advance the domain of professional practice in the use of ODL solutions for learners with SEN. The heads of SEN schools play a pivotal role in articulating and sustaining the collective approach within the school ethos.

To drive this change, school leadership is vital. It was further proposed to have regular round tables, regional workshops, and international conferences on ODL initiatives in SEN education. This unified force with shared goals will bring visibility to SEN learners, both regionally and internationally.

Technological infrastructure

There were recurrent arguments that school technological infrastructure must be reviewed, reinforced, and measured against required quality norms: this contributes to quality ODL practices in SEN education. These norms include broadband internet connectivity; robust hardware; software for specific disabilities; laptops or tablets for teachers; and adapted classrooms and mobile

'Greater consideration should be given to the reality of the classroom because every child is unique, and teaching depends on contextual reality.'

Director, MIE.

A manager of an NGO referred to 'the creation of an online hub dedicated to the SEN community to craft inclusive and equitable digital solutions and allow sharing and discussion of innovative, affordable, and replicable approaches.'

projecters. In addition, timely maintenance and upgrading of the technological infrastructure is essential for sustainability. Heads of schools, together with teaching staff, should develop a school ICT policy which will be derived from the national ICT policy for SEN education. This should be an integral part of the school development plan.

Teachers are encouraged to adopt affordable and accessible ODL solutions that become enablers of ODL implementation. In so doing, these initiatives will lead to a positive working climate resulting in a responsive culture to ODL practices in education. The development of a SEN portal was strongly recommended to connect all stakeholders, including SEN schools, SENRDCs, NGOs, and relevant partners. Access to free internet and adapted digital devices for vulnerable families who have a child with a disability should be earmarked for the forthcoming budget as a social responsibility to provide equal access and learning opportunities.

Empowering key stakeholders

A diverse education workforce and empowering key stakeholders across all levels from the micro (school level) to meso (community level including parents) and macro levels (ministry level) should be in place to support inclusion in SEN education. This knowledge-pull approach must be embraced and valued in this digital era as successful implementation of ODL solutions in SEN education is achieved collectively.

MIE engagement to upgrade the educational qualifications of SEN personnel[13] – namely, managers, teachers, assistant teachers, and carers – is duly recognized. However, in this digital era, MIE is invited to design tailor-made training courses in terms of short courses, workshops, and seminars for SEN personnel in ODL solutions that can be replicated and sustained. The personalized continuous training in disability-specific techno-pedagogy was emphasized to boost the confidence and motivation of teachers. As a result, they are empowered to become designers of ODL solutions rather than being only consumers of ODL solutions.

A mix of leadership styles was important in driving and guiding ODL implementation and encouraging the sharing of good practices. Also, collaboration of therapists in designing and development ODL solutions was highly recommended. In a nutshell, SEN institutions should be active learning organizations that positively influence the quality of ODL solutions for learners with disabilities. The multidisciplinary team engaged with learners with disabilities should also benefit from capacity building in ODL solutions. Furthermore, familiarizing the students with ODL solutions was viewed equally vital, as there should be a smoothing transition from the conventional to the novel ODL practice to maintain sustainability.

'We need increased investment in the training of educators in technology whose roles have changed since the start of the pandemic.'

Manager, NGO.

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13   http://portal.mie.ac.mu/wp-content/uploads/2020/03/Special-Educational-Needs-Educational-Path.pdf.

Parental support and involvement was appreciated during the pandemic, as teachers were able to successfully implement ODL solutions with their support. This implies that parents should be active stakeholders in decision-making for ODL solutions at the level of the institution and training. Thus, informed and trained parents will be better equipped to provide additional support for their children at home.

School–home partnership

With strong communication, commitment, and relationships built on mutual understanding and trust, teachers and parents implemented distance education during the pandemic crisis. This shared learning space and responsibility strengthened the connections between school and home, creating opportunities for learning from home with technological support. Nevertheless, it is observed that the importance of school–home partnership is underplayed. Hence, the parents' vital role in the learning of their child should be acknowledged and valued, and opportunities should be created for including parents as informal learning partners.

Quality assurance

The SENA should collaboratively prepare a quality assurance policy for SEN education with the Health and Wellness directorate, Quality Assurance and Inspection Division, MIE, SeDEC, NGOs, DPI, Inclusion Mauritius, and DPOs. This document should describe the quality assurance processes, outcomes, and actions in SEN education, and should be available in all SEN institutions. Trained personnel should closely monitor all quality processes, outcomes, and actions in a timely manner.

Unified implementation strategy

It was agreed that an inclusive approach with a common goal has to be adopted by all major stakeholders in the SEN sector to facilitate the implementation of ODL solutions. With a dedicated team and a unified implementation strategy, the efficiency and effectiveness of monitoring every child's educational achievements and emotional behaviour will be a reality. This will contribute to improving access, inclusion, and quality of ODL integration in SEN education.

Working with partners

SEN education advocates a strong focus on willingness and collective decisions and actions. The holistic development of learners with disabilities involves partnerships among various stakeholders from education, health, and social services. Within the same context, it is highly recommended that a partnership be developed to support and sustain the integration of ODL solutions in SEN education. For instance, medical officers from the health services could advice on the type of technology used in SEN education in relation to the type and degree of disability.

'We need a strong synergy between the civil society in the disability sector and the government to better tackle issues regarding the educational needs of SEN learners.'

Project and Fundraising Manager, NGO.

The NGOs strongly felt that partnerships among NGOs, ministries, and private companies should be strengthened.

'Yes, more than ever, we continued ODL solutions in the post-COVID environment.'

Project and Fundraising Manager, NGO.

Conclusion

In conclusion, this case study has looked at the potential sustainability of ODL solutions as a post-COVID recovery plan by critically analysing their relevance, efficiency, effectiveness, impact, and sustainability during the pandemic, as well as aiming to understand the barriers impeding their successful implementation in both COVID and non-COVID environments. The contributions in terms of technological innovations within different layers in the education sector with a focus on SEN was scrutinized. One of the forceful messages that came through was the strong will to embrace technology in SEN education in an inclusive and equitable manner: the right to education for all also encompasses the right to equal resources for all. Key recommendations in this shift towards an inclusive ODL learning environment were outlined.

The health crisis has not only interrupted traditional schooling but has also revealed the inadequacies and inequities in our education system, including the SEN sector. As we move towards the COVID-19 recovery phase, it will be critical to reflect and act collectively with all partners in the SEN sector in fostering a resilient educational ecosystem to better guard against adversity. This will include a realignment between resources and needs, ensuring that learners with disabilities have equal learning opportunities within a supportive learning environment. In this sense, it is of paramount importance that government sectors, in close partnership with NGOs, DPI, DPOs, Inclusive Mauritius, and the private sector, react effectively and efficiently in regard to the recommendations outlined above. The nature of the shared decisions and actions will undoubtedly determine the success of the COVID-19 recovery practices.

'We still have to perfect our act.'

Director, MIE.

References

- DeGraff, J. 2014. Digital Natives vs. Digital Immigrants. THE BLOG, [blog] 16 June. Last accessed January 2021: https://jeffdegraff.com/blog/2014/06/digital-natives-vs-digital-immigrants/.

- Deursen, A.J.V. and Dijk, J.A.V. 2014. The digital divide shifts to differences in usage. New media & society, [e-journal] 16(3), 507-526.

- Joy, O. 2012. What does it mean to be a digital native? CNN, [online]. Last accessed January 2021: https://edition.cnn.com/2012/12/04/business/digital-native-prensky/.

- Mauritius Institute of Education. (2020). Special Educational Needs: Educational Path. Last accessed December 2020: http://portal.mie.ac.mu/wp-content/uploads/2020/03/Special-Educational-Needs-Educational-Path.pdf.

- Mauritius. 2016. Ministry of Education and Human Resources, Tertiary Education and Scientific Research. Nine-Year Schooling: Inspiring Every Child. Pont Fer, Phoenix: Open University of Mauritius. Last accessed December 2020: https://education.govmu.org/Documents/educationsector/nys/Documents/NYCBE%20Booklet.pdf.

- Mauritius. 2017. Ministry of Education & Human Resources. Norms and Standards for Special Education Needs Schools. Pont Fer, Phoenix. Last accessed December 2020: https://education.govmu.org/Documents/educationsector/Documents/Special%20Education%20Needs/6.%20Norms%20and%20Standards.pdf.

- Mauritius. 2017. Ministry of Education & Human Resources. Salient Features, Inclusive Education for Children and Youth with Special Needs in Mauritius. Pont Fer, Phoenix. Last accessed December 2020: https://education.govmu.org/Documents/educationsector/Documents/Special%20Education%20Needs/Salient%20Features%20Startegy%20Doc%20(1).pdf.

- Mauritius. 2017. Ministry of Education and Human Resources, Tertiary Education and Scientific Research. Policy Framework and Strategy Document 2017, Inclusive Education for Children and Youth with Special Needs in Mauritius: Concept to Reality. Pont Fer, Phoenix. Last accessed December 2020: https://education.govmu.org/Documents/educationsector/Documents/Special%20Education%20Needs/SEN_Strategy_2017_Final.pdf.

- Mauritius. 2018. Ministry of Education & Human Resources. Special Needs Schools Act. Pont Fer, Phoenix. Last accessed December 2020: https://education.govmu.org/Documents/educationsector/Documents/Special%20Education%20Needs/Special%20Education%20Needs%20Authority%20Act.pdf.

- Mauritius. 2019. Ministry of Education and Human Resources, Tertiary Education and Scientific Research. Free Education in Tertiary Education Institutions. Pont Fer, Phoenix. Last accessed December 2020: https://education.govmu.org/Documents/educationsector/Documents/2019/Communique%20250119.pdf.

- Mauritius. 2020. Education Statistics: Highlights. Port-Louis: Statistics Mauritius. Last accessed December 2020: https://statsmauritius.govmu.org/Pages/Statistics/ESI/Education/Edu_Yr20.aspx.

- Mauritius. 2020. National Laws on Labour, social security and related human rights. The Training and Employment of Disabled Persons Act 1996. International Labour Organization, NATLEX Database. Last accessed December 2020: www.ilo.org/dyn/natlex/docs/WEBTEXT/45308/65039/E96MUS01.htm.

- Mauritius. 2021. Prime Minister's Office. La ministre Daureeawoo réaffirme l'introduction du Disability Bill à l'Assemblée nationale. Port-Louis: Government Information. Last accessed December 2020: Service. https://gis.govmu.org/News/SitePages/La-ministre-Daureeawoo-r%C3%A9affirme-l'introduction-du-Disability-Bill-%C3%A0-l'Assembl%C3%A9e-nationale.aspx.

- Prensky, M. 2001. Digital Natives, Digital Immigrants Part 1. On the Horizon, [e-journal] 9(5), pp.1-6. Last accessed June 2019: https://library.mdx.ac.mu.

- UNESCO Institute for Lifelong Learning. Mauritius: Education and Human Resources Strategy Plan: 2020, issued in 2009. Last accessed November 2020: https://uil.unesco.org/document/mauritius-education-and-human-resources-strategy-plan-2020-issued-2009.

- United Nations. Universal Declaration of Human Rights. Last accessed December 2020: https://www.un.org/en/about-us/universal-declaration-of-human-rights.

- Veinberg, S. 2014. Digital native's attitude towards news sources. Public Relations Review, [e-journal] 41(2), 299-301.

Appendix

List of interviewees

Mrs Aneeta Ghoorah

Director
Primary, UNESCO and Curriculum Development and Evaluation
Ministry of Education, Tertiary Education, Science and Technology

Dr Neeshti Reetoo

Director, Health and Wellness
Ministry of Education, Tertiary Education, Science and Technology

Dr Om Nath Varma

Director
Mauritius Institute of Education

Miss Shabnaz Koodoruth

Temporary Assistant Permanent Secretary
Ministry of Education, Tertiary Education, Science and Technology

Mr Kaviraj Ramdhun

Senior Inspector
Special Education Needs Unit
Ministry of Education, Tertiary Education, Science and Technology

Mrs Jocelyne Beesoon

Director
Association de Parents d'Enfants Inadaptés de l'île Maurice

Morcellement Belzim

Active Member, Inclusion Mauritius

Mrs Kina Diop

Project and Fundraising Manager
Association de Parents d'Enfants Inadaptés de l'île Maurice (APEIM)

Mrs P Ullagen

Director
Association of Disability Service Providers

Mrs Atia Sultana

Director
Ranger Foundation Centre

Ignace Marie-Ange Helene de Cazanove

Project Officer
La Fraternite Mauricienne des Malades et Handicapes

Mr Bondy Poorasveensingh

Manager/Project Coordinator
Southern Handicapped Association

Miss Renooka Beejan

Head of Socio-Economic Development Unit
United Nations Development Programme
Country Office in Mauritius and Seychelles

Ms Pooja Gopee

Project Head
Inclusion Mauritius

Mr Vijay Lutchman

Deputy Head Teacher/Officer in Charge
SEN Curriculum Panel Member, MIE
SEN Research and Development Centre

Mrs Lalima Munnee

SEN Educator
SEN Curriculum Panel Member, MIE
J.T. Ramsoondar Government School (Government Integrated Unit)

Mrs Ferozia Hosaneea

Disability Rights Activist

About the author

Anuradha Gungadeen is Senior Lecturer in Open and Distance Learning, Centre for Open and Distance Learning, at the Mauritius Institute of Education. She served as a member of the National Education Reform Communication Committees during 2015–2016 and was the recipient of a number of prestigious fellowships. Her research interest focuses on emerging technologies for affordable, inclusive, and sustained education.