DIGITALL

A guide on Digital Adaptation Needs

2021

Funded by the Erasmus+ Programme of the European Union

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Introduction

About this Project

In the spring of 2020, the Covid-19 epidemic forced school systems across the globe to shut down without warnings, preparation or plans. As of mid-April 2020, the UNESCO estimated that 1.6 billion children worldwide were no longer taught in a physical classroom (UNESCO, 2020). As imagined, not all schools were able to face the switch with ease; while some teachers were able to adapt to distance learning easily, others, due to a lack of training and resources, struggled to adapt their lessons to the needs of their students. However, distance learning showed promise. New technologies, resources and methods were quite valuable. More than a year and a half later, the question is not whether things will go back to normal or not, but rather, how we can develop teachers' digital skills to ensure that all have a skill set usable both online and in classroom settings.

With this in mind, different organisations involved in fostering inclusion and increasing accessibility raised the question; **what about students with special needs?** What about students with Learning Disorders, students who are deaf or blind? Students who need special accommodations to fulfil their education? **How has the transition process been for them?**

As a result of intensive research, consideration with experts and specialists, discussion with partners from various backgrounds, the DigitAll project was implemented to improve inclusion for online learning, and to provide teachers with all the tools and resources available to improve their online teaching methods to be inclusive of all students and their specific needs.

To this end, the Project DigitALL is divided into 6 clear outputs, each reinforcing the training and knowledge of teachers regarding their digital and adaptation skills in an inclusive online sphere.

DIGITALL

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ISTITUTO DEI SORDI DI TORINO

GREEK MINISTRY OF EDUCATION AND RELIGIOUS AFFAIRS
REGIONAL DIRECTORATE OF PRIMARY AND SECONDARY EDUCATION OF WESTERN MACEDONIA

AiO
Association pour l'Innovation en Orthopédagogie

Colegiul Național - Doamna Stanca
Satu Mare

epralima
PROJETOS INTERNACIONAIS

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About the guide

The first output of this project takes the form of a guide that encompasses all the different aspects of inclusion for online teaching. Based on the survey of the School Education Gateway of June 2020, and the subsequent surveys led by the partnership of this project on over 500 respondents, this guide aims to reinforce the knowledge of teachers regarding learners with special needs (the various disorders and impairments, the challenges and recommendations), their understanding of online teaching and its usages, advantages and disadvantages, but also to increase their digital knowledge.

The guide is divided into 4 main parts. Part 1 presents the concept of online learning, with a brief introduction to the idea, then a complete overview of its challenges and advantages, as well as the current training of teachers in the acquisition of new digital skills. Part 2 provides a complete overview of the concept of special needs according to official accreditations, the various specific learning disorders, deafness and visual impairments, as well as a comprehensive coverage of the concept of inclusion and accessibility for all.

Part 3 highlights the challenges of our target audience in general, then focuses on the challenges faced by these learners in online learning settings. It is important to note that online learning is not only negative but that it also presents serious advantages for all types of learning, therefore a section of the guide will be dedicated to this idea.

Lastly, Part 4 provides extensive recommendations of good practice for adaptation of online learning teaching methods, covering a wide range of topics, from the layout of lessons to specific time and classroom management.

What is inclusion in digital learning?

To establish a strong base of knowledge, it is first necessary to clarify some concepts and ideas that are going to be recurrent in the reading of this guide. For this reason, this section rapidly introduces the key terms: Inclusion, digital learning, and accessibility to allow for an all-encompassing understanding of an ‘inclusive digital education’.

Inclusion is defined as: “the action or state of including or of being included within a group or structure”. It is not a new concept, nor is it complex, yet it has received, in recent years, an increasing amount of attention, especially in the field of education. In this sense, the European Commission promotes inclusive education as such:

> “Everyone has the right to quality and inclusive education, training and life-long learning in order to maintain and acquire skills that enable them to participate fully in society and successfully transition into the labour market” (European Commission, 2017) .

In 2017, inclusive education became part of the European Pillar of social rights, which marked the importance of social, educational and cultural dimensions of EU policies. Among the recommendations and guidelines produced by the Council regarding inclusion, education, key competences, and more, in 2020, the EU also implemented a Digital Education Action Plan (DEAP) that highlights the needs to support sustainable and effective adaptation of the education system to the digital age. **Digital education** is the innovative use of digital tools and technology during teaching and learning (UoE, 2018). With the Digital Education Action Plan, the focus shifted to developing a high performing digital education ecosystem and enhancing digital skills and competences for the digital transformation.

Therefore, it is not only a question of inclusive education anymore, but of an inclusive digital education. In this sense, a special focus is placed on inclusion in these new methods, specifically in gapping the digital divide, assistive technologies, appropriate training, technical supports, teacher competencies, and more. Thus, the question of accessibility remains a crucial foundation to lay these new approaches on. **Accessibility** is commonly understood as the practice of having websites and other online resources usable by as many people as possible. This includes people with disabilities or special needs, but also people from disadvantaged backgrounds with old computers, slow connections, mobile access only, etc. Indeed, while the shift to digital education is inevitable, it must be implemented in the best possible way for all. Therefore, a 21st-century digital education must be accessible, inclusive and provide long-lasting skills.

European legislation on the state of inclusion and e-learning in Europe

Historically, the right to quality education for all appeared in European directives in the middle of the 20th century when it was mentioned in Article 2 of the Universal Declaration of Human Rights (ECHR, 1950). In 1989, the United Nations Convention on the Rights of the Child (UNCRC) devoted articles 28 and 29 to recalling the obligation of free and compulsory primary education for all children. While the right to education is known and recognised by most European countries, the concept of school inclusion appeared in the legal texts in 1994, within the Salamanca Declaration (UNESCO). In this way, almost 92 countries have affirmed their willingness to commit their education systems to enrol pupils with special needs in regular classes. More recently, in 2006, the United Nations Convention on the Rights of Persons with Disabilities (CRPD) concretised the existing human rights obligations towards persons with disabilities. It invites States Parties to work towards developing a system of inclusive education at all levels (article 24) so that all students with special needs may have access to (...) inclusive, free and compulsory primary and secondary education, (...) general tertiary education, vocational training, adult education and continuing education" to take an active part in the social, cultural and economic life of tomorrow. It should be noted that inclusive education is then defined as a philosophy as well as a set of pedagogical practices likely to lead all students to acquire skills and take an active place in the school and community in which they find themselves (Tremblay, 2015).

However, despite the signature and ratification of legislation by the majority of European countries in favour of inclusion, it appears that researchers, politicians and professionals in the field are still debating the foundations of inclusive education, its necessity and the indicators allowing its implementation and verification (Keffalinou, Symeonidou & Meijer 2020). Thus, depending on the country and the way the school system is organised, 'inclusion' can be interpreted in many ways, ranging from the simple placement of pupils with special needs in ‘regular’ classes to the implementation of a genuine overhaul of reception and educational practices to enable these pupils to participate fully in school and later in social and professional life (Curchod-Ruedi, Ramel, Bonvin & Albanese, 2013). However, while the concept of inclusion remains multifaceted and complex, it

seems to be evolving in concert with the organisation of education in general. In this respect, digital education has become a priority for several years in response to the desire to adapt training to changes and new needs in society (European Commission, 2018). It has also progressively become a complementary priority to support inclusion by enabling young people with special needs to benefit from adapted tools to participate in a regular classroom and, later, in society. Challenging to implement due to a lack of time or teacher training, this shift towards digital technology was brutally accentuated with the arrival of Covid-19. Thus, the closure of schools, harmful in many respects, has had the merit of having stimulated the use of computer tools, mainly to propose online learning activities, and to limit the break with schools. Thus, educational teams have had to find the best way to equip students, offer online courses and involve distance students (Zalat, Hamed & Bobol, 2021).

So, has this transition been well received by young people with special needs and teachers? Have families been able to support home-schooling for their special needs children easily? Are teachers familiar with the concept of inclusion? How did they apply it to their online course? How often were they using technology in their lessons before the pandemic?

To answer these questions, the Erasmus + project “DigitALL” looked at the experiences of teachers, students with special needs and their families with e-learning.

Belgium, Portugal, Romania, Greece and Italy.

497 responses collected and analysed.

Below is a comparative table concerning the state of knowledge and experience of inclusive education by the respondents and the position of teachers in the different countries (Belgium, Greece, Italy, Portugal, Romania) about digital resources and online education through the responses to the questionnaires:

	State of inclusion	Status of digital use in schools	Experiencing the transition
B.	69.5% of the teachers do not feel familiar with the concept of inclusion. Thus 58% of the teachers find that their courses are not (or not very) well adapted to students with special needs, mainly due to lack of knowledge, time and means.	Before the pandemic, 45% of teachers used technology sometimes (not often) in a learning context, 14.5% never used them. 24% already used them often or very often. The use of technology tools for teaching was somewhat or completely new for 71% of respondents.	For 32.5% of teachers, the transition to digital education was difficult or very difficult. 44% found the change "neither easy nor difficult". For special needs (SN) youth and their caregivers, 57% found the transition "neither easy nor difficult" and 29% found it easy. 14% found it difficult.
G.	66.7% of respondents felt familiar with the concept of inclusion. However, only 28% felt that they offered lessons adapted to the needs of their students. 35% felt that their lessons were somewhat adapted but could be more so.	Before the arrival of covid-19, 35.5% did not use the technology often and 12.5% never used it in their course. 42% were already familiar with its use .	54% of respondents found the transition "neither easy nor difficult". 22.6% found it difficult and the same number found it rather easy. 46% of youth at SN found the transition "neither easy nor difficult," 23% found it difficult and 30% found it easy.
I.	93% are familiar with the concept of inclusion. 48.3% felt that they were running inclusive courses and 37.9% thought they were making their courses somewhat accessible.	Before the pandemic, 59% of teachers sometimes (not often) used technology in their lessons. 22% never used them. 18% used them often to very often. Thus for 87% the use of technology tools for teaching was also new for them.	50% of respondents found the transition difficult. 34% found the change "neither easy nor difficult". 60% of SN youth and their families found it difficult to switch to distance education and 40% found it easy.

P.	93% of the respondents said they were familiar with the definition of inclusive education. 53% of respondents felt that their lessons were mostly inclusive. 47% felt that they were somewhat or not at all inclusive.	Before the pandemic, 60% of teachers used technology sometimes (not often) in a learning context. 20% were already using it often or very often and the same number never used it. However, the use of digital tools for teaching was somewhat or completely new for 86% of respondents.	60% of teachers found the transition "neither easy nor difficult". 20% found the transition difficult. For youth with SN and their families, 41% found the transition "neither easy nor difficult," 29% found it difficult and 25% found it easy.
R.	71% of respondents said they understood the concept of inclusion. However, only 28% felt that they offered inclusive learning. 72% said they tried to make their courses accessible.	Prior to the arrival of covid-19, 57% of respondents often used technology in their courses. Thus, for 53%, using technology in their courses was not new.	57% of teachers found the transition "neither easy nor difficult". 28.6% found the transition difficult.54% of youth found it "neither easy nor difficult", 18% found it difficult and 27% found it easy.
	While a large majority of respondents (79%) said that they were familiar with the concept of inclusion, only about 50% felt that they were providing learning that was accessible or somewhat accessible to the specific needs of their pupils.	Of all respondents 64% never or rarely used technology in their courses before the pandemic. Thus, the use of digital resources was somewhat or completely new for 72% of respondents.	The majority of respondents did not take a position because they found positive points (little travel, flexibility of materials, etc.) and negative points (student motivation, poor connection, less interaction, etc.) in this new teaching organisation.

B=Belgium; G=Greece; I=Italy; P=Portugal; R=Romania

Part 1 – Online learning

In this chapter, we will present the concept of digital learning along with its advantages and disadvantages; our attention will focus on primary and secondary school students and their development needs.

Research on the switch to distant learning was conducted in different European countries among teachers, other professionals, students and parents. The results of these will help us depict different realities about the topics of education, distant learning and social inclusion, which co-existed during the lockdown experience.

What is online learning?

The term ***e-learning*** stands for **electronic learning**, it refers to the activity of online learning, therefore to the acquisition of knowledge, through electronic technologies and media. Many synonyms can be used to describe this activity, among these: **online learning, distance learning, educational technology** and many others (Wikipedia, 2021).

E-learning activities are nowadays conducted on the internet, a digital environment where users can easily access and retrieve any information or learning material directly from home. In its earliest forms, around 1980, floppy disks and then CD programs could carry complete courses and encyclopedias (Tatli, Z.H., 2009). Digital learning went through different and silent changes, growing at its best with the advent of the internet. This modern form of education took many shapes, depending on the goals and objectives of the course.

Essentially, we can identify two primary types of e-learning: **computer-based learning and internet-based learning**. This difference is crucial because it distinguishes the actual use of e-learning from online schooling (S. Tsai, P. Machado, 2009).

The distance learning that all European students experienced during Covid restrictions is of the second kind, as it offers online training conducted by a teacher through the internet. At the time this guide was written, the health emergency is not

yet over. Some countries felt legitimated to re-open schools for short periods. Some only assured lessons in presence for small groups of students with particular needs while others continued with the distance learning program for all students.

Online learning model can take different forms, according to its goals and users (J.Holmes, 2020):

Fixed e-learning

One of the older versions of online learning exploits the traditional learning structure that passes down information to the students. All learners receive the same type of information determined by their instructors. Since the learning materials rely on the teacher, fixed e-learning is rigid and does not adapt to the students' preferences. Such a model of learning is best suited to adult training or work environments where learners have similar schedules and skills.

Adaptive e-learning

Unlike the first outlet, adaptive e-learning is self-conducted has the student's flexibility as its focal point : the learning materials are designed to fit the learner's needs. This system pays attention to skills, abilities, and individual performance at the cost of self-awareness on your personal needs. Adaptive e-learning works well with adult learners that prefer to study at their own pace. High self-discipline is needed.

Asynchronous e-learning

In this model, students can study independently from different locations, according to their time necessities, depending on their schedule. It can include user-generated content such as, instead of multiple-choice exams, learners could submit a video of themselves proving their newly-learned skills. It is best fitted for adult learners.

Interactive e-learning

In this model, both teachers and students can communicate freely, allowing both parties to change the learning materials. An open line of communication allows better interaction, resulting in a better learning process. Interactive e-learning works for adults and young adults, but it has considerable potential in group-work environments.

Individual e-learning

The students can decide on their own both time and materials for learning, without any peer communication. This is an individual form of e-learning; it is a self-conducted, yet very free model of learning. Typical of self-training, but also exploited as an exercise in other models that foresee the use of self-regulation.

Collaborative e-learning

This learning model mainly focuses on teamwork, allowing students to work together. Learning materials and goals rely on combined effort from all students for completion of the course. This strategy finds extensive use with young adults and class works (J.Holmes, 2020).

The cost of distance learning

Distant learning, the online learning system that the entire worlds' students went through during the Covid-19 emergency, doesn't specifically follow one single learning model, but instead takes characteristics of different models eclectically. During the first months of 2020 confinement, students reported different issues regarding distance learning. Some of the most common were: lack of social interaction, physical distance and alienation, attention loss, lack of variety of

resources, hardware and connection issues and dispersion for having to solve tasks and homework on different platforms.

Many students reported having trouble maintaining attention in front of a computer screen for long periods; especially students with an attention disorder, if left without caregiver support. Teachers' training and experience in the use of the devices were personal and different, resulting in diverse approaches to teaching online. Students found difficulties in following with multiple online platforms used simultaneously; dispersion, lack of resources and answers, slow adaptation, stressful and generally laborious.
Teachers reported many obstacles to their work, most of these in relation with the students and hardware/software use: physical and emotional distance, observed attention and motivation loss, lack of typical in-presence spontaneity, difficulties in adapting the lessons to new content, the use of technology, lack of specific training and difficulties in keeping a routine.

Worktime augmented and so did tiredness and frustration; specific training was needed, while adaptation of didactic materials was left to individual skills and creativity, with great help from the different software and sharing materials database between professionals.

Digital competences had to be developed in a relatively short time, in order to keep up with work and the students' necessities: interesting and engaging lessons had to be produced, while the skills to do this were slow to build and very difficult for the more aged and less digitally experienced teachers.
In the meantime, internet connection problems affected both teachers and students, causing feelings of impotence and frustration. One of the main challenges of a school system based on e-learning concerns younger students of primary school (elementary school students) and secondary school (middle and high school students).

Studies in developmental psychology confirm that social inclusion is a crucial component for acquiring social, cognitive and emotional competencies that permit personal development and healthy growth during the years of development. The areas of development in which the human being funds the basis of its growth are mainly: **social**, **cognitive** and **emotional** areas. Experiences in various social

environment permits the person to develop knowledge in these different domains and facilitates growth and maturation (J.W. Santrock, 2013).

The youngsters are said to be in a “sensible period” because during the first years of life we are biologically programmed to try to develop a mental image of the world we live in to be able understand it and interiorize its functioning by observing, learning and exploring it, along with the many processes of development that we resume with the word “growth” (J.W. Santrock, 2013).

In fact younger pupils, from their very first years to around the age of 12, have the biological necessity to explore the world to understand its mechanics: culture and social functioning in general is interiorized at this age by observing and repeating others’ behavior observed during social experience. This process is made possible through **social immersion** in the different extractions of social environment, by relation making and cumulating direct personal experience in the diverse domains of development.

The school environment is perfect for the scope, as it can provide major social experience opportunities: school is in fact a **cultural environment**, rich of social examples in which, during the years of development, the students can develop communication skills and strategies that will permit them to socialize, learn and grow, in a self-conducted process of trial and error, guided by teachers and older peers.

One key factor for this process is of course the environment and relation with peers and older figures, from whom direct observation will confirm or deny social habits and rules, following the process of “social copying”. The young tend, in fact, to observe and repeat behaviors and words to interiorize these mechanisms.

Distance learning can represent a limitation to the potential development that the live school environment could provide. To ensure the provision of the elements needed for healthy development it is important to consider these developmental necessities while planning online lessons.

Primary school students (age 6-12) have the strong necessity to interact and socialize with their peers to explore and understand **social rules**. Practices that ensure learning while responding to development needs can be adopted, in respect of the class’ age and needs, even during online learning(J.W. Santrock, 2013).

Secondary school students (age 12-18) have similar necessities of social immersion, with a more refined objectives: during infancy, society rules have been interiorized. Adolescence however is a period of life devoted to the social research of identity. During the pre-adolescence, **group identity** is explored: forming a bound with different social groups, with the objective of understanding the similarities between themselves and social groups; to understand what they like or don't like (J.W. Santrock, 2013).The use of group work and the fostering of self-conducted researches and projects is strongly recommended during the planning of lessons at these students' particular age.

Good practice suggests that lesson planning should consider all these necessities according to the age of the students: moments of socialization, discussion, confrontation, destress and gameplay in different proportion, along with didactic explanation, should be planned in different forms to ensure an healthy environment.

Inclusion, our main objective, fits this topic diagonally: students with special needs indeed go through the same evolution process and developmental stages as every student. Inclusion can be granted if all the students go under the same prospective of learning necessities, possible through thoughtful lesson planning, considerable of the many different options. It is suggestable not to try to find a fit-for-all way, but to try to reserve to different students, different moments and kinds of attention and materials.

Research shows that the attention span of the average primary school students, depending on the age and environmental factors, can go from a minimum of 10 to a maximum of 30 minutes; while secondary school students can reach 60 minutes. The right conditions for maintaining attention can be of course created, but we must underline the importance of resting for mental performance and health.

Being physically distant from the classmates, as from the teacher, requires mental efforts that can cause high stress levels, lowering of attention levels and generally affect the quality of learning. It is suggested, if these moments of forced online learning persist, to keep a space during lessons to create a diversion and recreational moments, in which students can relieve from the cognitive stress of the lesson and run personal, group or freely decided activities.

Acquiring new digital skills in the education system

From the teachers' point of view the "digital upgrade" was hard; so was adapting their knowledge to new systems and methods. Formal training was provided by school organizations to keep their teachers updated with the latest educational needs, yet their ages and skills varied greatly.

The necessary skills and habits to navigate with agility the digital environment had to be developed, through individual practice and experience. Many countries organized training courses for teachers in order to facilitate the adaptation to the new digital school system, helping them with the transition to a different teaching approach, with the use of the new technologies and programs that could support their work.

The training courses touched different topics, such as the basics of skills needed to operate computers properly, different ways to produce didactic material and homework. The solutions proposed from the formal training were reported to be quite basic and not particularly creative, but peer help from those we were more experienced in the field gave new ideas to workers, giving life to colored solutions to revive the interest of their students.

Special-Ed teachers generally had the greatest trouble adapting to digital education, as disability can manifest itself in a large range of difficulties for the students, some of which are unlikely compatible with computer-screen work and require the physical presence of a tutor and precise attention which were complicated to pass to the caregivers in presence. Indeed, teaching a lesson online can feel as a completely different approach, especially if compared to the usual live frontal lessons. The process of acquiring new skills is perceived as a harder task with the age and with pre-existing and already consolidated methods of work.

Training of teachers, their needs and expectations

The preparation of teachers for online teaching has not been sufficient in many occasions: the training provided was reported to be quite superficial with respect to real problems that workers had to face during online lessons. Almost one half of the teachers interviewed stated they still felt unconfident about their digital competences. Training is a key component of the success of online teaching, as teachers must

deliver the lesson, presenting topics and materials, while being prepared to face different possible issues and be able to solve problems.

Teachers' expectations were indeed different from reality:

Many reported needing continuous and more specific training or online resources that could solve every day small issues that generally required instead assistance from ICT colleagues.

Channels of communication with specific and prepared personnel would have been generally appreciated.

Training on online lessons planning was missing in many schools, as on video editing skills and the use of visual supports.

Most experienced teachers were eager to share the tools that they had found for distance learning, but were unable to organise that themselves. Chatting between colleagues was faster than waiting to receive a formal training from competent authorities.

Useful software for different purposes has been extensively used since teachers do not always have the skills to create it themselves. Online programs were valuable, but were often reported to be slightly different from the task they were instead used for, causing a considerable amount of stress during lessons to both sides.

The platforms that support live video communication are numerous, but many do not share the same characteristics: most of them have in common the possibility to manage participants, an important feature for teaching to the younger classes, while many can act as a whiteboard to share and display didactic materials, some can automatically subtitle the audio spoken. One frequently reported source of stress was the need to change platforms for different lessons or purposes. The most used platforms during Covid-19 lockdown are reported to be: Zoom, Hangouts, Meet (Google G-Suite) and Webex.

The experience, after the initial confusion that came with Covid-19, forced many teachers to find their own solutions to everyday problems: to digitalize the lesson materials, for example, many teachers initially scanned sheets from a physical text book, before digital versions of their books were provided to them.

Lesson planning also changed with time: it is preferable to plan “active” tasks, to start the process in which the students can actually re-elaborate concepts and the treated topics through individual and group activities, to foster interactivity and communication between peers. “Passive” activities that expose the students to a transmissive form of teaching, like assisting to a full frontal lesson offers students to a less quantity and quality of stimulus.

Both the structure of the activities and the content of the lesson can greatly affect students' inclusion: a recommendable format for distance learning activities to begin with a frontal framing of the lesson topics and end with a conclusive intervention to sort out what came up during lesson. The core of the lecture should provide apprenticeship activities, built with a constructive approach, so that students can work in an active way on the concepts the lesson is centered on.

Re-elaboration of concepts is an often-used strategy to ensure the passage of didactic information to students online. The activities identified as useful for lesson planning are many and differentiable depending on the desired goal (V.F.Allodola, 2021):

1. Asking/replying to questions
2. Building/verifying hypothesis
3. Games
4. Exploring research directions
5. Asking them to acquire and search info in their own
6. Negotiating meanings between themselves
7. Building synthesis conceptual maps
8. Facing problems and finding possible solutions
9. Simulations
10. Debates
11. Building projects
12. Proposing ideas

Part 2 – Special Needs

In this chapter we will present the concept of “special needs”, according to OECD (Organization for Economic Co-operation and Development).

We will introduce specific learning disorders, hearing and visual impairment and the difficulties that the students with these impairments face at school, and present some strategies and good practices for distance learning education.

What is ‘Special Needs’ according to official organisations?

The definition of special needs in education includes very different situations in different countries. In some, it covers only children with psycho-physical disabilities, while in others, it includes a broader range of students, covering, for instance, students facing specific learning difficulties or socio-economically disadvantaged students. In order to enable policy relevant international comparisons in this field, the OECD (Organization for Economic Co-operation and Development) developed and promoted a comprehensive framework which covers students with any diverse needs when at school and in whatever learning environment.

Today, it is recommended to use **special needs** as an umbrella concept toward a fully comprehensive inclusivity in the school system (OECD, 2021).

According to this framework, students with special educational needs are defined by the additional public or private resources made available to support their education. **Additional resources** are those provided over and above the resources generally available to students who are unlikely to have particular difficulties in accessing the regular curriculum. Such a resource-based approach covers a heterogeneous group of students which can further subdivided onto a tripartite taxonomy, based on the risk of educational failure (OECD, 2021):

Psycho-physical Disabilities – includes students with disabilities or impairments viewed in medical terms as organic disorders or to organic pathologies. The educational need is considered to arise primarily from problems derived directly to these disabilities. This first group includes some of the most well-known disabilities, such as deafness, visual impairment, autism spectrum, down syndrome, intellectual disabilities, motor impairment and multi-disabilities.

Specific Learning Difficulties – covers students with developmental, behaviour or emotional disorders, or specific difficulties in learning. This group covers, for instance, dyslexia, dysgraphia, dyscalculia, dysorthography, dyspraxia, ADHD (Attention Deficit Hyperactivity Disorder), etc...

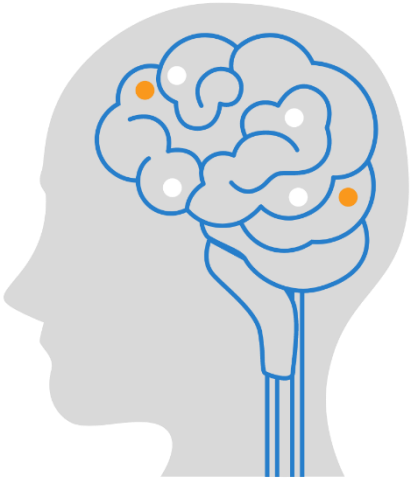
Socio-economical and linguistic disadvantages – comprises students with disadvantages arising from socio-economic, cultural, and/or linguistic factors. This group may include situations of temporary hardship, new immigrant students, students from families with serious social hardships, etc… (OECD, 2021).

International comparisons carried out within this framework reveal large differences among countries in terms of the numbers of students with disabilities, difficulties and disadvantages receiving additional resources. Similarly, there is considerable variation among countries in terms of the settings – segregated or not – where students with special needs are educated. While some countries educate all students with disabilities in regular schools, others educate almost all of them in special schools (United Nations, 2006).

Specific learning disabilities (SLD)

Firstly, the term 'disorder' refers to a dysfunction, a developmental defect in cognitive functions of neurodevelopmental origin resulting from the interaction of genetic, biological and environmental factors (Zorman, 2006, DSM-V cited by Lussier,

Chevrier & Gascon, 2018; Turcotte, 2020). Brain imaging allows for a better understanding of learning disabilities thanks to the increasingly detailed understanding of the functions attributed to the different areas of the brain. The presence of a learning disability is the consequence of neuronal disorders in certain brain regions or linked to a lack of connections between various brain regions making learning mechanisms potentially complex (Inserm, 2019; Habib, 2018).

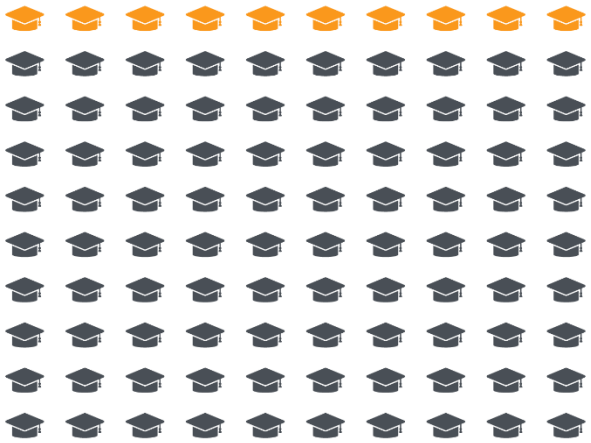


Secondly, SLDs are said to be 'specific' because they are distinguished from intellectual disability or other sensory impairments by normal (or even above average) intelligence and preserved sensory functioning. People living with SLD therefore generally have deficient 'intellectual tools' such as gnostic (enable decoding), praxis (inherent in oral and written language) and executive (planning to achieve a goal) functions (Pouhet, 2017 ; Lussier, Chevrier & Gascon, 2018) which may "impede - transiently or permanently - the processing of verbal or non-verbal information; whether in the acquisition, organisation or retention of information, or in the mode of expression or comprehension" (Fourneret & Poissant, 2016, p. 1227).

SLDs are primarily about 'learning' as brain dysfunction can significantly interfere with expected academic performance or various daily activities of individuals involving reading, writing or numeracy skills. Typically, individuals with SLD have both impaired cognitive functions and intact, preserved, or even over-invested cognitive functions.

In order not to be confused with learning difficulties or intellectual disability, the presence of an SLD must be attested by a multidisciplinary diagnosis based on different assessments (cognitive, educational, speech and language assessments as well as medical and psychological evaluations) and carried out by health professionals. In accordance with the principle of brain plasticity (Habib, 2018), SLDs then require adapted support with a (re)educational goal to enable people to learn to reduce their difficulties in order to continue their schooling and find an active place in socio-economic life (Fayol, 2011; Inserm, 2016).

In Europe, nearly **5 to 10%** (Pouhet, 2016; Mazeau, 2017) of the school-age population is thought to be affected by 'dys' disorders. It should be noted that in 40% of cases, a learning disability is associated with at least one other SLD (Inserm, 2019).



It is important that each of the pupils with special needs can benefit from adapted support as mandated in the texts dedicated to school inclusion. More than academic failure, the lack of coordinated support for these young people can also have consequences for their social and emotional development: loss of self-confidence, discouragement, social distancing, aggressiveness, etc., and ultimately have repercussions for the social and professional integration of the young person who has become an adult (Guilloux, 2009; Haguenaer, 2016).). Specific learning disabilities consist of 8 recognised categories. However, the effects of the same learning disability do not manifest themselves in the same way from one individual to another. This plurality can make the support of people with SLD more complex.

Dyslexia

A long-term reading disorder that can affect the assembly pathway and thus the identification of written words (problems in decoding words leading to deciphering, inversion, substitution, omission, etc.) and/or the lexical pathway (difficulty in associating letters with sounds, in deciphering unfamiliar words) and/or the comprehension of words (difficulty in accessing the mental image of words, the meaning) (Maeder, 2012).

Dysgraphia

A long-lasting disorder that concerns graphic gestures as well as the control of movement and motor skills related mainly to writing. The manifestation of dysgraphia can range from difficulty in forming letters to total inability to write. Potential difficulties related to dysgraphia can be: impaired writing and/or spatial and/or syntactic disorders and/or reluctance to write (Brun-Henin et al., 2012).

Dysorthography

Dysorthography can manifested by a deficient use of the phono-graphic procedure (poor spelling of regular and new words: substitution of letters and sounds, omission of a letter, addition, etc.) and/or a deficient use of the lexical strategy (difficulties in long-term fixation of the spelling of words and in building up a visual-orthographic lexicon). (Wahl & Walh, 2020).

Dyscalculia

A learning disorder affecting the acquisition of basic numerical and arithmetic skills (Noël et al., 2018). Dyscalculia is diverse. It is possible, for example, to master mental arithmetic, but to encounter difficulties in reading and writing numbers. Therefore, a dyscalculia assessment should try to identify the strengths and weaknesses of each child (Wahl & Walh, 2020).

Dysphasia

A disorder of language development (lexicon, semantics, phonology, morphosyntax, pragmatics, speech). It can be manifested by difficulties in expressing oneself orally (inadequate vocabulary, missing words, meaningless sentences...) and/or difficulties in understanding what is said (difficulty in understanding unusual words or double meanings...) (John & Mautret-Labbé, 2011).

Dyspraxia

Dyspraxia is manifested by difficulties in planning and executing movements or motor tasks (clumsiness, poor performance, slow execution...). Dyspraxia affects about 5-6% of school-aged children (Pedro & Goldschimdt, 2019).

ADD/ADHD

Attention deficit disorder with or without hyperactivity (ADD/ADHD) is one of the most common neurobehavioural disorders in school-aged children (Wilens & Spencer, 2010), characterised by attention deficit (difficulty concentrating), which may be compounded by impulsivity (acting hastily without thinking) and hyperactivity (excessive movement/speech/tone that is not appropriate to the context - fidgeting, shouting, etc.). ADD is defined as inattention predominating or mixed ADHD when inattention is combined with hyperactivity and/or impulsivity (WHO, 2019).

Deafness, hearing impairment and visual Impairment

Hearing impairment

About 2 out of every 1,000 children in Europe are born with a detectable level of hearing loss in one or both ears which can be defined as deafness and more than 90 percent of deaf children are born to hearing parents (Mitchell R, Karchmer M, 2004).

The causes of hearing loss and deafness can be due to different factors that can manifest along the lifetime:

Prenatal Period

1. Genetic factors - Include hereditary and non-hereditary hearing loss
2. Intrauterine infections – such as rubella and cytomegalovirus infection

Perinatal period

1. Birth asphyxia (a lack of oxygen at the time of birth)
2. Premature birth and Low-birth weight
3. Other perinatal morbidities and their management

Childhood

1. Chronic ear infections (for example, otitis)
2. Meningitis and other infections

Children are eligible for deaf education program accordingly to their audiogram and medical history: If hearing loss is generally described as slight, mild, moderate, severe, or profound, depending upon how well a person can hear the intensities of frequencies of the human voice, only severe and profound deafness are followed by atypical language acquisition.

This atypical acquisition requires accommodation and support in any learning environment for the deaf student, in order to ensure accessible school contents. Language deprivation, as lack of access to language during critical periods for language exposure, is a severe risk for deaf children. As a result, language is the main focus of any education policy for the deaf.

The difficulties of students with hearing loss have been thoroughly studied; due to the atypical language acquisition the main challenges they have to deal with are (P. Rinaldi, 2015):

- Communication with teachers and peers; understanding lessons in oral language, being evaluated in an accessible way, but also the basic social need to be able to have normal relationships with the teachers through “everyday communication”.
- Socializing with peers; being able to speak with and understand them in order to be fully included in the classroom’s social environment as a real peer and not being excluded from it, both in school and in extra-school activities.
- Accessibility to written language in the learning process. Deaf students can face barriers when approaching written text, such as schoolbooks, written instructions such as directivities for exercises or any other written text.
- Being able to study and do homework on their own, without special support on an individual basis.

Special education methodologies developed and in used today:

Bilingual-bicultural education

Bilingual education emphasizes the need for the Deaf students to have exposure to a fully accessible language through their national Sign Language from birth or the earliest stage possible for optimal cognitive development. In this view, Sign Language access is critical to ensure that deaf or hard-of-hearing children do not experience language deprivation, which has significant effects on mental health, socioemotional development, language fluency, and educational outcomes, among other factors.

Critics of this approach claim that without a strong emphasis also on spoken communication, this may lead to students being unable to integrate into the typically-hearing world using historical-oral languages. This approach describes deafness as a cultural and linguistic minority, and not as a disability which is to be defeated (Volterra, V., et al., 2014).

Auditory-oral education

In this case, deafness is described as a medical, not a cultural, issue and with a rehabilitative approach. To treat deafness; through cutting-edge technological solutions, such as the cochlear implant, or through speech therapy aimed at the best possible oral production.

Oralism utilizes a variety of approaches, including lip reading, strong parental involvement in rehabilitation, music therapy and exclusively mainstream learning environments. Oralism was established as an alternative to manual (sign language) education and stands in opposition to the use of sign language in the education of deaf and hard of hearing students (P. Rinaldi, et al., 2018).

Mixed methods

In this case, deaf and hard of hearing students are encouraged to the use and combination of a variety of communication means, including listening, lipreading, speech, formal sign languages, artificial sign systems (or manually coded language), gestures, fingerspelling, and body language. The idea is to optimize communication skills using a combination of means that are most effective for each individual child, leading to implementations of this philosophy that greatly differ from one to the next. Whereas the Bilingual-Bicultural philosophy emphasizes on the separation of spoken and signed languages, mixed methods allow simultaneous use of signed and spoken languages, producing signed versions of the oral languages: these are artificial signed systems, which are based on the grammar and syntax of spoken language and stand in opposition to formal sign languages, which have their own distinct grammar and syntactic rules (P. Rinaldi, et al., 2018).

Critics of this philosophy argue that using multiple modalities (sign language and/or sign systems alongside spoken language, also known as simultaneous communication) is problematic, because it reduces the linguistic quality of both

languages and therefore does not constitute full language exposure for deaf and hard-of-hearing children.

Of course, students with hearing loss usually do follow a special speech therapy program along the first years of life, especially during school years, during which they reinforce the acquisition of language understanding competences and, when possible, language production. What the teacher should do to include these students in the lesson is facilitating their understanding of the lecture, relying on measures that exploit the visual channel for acquiring information:

- using an onscreen subtitling program during lessons,
- using visual references during explanations, such as photos or multimedia to reinforce what the subject of discussion, support concept acquisition and attention maintenance,
- using an easy reading font when showing text, like for example: Helvetica, Open Sans, Verdana, or the Easy Reading font (available through the official website),
- underlining key concepts and using clear titles with well visible key words when showing text,
- using clear and brief sentences, when possible, which shall always be accompanied by descriptive comments or by explanations.

These suggestions can be an important facilitator for most of the students with low language competences; these small strategies can help acquiring the lessons' main concepts, to immediately access important information and understanding the meaning of the sentences.

Visual impairment

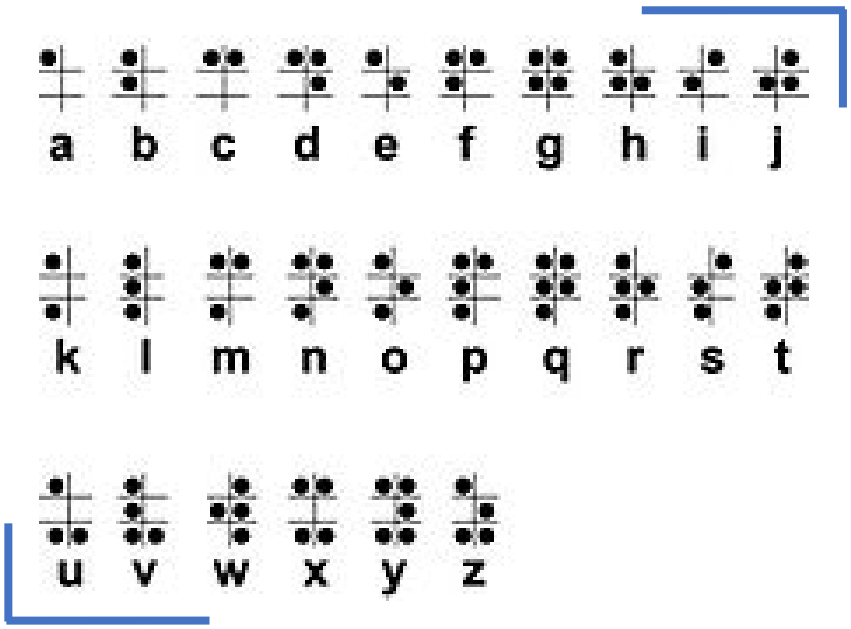
Due to a visual disability, the main challenges faced by blind and partially sighted students, day by day, are:

a. To reach the school building independently

b. To be able to move inside the school building, recognizing the most important rooms: their own classroom, teachers' room, fitness center, school cafeteria, workshops, and laboratories, etc.
c. To socialize on an equal basis with their peers, both during the school life and in extracurricular activities
d. To be able to access any written text provided by the school, teachers, and peers, using technologies and/or special support
e. To be able to write texts in their own national language, using appropriate accommodations and technologies
f. To be able to study and homework without special support on an individual basis.

The first school for the blind was opened in Paris, the "Institut National des Jeunes Aveugles", established in 1784 by Valentin Haüy, the school which was attended also by Louis Braille, who later also taught there. Braille soon became determined to design a system of reading and writing that could bridge the critical gap in communication between the sighted and the blind, especially in the reading of books, a crucial aspect for literacy.

Braille writing system:



Nowadays, blind and partially sighted children are mainly enrolled in mainstream schools, however when a child has a visual impairment, learning and development need to be strongly supported throughout the whole school cycle. Often, children require some training and instruction from teachers, in order to be able to use Braille or the new digital tools.

The extent of a student's visual impairment depends on the eye condition. Vision also may fluctuate or may be influenced by factors such as inappropriate lighting, light glare, or fatigue. Hence, there is no "typical" vision-impaired student. Students with visual impairments include those with low vision and those who are blind.

Students with low vision tend to read print, enlarged tabs, may use optical devices, or may also read Braille like their peers who are blind. Both students who are blind and have low vision may require specialized equipment and materials, such us a braille bar and video enlarger. Tactile models and relief design are other special tools which can give crucial information to the student with visual disabilities, compensating through the use of touch the information that their peers access through sight.

New digital technologies have allowed blind people and people with low income to become much more autonomous than in the past in any learning process. Today they can, in fact, use the accessibility functions of tablets, phones and computers to great advantage, functions which are installed for everyone and do not refer to the idea of tools specifically designed for people with disabilities.

The major challenge students who are visually impaired are facing in the learning environment is the overwhelming mass of visual material to which they are continually exposed, such as textbooks, class outlines, class schedules, written texts, models, images and other graphic materials, etc. In addition, the new multimedia tools, such as films, videos, YouTube and television programs, which are highly effective for the typical learner, instead add material that needs adaptation and mediation for the visually impaired learner. To assist in teaching a student with a visual impairment, unique and individual strategies based on that student's particular visual impairment and their communication media is required.

Inclusion and accessibility

Although there is still no consensus on the concept of inclusive education, certain criteria are gradually emerging as indicators of inclusive education, with the aim of enabling all students (with or without special needs) to have access to ordinary, quality schooling, in order to have equal opportunities for social emancipation. Thus, in 2005, UNESCO published the guiding principles of inclusion:

> "Inclusion is seen as a process of addressing and responding to the diverse needs of all learners through increasing participation in learning, cultures and communities, and reducing exclusion in education. It involves the transformation and modification of contents, approaches, structures and strategies, with a common vision that encompasses all children of the relevant age group, and the conviction that it is the responsibility of the general education system to educate all children." (UNESCO, p. 14, 2005)

Thus, based on the principles of the Disability Production Process (Fougeyrollas, 2015; 2018), UNESCO considers that the abilities of students with special needs may be compromised by the failings of the education system. Difficulties would not be solely due to the student and their disorder but are the result of the encounter between the student and an unsuitable school situation (Bergeron & Marchand, 2015). Consequently, to achieve this objective of inclusion for all, it would be necessary to adapt the school environment (strategies, content, learning methods, resources, etc.) in which young people with special needs evolve in order to reduce the contextual obstacles likely to hinder their academic involvement. Implementing school equity (Fougeyrollas, 2018) would enable all pupils to develop disciplinary, social and adaptive skills enabling them to take an active part in tomorrow's society. Finally, beyond the acquisition of academic skills, inclusive education should also promote mutual respect, tolerance and dignity for all and by all (UN Committee on the Rights of Persons with Disabilities, 2016).

Thus, the European Agency for the Development of Education has identified four priorities to support inclusive education:

1. **Quality professional development** - teachers must accept responsibility for their own lifelong learning
2. **Working with others** - collaboration and teamwork are essential practices for all teachers.
3. **Supporting all learners** - teachers must have high ambitions for the success of all learners.
4. **Valuing student diversity** - student difference is seen as a resource and an asset in education". (quoted in Donnelly & Watkins, 2011, p.15)

In this way, the values of inclusive education are gradually being broken down into different areas of work and indicators. The following sections illustrate the 4 key notions of inclusion in relation to the scientific and grey literature.

1 Quality vocational training

Training for teachers and school workers:

Teachers and the quality of their teaching practices are key players in the academic success of students, especially when they have special needs (Bergeron & Marchand, 2015, Dubé & Sénécal, 2009; Paré & Trépanier, 2010). However, it appears that many teachers do not feel sufficiently trained to be able to adapt their teaching practices and materials to the needs of students with special needs (Bergeron & Marchand, 2015; Boutiflat, 2019). In this respect, in our study, less than 50% of the professionals interviewed said they knew how to make their courses accessible. Yet, the World Report on Disability (2011) points out that: "adequate training for mainstream teachers is essential if they are to be competent and confident in dealing with children with diverse needs" (p. 222).Thus, training and experience would be essential to be able to manage diversity.

2 Working with others - Collaboration between actors and multidisciplinary support

Diagnostic & multidisciplinary support

Diagnosis requires various tests to be carried out by specialised professionals. On the one hand, it makes it possible to rule out medical, psychological and intellectual causes likely to justify persistent learning difficulties (Turcotte, 2020). On the other hand, the diagnosis identifies the preserved and altered functions. This allows the young person to benefit from multidisciplinary support in order to improve the deficient skills, based on the postulate that the cognitive skills of young people with special needs evolve throughout their lives. However, despite this brain plasticity (Rouzic, 2016; Habib, 2018), a gap is often noted between their evolution and that of individuals of their age, without special needs (Fourneret and Poissant, 2016). To overcome these persistent difficulties, it is recommended that reasonable adjustments be made with and by the young person and the multidisciplinary team (CDPH, 2009).

3 Provide support to all learners

Adaptation of teaching practices

Various studies on special needs students and school inclusion highlight the importance of adapting learning practices (Bergeron, 2014; Dubé and Sénécal, 2009; Galand, 2009; Paré and Trépanier, 2010; Theis, Giguère, Martin and Myre Bisaillon, 2009). Thus, teachers faced with increasingly heterogeneous classes are led to diversify their teaching practices. Some of these practices seem to facilitate the management of different levels of learning and strengthen the inclusion of all in the classroom.

- **Tutoring:** Bernard De Backer (2004 cited by Boumedian & Laloy, 2016) considers tutoring to be a training device which moves from the pedagogical model of transmission to the interactive pedagogical model of exchanges between a tutor and a protégé. This pedagogical situation of individualised support encourages the development of skills through action and interaction.

Within this pairing, everyone learns, particularly on the basis of an identification mechanism, even though none of the players is a priori a teaching professional (Lepage & Romainville, 2009).

- **Co-teaching:** The introduction of co-teaching within the regular classroom was encouraged by the development of inclusive education (Hallahan, Pullen and Ward, 2013) where remedial practice was no longer restricted to special education. Thus, co-teaching can be described as joint pedagogical work in which two teachers carry out (part-time or full-time) educational work with the aim of developing skills in their pupils within the same group and in a common time and space. (Friend and Cook, 2007 cited by Tremblay, 2015, p.35). The presence of two teachers makes it possible to organise working time and reduce the number of pupils/teachers to be able to offer learning in an individualised and more intensive way (Friend and Cook, 2007), while being less stigmatising.
- **Universal pedagogy:** In parallel with the disability production process model (Fougeyrollas, 1996), universal pedagogy seeks to make classroom practices and learning content accessible to all. In this logic, reflection focuses on how to provide sufficiently multiple and flexible materials, learning situations and pedagogical practices so that new learning can be understood and intelligible by all (Bergeron, 2016). This desire for adaptability is also found in the concept of **differentiation**, which consists of modulating content, methods, practices, presentations, expectations, etc. to adapt to the needs, values, work preferences and abilities of the students (Subban, 2006).

In this respect, we can identify various types of arrangements and adaptations in the service of differentiation in the classroom. They contribute to the implementation of inclusive education because they can be offered and used by all pupils, according to their needs.

Reasonable accommodations

In the school context, a reasonable accommodation is a concrete measure to reduce as much as possible the barriers to learning that students with special needs may encounter during their schooling (Eserbold, 2014). An accommodation is considered 'reasonable' when it is easily achievable without requiring too much investment of time or money from both the student and the teacher. Its aim is to enable young

people with special needs to access learning on the same basis as others (European inclusion).

Material/immaterial adaptations

reading aloud and/or taken over by the teacher, text with adapted font/layout, reduction of notetaking, use of fill-in-the-blank texts, use of alternative material (computer, electronic dictionary, software, exercise machines, etc.)

Pedagogical adjustments

In order to support the self-confidence and motivation, it is important, in some cases, to adapt the level of demand to the strengths and challenges of the student, to modulate/subdivide expectations and objectives, to support differentiation (not all students do the same thing at the same time with the same means).

Organisational adjustments

It is advisable to modify/alleviate the timetable, the workspace, the time management, etc. so that the pupil can be in the best conditions to participate in the learning of the class. Example: Increasing the time to complete the task (1/3 more), organised desk, adapting the rhythm, managing breaks, time, ...

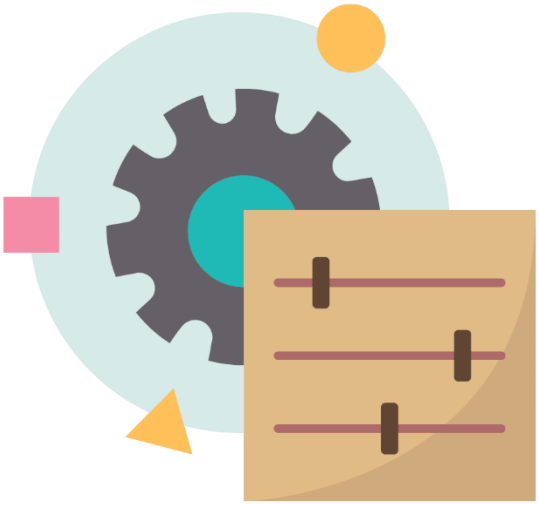
Reasonable accommodation is not intended to benefit the pupil with a disability or SLD, but to compensate for the disadvantages linked to his or her situation and to an unsuitable environment so that he or she can progress on an equal footing with other children. The accommodation may benefit all pupils (European inclusion).

Adaptations of instructions, teaching materials and assessments

Attention skills are often weak in people with special needs. Thus, to facilitate the mobilisation of attention and therefore a better understanding of the written material and instructions that mark out school (exercises, readings, problems, etc.), it is advised to make them as accessible as possible in terms of content and form.

Content: use common vocabulary, use only one action verb per instruction, use the active present tense and avoid abbreviations, etc.

Form: simple, short, clear instructions; prioritisation of tasks; avoid double-sided writing; adapt the time taken to complete tasks; oral and/or written support according to the young person's preferences; font size 14, line spacing 1.5... (Unapei & Inclusion Europe, 2009)



Adaptations: The working environment can be modified; moving the student to a quiet and isolated place. The performance can be measured differently; reading, repetition and simplification of questions/instructions, extra time for performance, etc. Finally, the grading system can be adapted; marking on specific criteria, modification of correction criteria for language. (Unapei & Inclusion Europe, 2009).

4 Valuing all students through self-awareness and confidence-building activities

Positive reinforcement and activity to support self-awareness and self-esteem

Self-esteem refers to the opinion, the image that each person has developed of him or herself. This concept includes three interdependent and balanced components: (1) self-view (projecting oneself into the future, believing in oneself and one's abilities), (2) self-esteem (listening to one's desires and needs, respecting oneself), and (3) self-confidence (acting without fear of being judged by others or acting without fear of failure) (André & Lelord, 2011; Siaud-Facchin, 2005). This balance can be challenged in special needs learners. Indeed, it is not uncommon, particularly in the absence of appropriate support, for the academic results obtained to be inversely proportional to the effort made. Moreover, their academic difficulties and, more generally, their differences, expose them to more stigmatisation and mockery from their peers. Thus, these pupils are more likely to develop a negative image of their skills, which can, in some cases, lead to academic failure, social difficulties,

depression and dropping out of school .... (Pandy, 2012). It is therefore important to intervene as soon as possible in order to prevent the child from falling into the "vicious circle of deviance" and to motivate and support their efforts: encouragement, positive reinforcement, success situations, valuing participation, establishing a climate of security and trust in the classroom, etc.

Part 3 – Challenges and advantages

In the previous chapter, you have gotten familiar with the concept of Special Education Needs (SEN), the various Specific Learning Disorders (SLD), Deafness, Visual impairments and other difficulties that learners can face in school settings. In this section, we will introduce you to the various challenges that these students face in classroom settings, both in person and distance learning. Lastly, we will focus on the positive aspect of online learning for students with SEN.

Challenges and difficulties in 'classic' learning settings

Not all students share the same difficulties. Special Needs are not unitary and there is no one-fits-all model when it comes to challenges and difficulties. There is, however, a range of similar issues and challenges that students with special needs might share. The key is to be able to identify these difficulties so that they can be addressed properly. Learning difficulties arise both in learning and non-learning contexts. However, we will only focus on learning settings (both at home and in classrooms) for the purpose of this guide.

The Lessons

Lessons are meant to teach students about a specific subject. Whether it is through exercises, practice or theory, with or without the support of the blackboard, practice sheet or manuals, every teacher is free to approach the content in the way that they want. However, the framework of a typical lesson can present challenges for students with special needs, such as:

- The student does not see all the details on the board
- The student does not write fast enough to take notes
- The student cannot listen and take notes at the same time
- The student forgets details and instructions
- The student cannot copy accurately (forgets words, line breaks)

- The student does not understand/hear all verbal instructions (needs pictures)
- The student gets often tired quickly during the lesson
- The student does not understand symbols (ex: in math) easily
- The student does not understand shape, symmetry, relative size and quantity and how to manipulate them
- The student has poor motor skills and cannot use manual tools
- The student cannot lip read or see signs appropriately if the teacher is moving through the classroom.

Structure

The second most common challenge comes from the lack of structure and supporting resources for students with special needs. In these situations, students might struggle with:

- The layout of the information on the sheet provided is not adapted
- The fonts and texts are unreadable and unclear
- The text is not structured in clear paragraph
- The student does not follow the line breaking correctly
- The sheet lacks colour coding
- The students read through poorly printed material
- The student gets lost in all the information
- The information is given in text rather than graphs and visuals.

Core skills

In learning context, students have to engage their core skills (reading, writing, listening, speaking) often. These skills are not all developed entirely depending on the student's difficulties. Regardless of their specific difficulties, here are some of the most common issues:

The student:

- Formulates incomplete answers because writing is too hard
- Has poor grammar and spelling
- Has poor mathematical reasoning and problem-solving skills
- Has illegible handwriting and cannot proofread
- Does not vocalise what he/she reads
- Does not make the phoneme-grapheme link

- Takes too long to read documents
- Cannot find information in a long text
- Has difficulties with learning new words and new vocabulary
- Has difficulties with learning foreign languages

Organisation

Students might struggle with their own sense of organisation, whether it is through self-regulation, distractions and more. It is naturally expected that students organise themselves in their learning, yet this is not always possible.

In this sense, the student:

- Has difficulty putting thoughts into words and gives answers
- knows and remembers but has forgotten most
- Cannot find their way around double-sided documents
- Does not store documents well
- Is distracted by distractors
- Does not follow schedules
- Has poor time management and therefore stress management

Atmosphere and situation

The general atmosphere and sitting layout in the classroom plays a pivoting role in the learning of special needs students. Not only do SN students face a higher risk of social exclusion, stress and psychological issues, but the atmosphere of the classroom can influence how a student learns. In poorly set up classrooms, the student:

- Cannot hear well with background noise
- Is not resistant to nervous fatigue
- Has a higher chance of having emotional and psychological difficulties such as insecurity, lack of confidence, low self-esteem, avoidance, isolation, anxiety. (Cavioni, V. 2017)
- Cannot focus or hear if sited near doors or windows with high amounts of student-traffic or commotion

- Is sensitive to poor lighting: Fluorescent lights emit a special sound that interferes with hearing aids and cochlear implants
- Cannot see the teacher sign properly if he/she is sited near windows and light
- Faces social pressures to fit in so they might not ask for instructions again or draw attention to their lack of understanding.
- Has fewer opportunities to make friends, frequent states of loneliness, behavioural problems
- Might develop defending strategies like refusing to do homework, lying.

While learning seems like a relatively easy thing to do, it can present some serious challenges to learners with special needs. The above lists are by no means exhaustive or applicable to all SNS in a unitary fashion, but if you notice one or more elements in students of your own classroom, adapting your material will benefit not only them, but the classroom as a whole!

Challenges identified in online learning

The section above introduced you to the various challenges SNS students might have in classroom settings. It is therefore relevant to now highlight the challenges in online settings, as addressing these challenges is the main goal of this project. Here, you will find a combination of the existing literature and the results from the surveys conducted in the preparation phase of this guide.

The first main challenge identified in most literature on the subject lies with the idea of technology and access to it. Not all students share similar socio-economic status, even in small environments such as classrooms. Indeed, SNS can come from different backgrounds, which implies that some students might have no computer, share a computer with other members of their families, have poor or no internet connection, can only work from their phones, cannot afford a computer to attend classes.

SEN implies that a ‘special’ system is used to address the needs of the student. This is where assistive technologies (AT) come into play. AT are usually items, software or product systems that help to increase or improve the functional capabilities of persons with disabilities. It can vary from low-tech or hard tech elements to computer

software such as screen readers, communication programs, curriculum aids and more (Atia, 2021). At home, students might not have the same access to the type of technologies they use at school which implies less accessibility to the content they need.

In regard to accessibility, this factor remains a major challenge in online schools. Scholars report difficulties on the accessibility of technology and digital education material (Eur-Lex, 2020), website and course management system, digital and audio, course notes, and more.

In more practical terms, some other challenges are identified as such:

Support

Parents might not be available to provide the same support as specialists would, parents are left on their own to manage children's education

Stress

Drastic change in routines, absence of regular support, Worktime increased and so did tiredness and frustration

Accessibility

Lack of adapted technologies, poor application of 'classic' lessons in digital format, inadequate methods

Technical

Difficulties accessing eLearning platforms, presentations are not available after the class, problems with downloading lessons, Inflexible time limits for online tests, multiple online platforms

Autonomy

Poor time and organization management, no self-regulatory training, attention loss

Social

Lack of contact with class peers and stimulus through socialization, physical distance and alienation, lack of the typical in-presence spontaneity

Environment:

Lots of distraction at home or in the student's bedroom, lack of incentive to connect

Adaptability

difficulties in adapting the lessons to new content

Furthermore, there is an important point to be made in regard to the privacy and GDPR (General Data Protection Regulation*)* of the students in the classrooms. When proactive teachers try to adapt their lessons to online spaces, they might be unprepared, untrained or uninformed as to what technology, websites or software to use to ensure the privacy of their students' data. This might lead to breaching of student's privacy and GDPR law. It is therefore paramount in those situations to ensure that teachers know what resources are safe, and which are not.

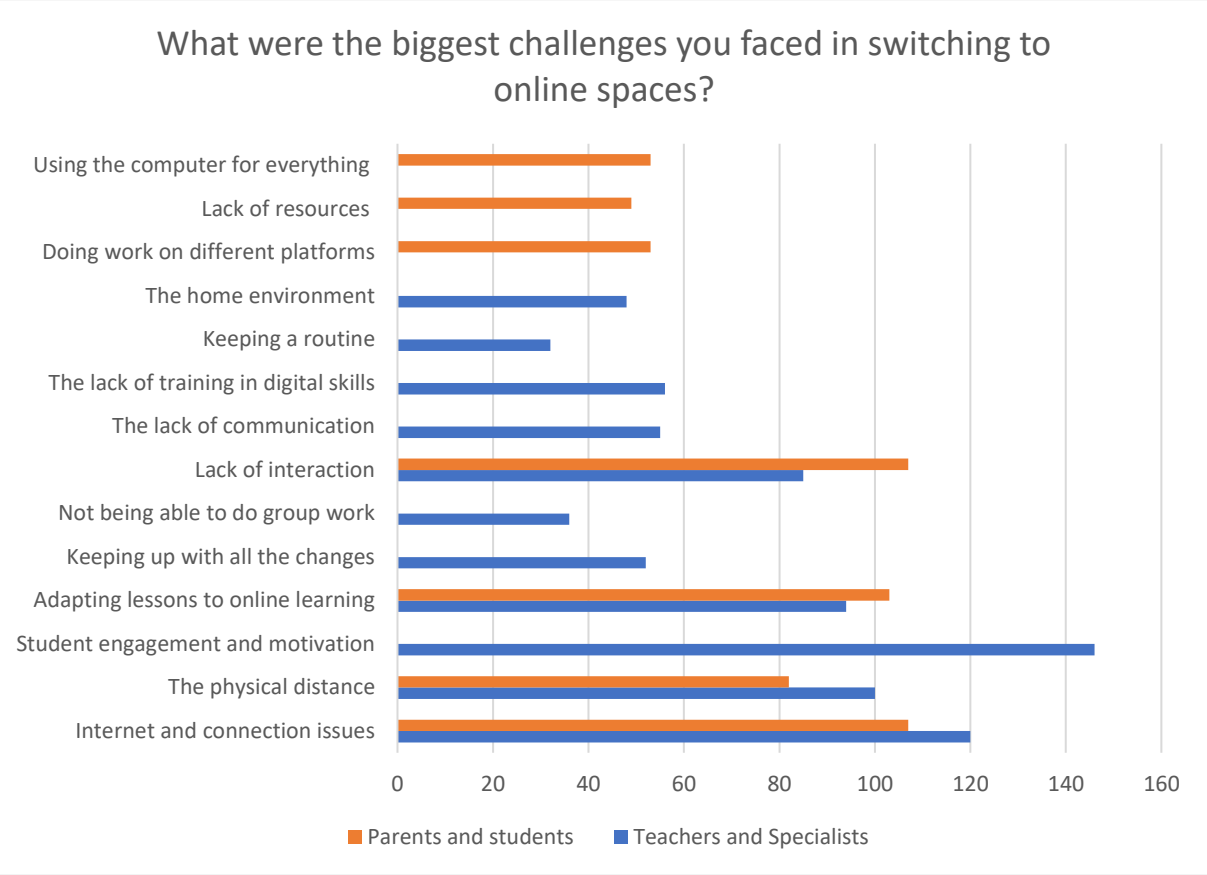
Lastly, while focusing on accessibility and technology is pertinent, a strong case should also be made concerning evidence that stress, isolation, lack of human contact and social environment can lead and contribute to mental health issues amongst young people (Chen, Dorn, et al, 2021).

Survey results

In the surveys conducted by our partnership, professionals, teachers but also parents and students were asked to identify the challenges they faced when switching to online learning. The respondents, from 5 countries (Belgium, Italy, Greece, Romania and Portugal) shared both similar and different experiences in their online learning

days. When asked if switching to digital learning had improved or worsened their lesson when it came to inclusion, the average response was 3/5 with a strong leaning towards ‘worsen’. However, numerous challenges were listed regarding the transition.

Here is an overview of the main challenges mentioned by the teachers and specialists:



Then, participants added these challenges:

- Not being able to use manipulations and physical demonstration
- Parent’s involvement and support was sometimes inadequate
- Adapting to the ‘new’ was rushed, both parents and teachers were unprepared, lacked the resources and tools
- Less interactions for feedback and reviews but also to create relation and support students
- Too much autonomy and independent work for certain age levels, lack of self-discipline

- A lot of written work rather than oral which is not appropriate for SEN
- For certain SNS (like Deaf, TDA/H) or severe disabilities such as mental retardation or autism. digital learning is almost impossible
- Hard to keep student's attention and focus when done through a screen
- Hard for deaf students to follow as they need both gesture and lip reading
- Little or lack of communication between students and peers, no debate or discussion to variate learning
- "Ghost pupils' were hard to reach
- More inequalities; one computer for many students, internet connection etc.
- Lack of trust between student/ teacher (connection issues, internet problems)
- Practical classes were non-existent, they weren't adaptable to digital learning
- School just expected the home environment to be ready for distance learning
- The wide range of different platforms, resources etc. no centralised information for students to follow.

Advantages of online learning

As stated, online learning is not a new concept. Despite a long list of challenges, it also presents serious advantages to all learners, SNS included. According to the Digital Education Action Plan of the EU Commission:

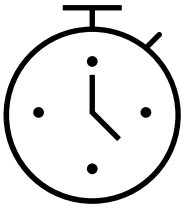
> "It can facilitate more personalised, flexible and student-centred learning, at all phases and stages of education and training. Technology can be a powerful and engaging tool for collaborative and creative learning. It can help learners and educators' access, create and share digital content. It can also allow learning to take place beyond the walls of the lecture hall, classroom or workplace, providing more freedom from the constraints of physical location and timetable. Learning can happen in a fully online or a blended mode, at a time, place and pace suited to the needs of the individual learner" (European Commission, 2020)

Some additional general advantages to online learning are: the benefits of a more personalised education (Jenmi and Ayeb, 2014), the opportunity to study from anywhere, the more flexible schedules, self-regulated management of timing and classes, not need to commute or attend classes daily, the possibility to use the internet to support research and work, the cost is lower as less money is required for

textbooks and other activities (Fotijk, 2017). Additionally, learners are free to move around their own space without disturbing other students, they can take breaks and segment their days according to their own strength and more (Young and Donovan, 2020).

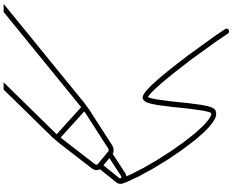
In a more practical outlook, we asked our respondents to share the positives that online learning has brought to their classroom and their learning. Some of the positives identified in the surveys were the following:

Time and self-management



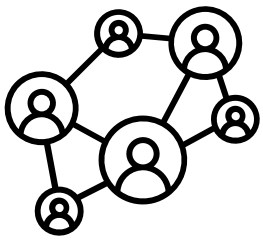
- Less block time of 50mins to 2h lessons, more split to fit the student's concentration span, respect of the student's natural rhythm rather than the class.
- Additional time to do the research and homework
- Less time constraint, timed performance

Writing/reading accessibility



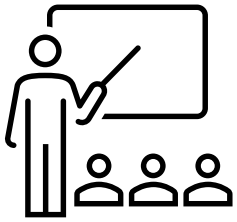
- Writing using a keyboard is easier for coordination than pen and paper, it improves readability of the text as well as sentence structure
- Audio version of text with tools such as Read aloud or Text to speech so that student struggles less with reading, Spell check, Grammarly and other resources for better writing
- Adapted font and sizing and general layout of resources

Social and environment



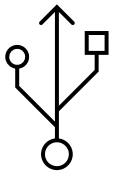
- Less distraction, space to work in a quieter environment than a classroom
- Less fatigue and frustration as the student is free to adapt to his own needs
- Less social pressure to give the good answers, less mockeries and bullying

Teaching methods



- Learning is more interactive and varied with a wide range of support
- More gamified methods of learning
- Being able to re-read classes and re-attend lessons that were recorded
- More flexibility overall, both in the teaching and learning style
- Use of new, useful resources that can be applied to classroom teaching as well

Technology



- Unlimited source of knowledge on the internet
- It is easier to use computers for the younger generation

Overall, both in the literature and the surveys, it appeared that the disadvantages outweigh the advantages of online learning. There are many reasons as to why that is: first, the abruptness of the switch and the lack of preparation of higher authorities to handle the change smoothly made it harder for the transition to fit all student's need. Second, there is a general lack of uniformity in the best methods for online teaching. Indeed, there were no strict guidelines, centralised resource pool, or general structure that all schools were able to use to ensure best practice. Third, too much was expected of teachers who were unprepared and untrained to use their digital skills to the best of their knowledge. Fourth, digital learning, when not used properly can hinder learning rather than expand it, despite its proven benefits to SNS. Fifth, online teaching exclusively relies on technology and special equipment, both of which cannot possibly be taken for granted in all situations. Lastly, a more prepared and digital trained teacher will be able to implement all the positive changes digital learning can bring to students in a more blended approach of learning, which is key for all students across the board.

Part 4 - Recommendation

General recommendation for Special Needs

Inclusive teaching promotes the flexibility and accessibility of content to all individuals. This is a very challenging feat for teachers who are expected to adapt and create lessons suitable for everyone while not spending hours re-planning lessons for each different need.

This is why there already exist guidelines for a more inclusive classroom such as: reasonable accommodations (RA), Universal Design for Learning (UDL), and more. RA is any changes to an environment that is needed to enable a person with a disability (or learning difficulties) to perform properly. They are usually applied to in-classroom teaching to ensure that the student with special needs is included and able to follow the lesson properly. In a more all-encompassing way, UDL is an instructional planning intended to increase meaningful access and reduce barriers to learning for students with diverse learning needs and those from diverse cultural and socio-economic backgrounds. In other words, it is the practice of applying flexible and inclusive strategies into the classroom so that ALL students (whether they are SNS or not) can have access to a variety of learning solutions (Mooc Dys, 2018).

So how can these methods change the way we teach? Think of these solutions:

WORK ENVIRONMENT:

- Create a welcoming and inviting space for students. If possible, include them in the creation process. The space should be suitable for movement.
- Present the information in various ways, not just through a blackboard or projector (printed sheets, electronic devices, tablets, etc.).
- Allow additional time for practice and/or task completion if needed.
- Design a reward system (incentive or token systems) based on gamification.
- Display the rules of the classroom clearly and clarify them regularly to make sure all students know the routines of the class and everyday organization.
- Create a space in the classroom where students can write down questions if they are uncomfortable asking them out loud.

- Organize a class calendar (displayed and color coded) to remind all of tests and other deadlines.
- Plan for transition times (between subjects or tasks, before and after lunch, changing classes), and for action cues (settling down, individual work, getting out materials).

TEACHING METHOD:

- Use a multisensory approach: provide different kinds of content. Research suggests the use of intensive interaction and/or a 'sensory' based approach are effective for children with communication and interaction difficulties associated with profound and multiple learning difficulties.
- Collaborate with special education teachers, related service providers, and paraprofessionals on a regular basis.
- If you are co-teaching, commit to planning at least once a week with your co-teaching partner and determine your respective teaching responsibilities. Write your plans down and share the worload (Land, 2014)
- Focus on collaborative rather than competitive tasks. This allows for all students to play on their strengths.
- Create heterogeneous groups with different strengths and weaknesses.
- Create a structured classroom. This may include designating separate areas for group and individual work and centers for reading or art for example.
- Use assistive technology whenever possible – interactive whiteboards, VRI, chat rooms, strobe lights, digital pen technology, closed captioning on all movies and videos, infra-red systems – hearing aid compatible, computer assisted note taking, ASL videos for testing materials, alert systems such as vibrating systems, and alarms and interpreters in the classroom (Getting Smart, 2016).

GIVING INSTRUCTIONS:

- Incorporate the three qualities of universal design when planning instruction:
    1. Multiple means of representing content (visual and oral strategies),

2. Multiple means of students' expression of content (writing, illustrating, speaking),
3. Flexible means of engagement as students learn (videos, software, and role-playing).

- Do not rely on verbal instruction. Have them available on worksheet also provide both the auditory and visual forms of the information.
- Sequence the instruction into short manageable steps. Provide a visual support of the task, so that they don't have to keep it all in mind and can go back and look.
- Instructions should define and present the learning objectives and the purpose of every task or lesson.
- Provide an outline at the beginning of every lesson and finish it with a summary of what has been acquired.

CONTENT ADAPTATION:

Basic Layout

- Use a clear sans serif font like Arial, Century Gothic or OpenDys.
- The font should be between 12 and 14 in size.
- Use an adapted spacing of 1,5 in between the lines.
- The text should not be justified → align to the left.
- Do not use *italics*, <u>underlining</u> and CAPITALS → put text in bold to highlight it.

Structure

- The text should be broken down into small, easily readable paragraphs and short, clear sentences.
- Structure your text with clearly distinguishable titles, subtitles, etc.
- Present the important items in bullet points.
- Ensure enough white space between sections.
- Use page numbers (bottom right).
- For long documents include a contents page.
- Information order:
    - Ensure that the main information is easy to find.

- Write one paragraph about one specific topic.
- Use examples whenever possible.

- Structure the content of the lesson from simple to more complex concepts, use smaller steps to reach the objectives to maximize their success.
- Relate learning as much as possible back to the student's own world or to a real situation. Avoid using metaphors.
- When introducing new topics remember that some SNS will need more exposure and more repetitions of new vocabulary, keywords, difficult or longer terms, so repeat the content using different formats.
- Prepare mind maps, charts, tables, visual presentations, infographics, posters to present the concepts to be learned. By using visuals, we can significantly enhance understanding and memorization for both students and SNS.
- If possible, remove unnecessary details from textbooks or worksheets so SNS students can focus on a task.
- Help students organize their materials by using checklists, folders, and containers to keep materials organized in desks.

FEEDBACK:

- Give constructive feedback (sandwich model) and don't forget to celebrate the progress of the SNS.
- Encourage students to talk through his/her errors and how he/she thinks the performance could be improved next time. It will teach them self-assessment.
- Be descriptive when giving them feedback (what they should improve) or when praising them.

EVALUATION:

- Don't penalize spelling and writing mistakes for other subjects that are not related to language, you should only evaluate knowledge related to that subject.
- Offer appropriate accommodation such as extra-time, breaks, use of spelling tools etc.
- Allow different forms of completing the task.

HOMEWORK:

- Try not to send unfinished tasks home.
- Provide feedback on the homework
- Allow different forms of completing the homework. For example, instead of writing an essay they could create a presentation

Best Practice for Online Learning

Influence of online learning on motivation and school retention

Following the closure of most schools throughout Europe, various forms of distance education have emerged thanks to the rapid intervention of states and partners (television, radio, internet, etc.) throughout the world with the aim of ensuring educational continuity for millions of pupils (United Nations, 2020). In our survey, of the 213 teachers interviewed, almost 20% found the transition from face-to-face to distance learning easy or very easy. Nearly half of the responding teachers found this new teaching modality to have both positive and negative points. 32% of teachers found the transition difficult or very difficult. The trend was relatively similar but seemed to be slightly more positive for the 282 young people and family members interviewed. Indeed, 30% of them had experienced distance learning well (20%) or very well (10%). However, 43% of respondents were more mixed, while 25% had a bad or very bad experience of distance learning. This tendency for more than half of the respondents to have experienced a more or less complex transition does not seem to be without consequences for the mastery of learning. Indeed, Boyer and Bisonnette (2021) report in their review the effects of the first confinement on the performance of learners in five countries. It appears that the performance gaps in primary school decrease overall and that the differences between students with special needs and those without special needs become more pronounced. Based on the results, the researchers estimate that in one year of distance learning, students could lose an average of 5 to 9 months of learning time and 6 to 12 months for young people with special needs.

Thus, for teachers, young people and their families who have experienced this transition well, distance learning offered many advantages. Firstly, it allowed great

flexibility (less travel and therefore more time and motivation to study or practice). Distance learning also helped students who needed it to focus better by allowing them to move around, to follow a lesson sitting on the floor or standing up without disturbing the teacher or the class. Secondly, the possibility of recording or doing asynchronous work would allow learners not to have to take notes during the lesson and to be able to complete exercises at their own pace. The support of the computer would also be beneficial for certain pupils with special needs, in particular by making it easier to take notes, and the use of software (mind maps, correctors, online exercises, etc.) would support the pupils in their learning. In this respect, online teaching would enable certain (trained) teachers to adapt and create varied content and learning materials that would encourage greater commitment and motivation in learning. These data are corroborated by other studies that indicate, among other things, that some special needs youth had better opportunities for social inclusion, whether through increased power/agency for them and their families and/or new modes of connection leading to more efficient learning and support opportunities (Beaton, Codina & Wharton, 2021).

However, more contrasting observations are made by respondents who did not experience the transition well. First of all, the obligation to move to distance learning seems to have highlighted material inequalities between students and lecturers, who were not all equipped with a good internet connection, let alone a computer or specific equipment (camera, microphone, headphones, etc.). Some inequalities concerning computer skills were also observed between people (young people and/or teachers) who were more or less proficient in technology. This lack of mastery and experience of e-learning would have led many schools to multiply the use of technological tools without reflection, leading to confusion among teachers and students (Boudokhane-Lima, Felio, Lheureux & Kubiszewski, 2021). Furthermore, it appears that some students, confined to their homes all day behind a screen, deprived of real social contacts, experience a feeling of loneliness or even malaise. Some students who do not have a family network capable of ensuring follow-up gradually lose the motivation to commit themselves regularly to their courses and learning, and some end up failing their studies. Moreover, at a distance, teachers have less opportunity to observe their pupils' learning and are likely to miss difficulties in some of them and to remedy them in time. In this respect, some pupils

with special needs report having had difficulties in making the transition to e-learning, in particular because of the lack of access to reasonable accommodation and the usual adaptations (adapted layouts, additional explanations, manipulation, etc.), accentuated in some cases by the impossibility of benefiting from the usual sessions of speech therapy, remedial teaching, or individualised follow-up. In this respect, Jesus et al (2021) assert that, overall, confinement has had deleterious effects for young people and even more so for young people with special needs because of a rupture with their (para)medical and educational accompaniment as well as a lack of individualized support and access to adapted material.

Therefore, in order to support the quality of inclusive e-learning, the European Union (2021) has defined an action plan for digital education in various objectives for the development of IT and inclusive distance learning methods:

> "Propose a long-term strategic vision for a high-quality, inclusive and accessible European digital education"; "Strengthen EU-level cooperation on digital education and cross-sectoral collaboration to bring education into the digital age"; "Support opportunities, including improving the quality and quantity of education concerning digital technologies, supporting the digitisation of teaching methods and pedagogies and providing the necessary infrastructure for inclusive and resilient distance learning" (European Commission, 2021).

Thus, these goals aim to support effective and inclusive distance education by developing, among other things, access to online learning, coherence between online materials, curricula and students' expectations/needs, teachers', and parents' willingness to support learning, monitoring and evaluation (UNESCO, 2020).

Good practices to support inclusive e-learning

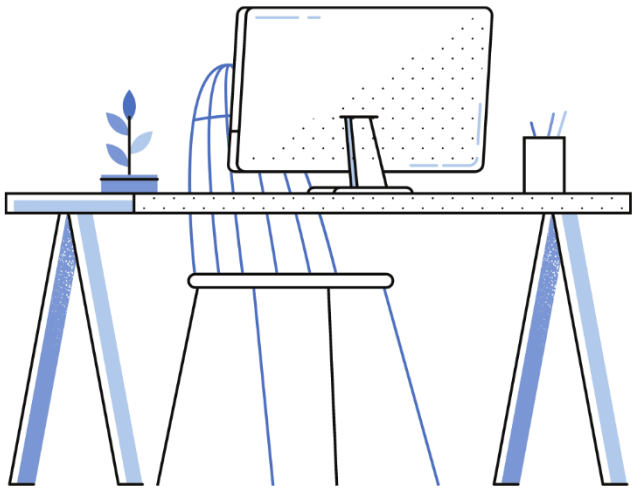
Access and training in technological tools

The successive confinements following the covid-19 pandemic have revealed the need to build digital capacity in education and training in view of the significant gaps observed that have led to the undermining of the right to education for children in Europe (Richardson, 2021). Indeed, the pandemic has led to the aggravation of several existing problems and inequalities between those who have access to digital

technologies and the Internet and those who do not (European Commission, 2020). This is particularly true for pupils with special needs who ideally require adapted equipment (Pettreto, Masala & Masala, 2020).

In addition, students' computer literacy is another important element. Thus, it appears that 'digital natives' may not be prepared for online learning (contrary to their own beliefs) and may need support (Connoly & McGuiness, 2018). Thus, guiding and training students in the software used for online learning should be the first step in any distance education. Teachers, on the other hand, were not better trained to deliver distance learning. Thus, the platforms and channels used were not necessarily the most appropriate or efficient. Thus, a United Nations report recommends adapting initial and in-service teacher training to prepare them better to provide new forms of teaching (2020).

Adapted workspace



In addition to access of computers, the teaching environment has a direct impact on the quality of students' learning. Thus, "the child's level of attention can decrease rapidly if the environment where the child is located is noisy and if the other people in this environment are going about different things" (Boyer & Bissonnette, 2021). In order to maintain this essential attention, it is first of all necessary to be able to offer the student, and even more so the young person with special needs, a workspace that is isolated, as far as possible, from the noise and the comings and goings that are an integral part of life at home. It is also essential that young people have a suitable place to work (seating, functional equipment, etc.) and a timetable that allows them to have time to work offline and time to relax.

Encouraging collaboration and interaction

Supporting exchanges within a virtual working environment is also important as it appears that the level of interaction between the young person and his/her peers can

impact on his/her attention span (Gauthier et al., 2013). When the teacher delivers his or her lessons synchronously, it would therefore be interesting for the teacher to reduce the audience to 8 to 10 students to facilitate interactions and the possibility of focusing attention on each student in turn. It is also important for the teacher to question the students during the learning process and to organise work in sub-groups, facilitating interaction and collaboration between peers (Boyer & Bissonnette, 2021). Indeed, according to a study conducted by Hyseni Duraku & Nagavci (2020), students with special needs preferred and were more successful in attending classes when these were synchronous and in small groups.

Moreover, to make learning more accessible, it also appears essential that teachers obtain information about their students and establish a privileged contact with each of them. Indeed, it is essential that students feel that their concerns, needs and preferences for online learning are considered (Ferrari, 2021). It is also necessary to support and maintain collaboration between teachers to ensure coherent follow-up of students on the one hand. On the other hand, links between colleagues are necessary to support teachers' motivation and commitment to their duties (United Nations, 2020).

Finally, providing a means of communicating with students and their families outside of synchronous learning moments would ensure open and transparent communication and create a coherent supportive community for learners (Younge, Frankin & Foreman, 2020).

Adapted teaching practices and content

Without anticipation, the accessibility of online learning is left to the knowledge and goodwill of teachers and/or parents of young people with special needs. The priorities are therefore currently to make technical resources available to all learners and

teachers, but also to train them in their use and to develop means of accessibility to promote quality distance learning, adapted to the needs of all learners.

In 2015, Burgsthaler was already interested in inclusive e-learning. Thus, she identified different principles to ensure accessibility of e-learning**:**

Perceivable - The information provided, and the interface used should be understandable to young people with special needs (e.g. an audio description of a video for visually impaired pupils)

Usable - The interface and documents provided must be usable by students with special needs (Use software that allows for enlarged characters, provide a word document that allows the student using the keyboard to complete a document without having to print it...)

Understandable - The information and operation of the user interface must be understandable to students, adapted to their level and needs.

Therefore, to promote inclusive e-learning, there are several levels to be taken into account:

Before learning:

- Ensuring **digital equity:** most families do not have one computer per person (Conan, 2020), so it is important to ensure that all applications used online work on mobile devices in case a laptop is not available and that the software used can be downloaded and used by all.
- **Assessing needs**: plan a synchronous or asynchronous exchange with students to assess their needs for adaptations and their level of acquisition of the forthcoming learning. Such practice allows the teacher to plan a lesson that is adapted and adaptable to everyone (Burgstahler, 2015; Boyer & Bissonette, 2020).
- Consider creating learning sequences according to the principle of **Universal Design**. That is, materials and methodologies should be accessible, as far as possible, to all students (with or without special needs). (Burgstahler, 2015).
- In **collaboration with other teachers and parents**: Establish and communicate clear expectations about when teachers and students should be connected. Also

set daily schedules to limit screen time and maximise concentration and the alternation of online lessons and independent work. The teacher and young people should be trained in the use of the software and media used in learning (European Commission, 2020).

- **Provide a timetable/programme** on the type of intervention and provide rules for online courses and anticipate the course of the session (synchronous and asynchronous guidance, necessary arrangements to be made/communicated, work modality, feedback...), how to get all students involved/persevered in the task (European Commission, 2020).

During the learning process:

- Establish clear, **explicit instructions** and present the content and progress of the session (Boyer & Bissonette, 2020).

- In face-to-face or distance learning, students with special needs are entitled to their **reasonable accommodations** (Ferrari, 2021) used in the regular classroom. In addition, new accommodations may also be allowed. For example, students with special needs interviewed emphasised that having the notes of the course in advance allows them to appropriate them and not to have to take notes during the lesson and thus to pay more attention.
- Distance learning needs to be **flexible** so that all students have different options in the way they access course materials. It is important to vary the media used to present courses (pdf, video, books, sounds, images, etc.), to record lectures and Zoom meetings so that they can be viewed at any time, and to offer transcripts and provide subtitles (Ferrari, 2021). Online learning sessions and the ability to view them after the fact have been shown to increase student engagement,

especially for students with special needs, as they can take control of the pace of learning (Kkhese, 2020). Thus, "*employing multiple and flexible teaching methods to reach students with a wide range of characteristics promotes the academic and social development of all students including those with special needs*". (Burgstahler, 2015). To vary screen time, the teacher can propose a manual activity, for example or one that requires moving around (taking pictures...) (Ferrari, 2021)

- **Make the documents and** materials (instructions, exercises, files, readings, etc.) provided to students **accessible** in terms of content and form:

Vocabulary without double meanings, active voice, present tense, one idea per sentence in the instructions, etc., Arial 14, line spacing 1.5, illustrating/highlighting action verbs in the instructions, airy layout, etc.

- Provide instructions and **exercises that pupils are able to carry out independently** (alone or in groups) thanks to reminders, feedback and materials provided
- Allow **extra time** for students with special needs to complete a task (1/3 extra time)
- **Provide immediate/feedback** (or at least frequent) **through** online knowledge checks, comments on collaborative documents and chats to keep students motivated and moving forward.

After learning:

In formative assessment, it is important to ascertain the degree of understanding of the skill developed. Having such information would allow the teacher to understand the difficulties of the students and to propose remedies (Bissonnette, 2012). Thus, distance learning activities have reaffirmed the importance of the formative role of assessments. "By drawing information about individual student learning from diagnostic and monitoring exercises, teachers can provide feedback and modify their teaching strategies to make them more effective. In addition, the development of

formative and self-assessment instruments facilitates a collaborative process between teachers and students to assess their progress towards targeted learning outcomes" (Eclac-UNESCO, 2020, p.8).

Useful software:

- YouTube provides automatic captioning.
- Microsoft Immersive Reader makes text more accessible. For more technological options, virtual tours (check out the many offers from museums and national parks), augmented reality or digital 3D are interesting possibilities.
- Various resources have been made available to teachers to facilitate their teaching by the European Commission (2021): https://www.ecml.at/Resources/TreasureChestofResources/Learners/tabid/4405/language/en-GB/Default.aspx

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