HIGHER EDUCATION STUDIES IN THE DIGITAL ENVIRONMENT
A STUDENT GUIDE

Edited by

Anetta Čaplánová and Estera Szakadátová

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A STUDENT GUIDE

To students current and future ones, we hope that this guide will help you to benefit from learning opportunities facilitated by the progress of digital technologies and expanded during the Covid-19 pandemic.

We remember those, who lost their lives due to the virus, treasure their memories and strive to change the course of the development of our societies towards sustainability, peace, and holistic progress.

Authors

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A Student Guide

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EXECUTIVE SUMMARY

Answering the question how to study effectively in the online education is one of the main topics on the implementation of type of studies. The new teachers and students' roles, the online communication, procrastination, distractions, mental well-being, time management or to find the answer to the question how to be a successful Online Learner are the basic points explained in this volume. The COVID-19 pandemic brought attention to online learning and highlighted also the need to raise the quantity and quality of the educational technology.

In the digital world many students take the virtual learning challenge, but they are aware that they need specific study skills and habits to achieve the best possible benefits and it is not easy to gain these skills as they believe.

However, there are mechanisms and strategies that students can implement to increase the quality of their learning process. Different students are subjected to the same educational environment and stimuli, but they do not achieve the same learning outcomes. An effective learning environment is one, where all students learn something and have the opportunity to improve their knowledge, skills and competences. Especially after the experience during the lockdowns around the world, the digital tools have proven their relevance as an instrument to improve the quality of teaching and at the same time it became clear that an unlinked educational system is no longer effective.

The difficulties of educational technologies that must be addressed for future implementation were discussed by more than two dozen specialists and experts in the fall of 2020. These professionals identified the obstacles and potential solutions for providing high-quality and equitable online and distance education. These experts concurred that convergence and acceleration are essential for educational technology to realize its full potential and satisfy the needs of numerous and varied stakeholders. By bringing together various disciplines and stakeholders, the development of more responsive and effective educational technology systems can significantly improve education and the society at large.

We suggest two significant factors that contribute to the creation of

an effective online course: Universal Design for Learning (UDL) and Assistive Technologies (AT). The first one is an approach focused on being inclusive from the very beginning of the learning process. In particular, the UDL underlines the importance of making information truly accessible to anyone by using products designed to be usable by all students regardless of their needs. The second approach defines any product, whose primary purpose is to maintain or improve an individual's functioning and independence and thereby promote their well-being. AT has the potential to enhance the quality of life for students with learning disabilities by providing them with means to compensate for their difficulties and highlight their abilities. Because students with learning problems have individual strengths, limitations, interests, and experiences, a technology tool that is helpful in one situation, or setting, may be of little use under different circumstances. As a result, selecting an appropriate technology for a student with impairments requires careful analysis of their needs, their opportunities and technology at their disposal. For these reasons we propose an analytical process to obtain an appropriate "technology match" between educational needs and proper technology.

From our point of view, these two factors are not an alternative to each other, but, they are, rather, complementary. UDL is a systemic approach, whereas AT operates at individual level and makes it possible for all students to achieve their academic tasks.

An alternative, which seems to be considered an efficient way of combining pros of both worlds – online and onsite learning – is a hybrid mode of learning. In the post-COVID times, many educational institutions focus on applying online aspects of teaching as a supplement to traditional onsite teaching to increase students' performance. The main advantage of the hybrid mode of delivery is that it can adjust to the needs of students and a particular field of study. Some students or fields need more onsite classes supplemented with online classes and some can be provided with prevailingly online classes and only some specific classes to be held onsite. The hybrid mode of delivery allows students to obtain information quickly, to ensure the effectiveness of the online instructions, higher self-confidence of students, students engagement and better students' performance, flexible learning experience, flexibility of learners and teachers, provision of instant feedback, own pace of learning, wider use

of digital resources, learning and teaching from any location, intensive interaction between learners and teachers, decreased educational expenditures, time management and many others. On the other hand, the use of hybrid mode of delivery depends also on available technology, internet connection and its stability, technical equipment and competences to use digital technologies. If these are lacking, then, they would represent a disadvantage of a hybrid mode of delivery.

Moreover, there is the need for technical support, support in developing appropriate methodologies for hybrid mode of delivery, a problem may be lack of social contacts, lower social skills of students, additional requirements and additional workload for teachers. In addition, the support of students in hybrid mode of learning needs to be personal and focused mainly on the students who have special needs. But, hybrid mode of delivery is suitable for learners requiring special assistance, since it is very flexible and allows to learn onsite or online as most suited to a student.

The new character of the learning system is even more relevant for students with special needs. They need to be appropriately engaged in the learning process and the only way to do that is by creating a system of connection across all relevant parts of the learning process. In this regard, the central point is the concept of their engagement, because learning is not a place, rather it is a relationship between a teacher and a student. Students (with special needs or not) must feel connection with teachers to learn well and effectively. It becomes even more decisive how teachers organize their teaching activities than in the past.

To develop a successful hybrid learning environment, students and teachers should consider clear goal setting, mapping of the teaching and learning processes, and course objectives. It should be decided which goals would be better achieved in an online and which in an onsite mode. Hybrid mode of delivery is effective, if students have positive approach, keep up active communication with teachers and with their peers, learn to use new technologies and familiarize themselves with new devices, are open to new approaches and methodologies, minimize distractions and create their own workspace. They should also check for assignments and their submission dates regularly, stay organized and manage their time effectively. They must be equipped with a reliable laptop, stable internet connection, have access to all required online platforms, be prepared to come to school

as needed, fully concentrate in classes, develop a network of classmates, and focus on appropriate time management. If students are engaged and would follow these recommendations, hybrid mode of delivery will lead to improving their performance and it will be effective for managing their time better.

The principles described above are further elaborated in the following individual chapters, which readers are invited to read chronologically, or as a reference based on their needs to learn more about key aspects to be considered to benefit most from the digital learning.

CHAPTER 1.

DIGITAL TEACHING AND LEARNING – STUDENTS' PERSPECTIVE[1]

Anetta Čaplánová & Ľubomír Darmo

1.1. Online learning at universities during the pandemic and beyond

The WHO proclaimed the spread of the new COVID-19 virus as a global pandemic in 2020 which has since developed into a severe threat to public health globally. Virus preventative and quarantine procedures have been used to prevent the spread of the virus and to contain the pandemic. Social distancing measures have been imposed in many nations, affecting also their education systems and leading to massive school shutdowns. In compliance with these regulations, educational establishments were required to make necessary and prompt adjustments to ensure continuation of teaching and learning and academic advancement of students. The **educational strategies were shifted to an online format** – online teaching and learning.

Online learning is education that is facilitated by the use of **communication and information technologies**. In general, the development of computer systems and software facilitated the development of novel educational methodologies and has altered the nature of learning and teaching. Earlier research (Lisa, 2021) has demonstrated the effectiveness of online learning and virtual learning and teaching education platforms, e.g., in medical fields. Online learning has been found comparable with conventional education in terms of information acquisition and productivity and led to the introduction of this new mode of instruction as a complementary method to standard modes of education. **Mixed, or hybrid, learning means** merging in class and distant education to promote students' independence, interaction, and collaboration. This type of learning applies developing, scheduling, and implementing the study programs

[1] We would like to thank Soha Jamil for supporting us with the preparation of underlying background documents for this study.

including both onsite and online educational activities. This type of learning has been shown to improve students' happiness, enthusiasm, involvement, and productivity and to encourage dynamic and self-motivated learning and online mode of instruction has been used as complementary even before the pre-covid period (Lisa, 2021).

The university's online **learning management system (LMS)** should be used to assist the development of effective online educations tools. It should facilitate self-directed learning within the developed framework allowing to organise classes, provide access to information, or encourage student interaction. These tools have become crucial during the onset of the pandemic and universities, which invested into these tools pre-covid, were better equipped for the smooth transition to fully online instruction. For example, classes that were previously held on campus were quickly converted to full online classes. Prior to the COVID-19 outbreak, the first 50 percent of the term consisted of on-campus academic learning with discussion forums, clarifying conferences, and participatory lectures; the second part of the term consisted of remote educational activities provided through various online communication systems. This helped students and instructors to see the difference between the two modes of instructions clearly (Dayagbil, 2021).

Although there are several viewpoints on the effectiveness of learning, such as student accomplishments and academic staff views, students' opinions are crucial, since students are the fundamental reason behind the existence of the educational process as such. Students' opinions represent direct information about their learning experience and objectives. Their views are especially critical when novel education methodologies and technologies are introduced. The research has shown that students' experience is affected by such factors as their **personal feeling of success, their satisfaction with the help they get, their understanding and experience with learning procedures, emotional and intellectual stimulation, and their perception of community**. Nevertheless, the criteria that students consider to be indicative of high-quality online instruction have not been yet fully established.

It is critical to recognise that from the perspective of students the online learning process is also influenced by **non-teaching aspects**. There are three elements that we should mention here: a) **Comfort**, b)

Characteristics of students, c) **Antecedent Elements**.

Comfort represents a significant consideration not related to the quality of instruction. Student's characteristics such as **self-discipline** or familiarity with computers affect online learning experience and its effectiveness for students through their responsiveness and preparedness to learn online. Lastly, several factors such as teachers' training and motivation of academic staff may contribute to enhanced online teaching but, perhaps, not to be immediately recognized by students. Student evaluations of teaching should be used to identify their experience with online instruction. Thus, existing evaluation forms should be adapted so as they were able to capture opinions of students with regard to the online aspects of instruction.

Secondly, although several studies (e.g., Yang, 2004) have examined student quality perceptions of online learning, the complexity of their impacts has not been yet comprehensively understood (Yang, 2004). Some studies (e.g., Fitriya, 2021) have studied students' feedback on the quality and general performance of personal approaches and techniques to learning in a digital environment such as the use of portable devices, tiny groups, research papers, simulations, multimedia and others (Fitriya, 2020). Unfortunately, such research will not add much meaning and relative significance. Several studies used checklists trying to measure students' general online educational experience, however, they included such variables, which made it hard to distinguish between educator's and situational factors affecting perceptions about the quality of online education (Cavanaugh, 2012).

COVID-19 swept over the globe within several weeks and institutions across the globe were required to shut their physical buildings and move all their educational programs to the internet (Bao, 2020). Many educational institutions were not ready for such a drastic shift away from traditional onsite teaching/learning environment and they began their online teaching with poor facilities and non-existing online teaching systems (Wang, 2020).

However, it has been an important asset that significant advancement in the development of learning platforms took place over previous few years, and these were available to be used at the very onset of the pandemic and have proven to be quite beneficial during this period (Dhawan, 2020). Also, there have been many **internet**

platforms in place used in the online environment (Nash, 2020). On the other hand, universities found the switch to the online mode of teaching a difficult task. In addition, teachers and students had to cope with a broad variety of logistical, technological, budgetary, and social difficulties (Peters, 2020).

Most students have struggled with worries and stress as the instruction moved to the online mode. As a result, students' ability to adjust to the distance online classes might have been hampered by their **mental concerns**. Furthermore, not all students have the same access to digital technologies and have adequate knowledge and experience with them to use them efficiently in learning. Even though access and experience with digital technologies across the student population existed also pre-pandemic, the pandemic brought the existing knowledge of technology gap to the forefront.

Because of the global pandemic, many entities, including schools, had to change their operational tactics and implement new technologies immediately. Typically, they did not have sufficient time to consider, how different technologies should be implemented and incorporated in their current situation (Carroll, 2020). Institutions across the globe were affected in the same way. The need to understand, how colleges around the world transitioned from the onsite to the online instruction and embraced digital learning, led researchers to undertake related studies (e.g., researchers in India and in the United States tried to comprehend the perspective of students on distance classes during the pandemic using epidemiological findings - Patricia, 2020).

Before the pandemic, few countries such as the United States had a substantial system of distance learning in place (Mishra, 2020). On the other hand, none of the institutions were prepared for an absolute shift to digital teaching. As the results of empirical research indicate, students believe that they learn more effectively in a traditional classroom setting than in online, and distance classes (Bojovic, 2020). In this mode of learning, students lack the assistance from their colleagues in classes or labs, and access to books and other resources can also represent a challenge. On the other hand, students believe that online education enabled them to carry on with their studies throughout the pandemic outbreak. Educational institutions have used new techniques to make sure that their students get an uninterrupted

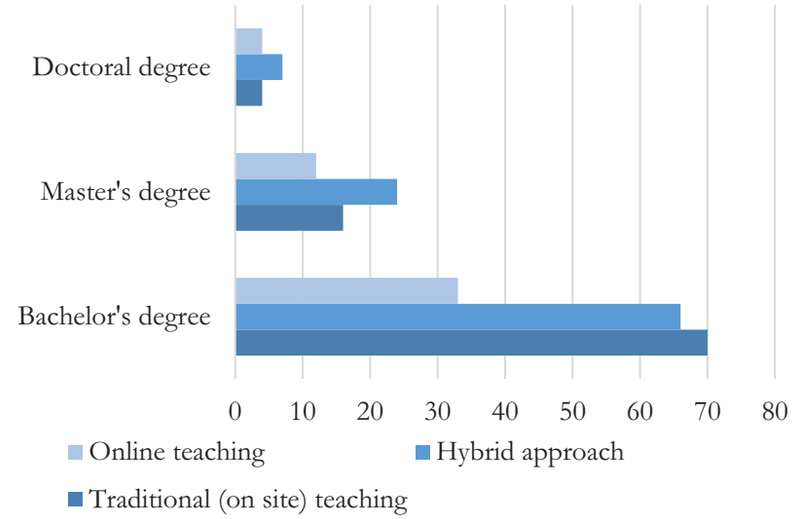
education (Zhu, 2020).

The delivery of course information by instructors takes place using a variety of different media. In order to teach their programs, instructors have increasingly relied upon **virtual learning portals, teleconference technologies, or even social networking sites**. Instructors may exchange class notes or an interactive content relevant to their classes with their students using available virtual learning systems many of which are also free to use. Students may also send in their projects using different virtual learning networks, and teachers can maintain track of their work using these portals. The organization of lectures and group discussions is facilitated using videoconferencing systems. Additionally, educators can use digital labs to assist students in teaching scientific courses (Ray, 2020) and assign them to practise and experiment with the problems related to the topic discussed while sitting at home (Diaz, 2020).

The effectiveness of digital/online evaluation methods and the efficiency with which students may connect with instructors and other students using online technologies are lacking sufficiently robust research. Only a small number of researchers have looked at these difficulties. However, the research has found that many instructors are unsure about the online evaluation procedures.

There was a survey carried out among students and lecturers at the University of Economics in Bratislava, Slovakia, in Spring 2021 focused on their **perceptions of online teaching and learning** (Čaplánová, Szakadátová and Darmo, 2021). The results have shown that students preferred a **hybrid or traditional mode of learning**. Bachelor students' preferences were slightly more favourable towards the use of traditional (onsite) teaching, while master and doctoral students preferred a hybrid mode of learning. The preferences of respondents (students) are illustrated in Figure 1.1.

Figure 1.1. Preferred teaching method by the degree of study (number of students)



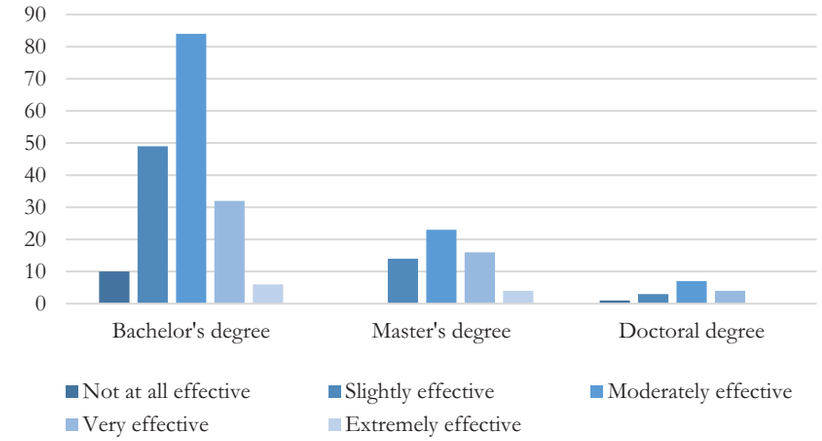
Note: The sample size for bachelor's degree is 182 students, for master's degree 57 students and for doctoral degree 15 students.
Source: Čaplánová, Szakadátov and, Darmo, 2021

A very important result of the survey is the perceived effectiveness of **remote learning** by students. Their responses show that students perceive online teaching as moderately effective at each degree level of study. "Almost half of the bachelor and doctoral students find online education moderately effective, and about 40 percent of master students find this teaching method moderately effective. No master students in our sample considered distance learning to be ineffective (i.e., having chosen an answer "Not effective at all"), whereas approximately 5 percent of bachelor's degree students and 6 percent doctoral students find online teaching ineffective. On the other hand, approximately a quarter of all students find remote learning very effective or extremely effective" (Čaplánová, Szakadátová and Darmo, 2021).

There are several reasons as to why students can consider **remote (online) learning** moderately or less effective as traditional (onsite) learning. The most important factors could be difficulties to concentrate during online classes, or self-study, as not all topics are

covered during online classes, there are less opportunities for discussion during the online learning, or problems related to technical equipment of lecturers (e.g., not using graphical tablets). On the other side, the remote learning can be found more effective by some students due to the opportunities it provides for **better time management** and more time is available to be devoted to projects or assignments. More **assignments and projects** engage students for more university/course related work as in the traditional (onsite) learning. Remote learning can have a positive effect on shy students, who can be more encouraged to speak if they are "hidden" behind their screens. The results of the survey focusing on perceived effectiveness of the remote learning are shown at Figure 1.2.

Figure 1.2. The perceived effectiveness of remote learning compared to traditional (on site) teaching by the degree of study (number of students).



Note: The sample size for bachelor's degree is 182 students, for master's degree 57 students and for doctoral degree 15 students.
Source: Čaplánová, Szakadátová and Darmo, 2021

1.2.The shift to online learning– adopting to a new situation: opportunities and challenges

Online classes are commonly used by universities and it can be expected that they will represent an optional mode of learning after the pandemic. As any other mode of instruction, also online education has

advantages and disadvantages. Figure 1.3 below provides an overview of most common challenges, but also opportunities from the perspective of students.

Box 1.0.1. Challenges and opportunities of digital education (Students' perspective)

Challenges	Opportunities
Digital Illiteracy: **Students must be able to log in, engage in courses, use LMS, and interact with professors and classmates online in order to take online classes.**	Lower Costs: Even though students in the digital education pay similar tuition fees as onsite students, they do not need to pay rent, commute or more expensive meals.
Technical Issues: Slow connection may slow down the class participation. A fast connection is required for quick and efficient work. It is simple to locate free Wi-Fi, but the connection may be inconsistent.	Location: Digital learning also offers flexibility in terms of potential students' location. They save money on relocating expenditures and enjoy the convenience of learning from about anywhere, where an internet connection is available.
Time Management: Digital studies provide flexibility in the schedule of students and they may have more time to devote to the family, or a job. However, managing school, job, and personal duties may be difficult. Excellent time management is critical.	Scheduling Flexibility: Digital education offers schedule flexibility for many students. Some programs enable students to begin courses immediately. In other circumstances, students may choose between courses of different duration.
Motivation: It is easy to procrastinate if students are not physically surrounded by classmates and teachers. Some online learners may get disengaged and their performance can suffer.	Pacing Options: Students can finish their work and assignments at their own pace within given constraints. At some establishments they may be able to choose between synchronous, asynchronous, or accelerated classes.
Lack of Direct Social Contact: Lack of direct physical and social contact between students and teachers and between students themselves poses a serious challenge for many people.	Accessibility: Accessibility can be a great opportunity for many students. At lower price, flexible location and at individual pace a lot more students can adapt education to their own circumstances.

Source: Majid (2021), Adedoyin (2020)

Digital instruction can provide convenient access to class resources, debates, and teacher feedback. The assignments and resources may be accessed from any smart device over the internet, whether it is on campus or in the student's residence. There are several factors why students may prefer to study in an online learning program

to the program in a typical on- campus study. First, some students work part-time or even full-time, which restricts their ability to be present in onsite classes and comply with strict onsite class schedule. Their work hours may clash with the class hours and using online classes would make the management of their job demands and classes simpler. It is difficult for an individual to adequately manage their work obligations with coursework and studies, when they work long hours. To cope with the time limits imposed by a work, one may more easily manage to take an online class. Online classes **increase their flexibility, increase their independency and may allow them to choose their preferred speed**.

However, to perform well in the online study, students must be responsible and capable of working alone. Since they do not actually attend lectures onsite, teachers are not continuously able to provide close guidance on the tasks, or assignments. Other obligations may prevent students from studying as frequently as if they were engaged in physical classrooms; nonetheless, it is students' responsibility to ensure that they complete all their classwork. Furthermore, one of the primary goals of university education is to develop a sensible person with the abilities to properly handle a demanding schedule (Ratcliffe, 2001).

Students may also assume that the coursework needed for their online programs could be postponed until they will have more time. As a result, they can fall behind the course schedule and their performance may suffer. Then, it would take some time to close the gap so as the situation did not escalate. Individuals that neglect their education duties sometimes drop out from the program, since they fail far behind or fail to finish necessary course work before the final deadlines. Thus, it is of utmost importance that students made time in their schedules to properly continue with their online study tasks. **While online programs are more accessible than regular onsite courses, they must be treated by students in the same way as if they were typical onsite university courses and students should avoid procrastination.**

Students in the online programs should be able to interact with faculty and other students. This prompts them to be more active in their studies and class discussions and to keep up with the tasks and obligations. Online classes may include, e.g., a **debate board where**

students may communicate with one another. They should have the opportunity to analyse and comment on each other's assignments, as well as provide feedback to comments of other students. By engaging in the discussion with peers, students are forced to analyse their own emotions and thoughts. This makes academic study more exciting since it allows students to express their personal views while developing their communication skills.

Generally, **online classes** are suggested to people, who have jobs or have domestic commitments and are interested to progress with their studies. Online learning is not only handy and flexible, but it also educates students how to become more focused without direct external pressure.

Many students enjoy online courses. They enable them to enrol in courses that would not be accessible to them in a standard onsite form (e.g., many of top tier universities provide for credit, or no credit online courses at lower or even no cost to interested individuals). **Online courses may be well suited to students with specific needs.** They provide such benefits as **cost savings, saving of time, and most importantly, accessibility**. Thus, online courses and programs represent an ideal solution for students with non-standard educational demands. Nevertheless, one of the drawbacks of online education can be a **threat to the computer system** caused e.g., by a virus. Not to lose data on their devices, it is crucial to set up an effective backup system, which can prevent such incidents from occurring.

But, the benefits of online learning are considered to exceed by far the drawbacks. Students can save money by taking online courses. This mode of instruction allows for savings on the transportation costs, since students do not need to travel to campus. Additionally, online programs allow to save time, which is the scarcest resource. Just eliminating travel time allows time to work on other duties or enjoy more free time, or time with family.

It is equally important that students should gain the same knowledge, while studying online, compared to if they studied onsite in a regular classroom. They can also contact their teachers or other students electronically at any moment. **Effective online classes should include a discussion thread for students to share feedback and suggestions regarding the topic covered.** By attending online

courses, students should not feel as if they are losing out on anything. Students may involve their family in their online tasks and ask them for their opinions. They would be spending time with their family, while learning at the same time. They can also create online polls and interview other students about their thoughts.

If having an option, some students might be inclined to take all their courses online. Online programs enable them to study, work, and have a family life as well. The problem would occur, when the computer, or the internet connection failed. Also, some students lack personal **social interaction**. Then, it is suggested to organise intensive onsite events for online students periodically, so as they were able to meet with their teachers and peers and the social distance was overcome. Of course, this was not possible during the COVID-19 pandemic and many students were found to suffer from depression, feeling isolated and abandoned.

Education was one among the most impacted areas by the coronavirus outbreak, with schools struggling to find ways to stay operational. Web-based learning technologies have proven to be effective in these challenging times. Further development of education technology solutions, particularly, of virtual learning applications market have sped up in the past two years leading to a tremendous **technological advancement**.

There are several advantages to distanced learning, including mobility, easy accessibility, decreased physical facilities requirements, cheaper prices, and more adaptability. However, this does not negate the fact that it has also flaws. According to the latest poll conducted in Hong Kong by the Hong Kong Christian Service's Shamshuipo East Happy Teens Club, seventy percent of pupils, who had recently switched to a virtual education system found the change to be uninteresting and found it difficult to motivate themselves to attend the lectures (Lee, 2020).

In a separate poll by Educause in USA, seventy percent of forty thousand university undergrads said they favoured face-to-face classroom learning over distance learning. This shows that in order to fix different flaws of virtual classrooms, it is necessary to understand the digital environment first (Martin et al., 2022).

As stated above, students enrolled in online programs frequently

suffer from the absence of human contacts with other students and instructors. A direct, personal relationship between students is also necessary for sustaining the interest, and this is something that the **web-based learning system** is not able to effectively address. Students need engaging instruction, and this is what educational institutions need to understand.

Online programs do not require large physical infrastructure in the form of classrooms, they require appropriate software, computers, steady energy supply and stable internet connection so as they can be implemented.

Also, students should have access to the same infrastructure which, if not available, should be provided to them by their university, or other institutions such as public libraries. Access to this infrastructure is not such a problem in developed countries, but in developing nations like Nepal, Sri Lanka, or India, technology is accessible only to a small percentage of potential students.

Also, even though the current generation is used to interact with technology, this does not automatically imply that they are also digitally literate. Mastering the use of relevant software is required to learn online, which can be challenging for many students. In a virtual classroom, students must also comprehend online messaging and be aware of their rights and obligations as learners as well as of ethical aspects. Universities should develop online training in relevant software and in other important aspects of online learning to ensure students are able to acquire necessary skills to engage in online learning in an effective way.

They should also make sure that students have **access to technical assistance**, to which they can turn, if they get stuck with technical issues.

People are social creatures. The web was built around the assumption that people will always want to engage in social interaction and learn more about each other. On the other hand, **digital engagement cannot replace direct personal contact**. The actual onsite involvement of classmates and teachers in the same physical environment creates an ambiance that cannot be recreated using the digital methods. In the real classroom, students are unable to turn off cameras or take a nap. Physical classes also enable instructors to pay

greater attention to individual requirements of each student.

Students with special needs are a group of students, who have been frequently overlooked in the development of virtual education. However, they require a more individualised and direct approach to learning. The character of the impairment and of special needs should be taken into account and teaching methodologies adapted to the needs of these students. Also, these students should be provided additional support and opportunities to interact with their instructors to overcome the effects of their disadvantage.

Even though the teaching and learning framework were modernised because of the change to online courses, unfortunately, this has not been the case regarding the content of courses. Universities have frequently kept the outdated learning content and framework. On the other hand, students rethought education and their expectations from it due to the changed environment, but also to changed labour market, when corporations like Apple and SpaceX have chosen to waive a university degree as a requirement for jobs.

Moreover, online platforms such as Udemy, Masterclass, Skill share and others provide excellent information on the topics normally included in the university curriculum at lower cost. These systems also allow users to select the structure of their own studies. This development should prompt academic institutions to reconsider their overall approach to teaching/learning. Also, **in a marketplace** where reputation of an education institution from which a student graduated is key, virtual education is frequently not considered to be on par with the onsite instruction.

Box 1.2. How to make online education more effective

Tips for Students

- **Find time wasters**. Use technologies to filter off social media and other time-wasters when you need to concentrate on academic tasks. You may download a free program that bans specified websites at specific times. To finish a study task, incentivize yourself with a non-school related activity.
- **Divide duties.** Make a weekly or daily to-do list. Use your list to find optimal times of the day to address each activity. Establish routines to help you become more consistent in managing your time.
- **Enlist aid.** As an online learner, you'll have less time to accomplish activities you used to do. Ask your parents, spouse, or housemates for assistance with household chores and other chores.
- **Avoid multitasking**. It reduces your job effectiveness and overall productivity. Focus on finishing one activity at a time to achieve larger objectives.

Sources: Patterson (2021), Rivera (2020)

It should be also considered that pre-covid, online degree-granting courses were often unaccredited and unrecognised by employers or other universities. Even though many universities and colleges have adopted web-based learning, universities and authorities have yet to acknowledge that it as a valid way to achieve a proper qualification. The experience from learning during COVID-19 may be helpful to change perceptions of online learning as being sub-standard to standard onsite programs. Also, bad reputation that online learning acquired in the past due to its improper design, or implementation, might be more readily overcome as the experience and findings from online learning during the COVID-19 pandemic become better known. Bad reputation of some of the online courses and programs has been attributed to technical challenges, connectivity concerns and boring courses. Many students find online education tedious and frequently lament about their lack of drive to complete a course. Even instructors have often complained about **scarcity of resources** to make lessons more interesting, which then, could result in the loss of enthusiasm on both sides. Also, in online learning, educational excellence is often harmed due to the absence of monitoring in the virtual learning environment. Interruptions have multiplied as a result of the unfettered utilisation of computers and cell phones throughout lectures, frequently at the expense of paying attention in classes (Gutte, 2022).

There is always a solution to any problem. There are several online learning platforms that have been continuously growing and evolving, and this progress can help to overcome existing disadvantages. Since the benefits of digital learning are many, it makes the learning process more affordable and accessible. However, the most challenging is to make the interaction more engaging, since technological problems will be eliminated by the progress of technology.

1.3.Increasing the acceptance of the new learning mode through university services and teaching support

The coronavirus outbreak has produced unparalleled issues in the areas of economy, social welfare, and politics throughout the world. It has not only caused a medical emergency; it has also affected many sectors in the economy, including education. Around the globe, quarantines and curfews impacted eighty seven percent of enrolled students, resulting in more than one and a half billion students being forced to miss schooling and other associated educational activities. Because of the unexpected nature, ambiguity, and instability of the situation, the education system was forced to react quickly to accommodate the shifting educational environment.

The chaos caused by the virus in the university system was so significant that colleges had to respond as quickly as possible to minimise the impact of the situation on students. They were forced to establish a **robust education system based on scientific knowledge, available technology and need-based data**.

Dealing with the consequences of virus at institutions of higher learning requires participation of a diverse range of stakeholders. The management, which endorses the instructional practices, the students, who are at the heart of the system, the university staff or educators, who have various academic responsibilities related to the instruction, parents/ families, who support students, the society and the partner organizations, who create demand for educated workers and to which education brings also benefits. These groups need to be consulted and communicated with, when designing changes in the higher education system. Thus, each higher education institution has a significant number of constituents and partners.

The university community should pay attention to the analysis and determination of the medium-term and long-term effects of the pandemic on education and learning, and the experience from this specific education period. The analysis of alternative scenarios and the awareness of the environmental factors and dynamics of each institution are required to effectively address present issues that these institutions face. Universities must be able to withstand adversity in times of crises. **The educational system must be resilient, i.e., it must have the capacity to endure difficulties of different kinds and come out stronger, smarter, and more individually empowered.** The higher education system must be prepared to establish strategies for moving ahead and dealing with the new reality. Higher education must address the need to provide consistent quality of education regardless of the situation and time-period.

Colleges and universities must be strong in the face of unexpected events and they must discover **innovative methods** to maintain the standards of the teaching–learning processes. Nevertheless, this abrupt transition has led to difficulties, particularly for those students, who did not have access to internet. When online courses have become as widely used as a consequence of the pandemic, the divide among those, who have good access to the internet and those, who do not, becomes even wider. Because of the limitations of internet access, the notion of effective learning has evolved as an alternative for online learning, particularly at higher education institutions. A flipped classroom is concerned with providing learners with alternatives in terms of the speed, location, and form of their learning, and it may be encouraged by good educational practices. In order for learners to progress with their studies, they are provided a choice of where and when they may progress, as well as the methods they can use to conform with the criteria and demonstrate the learning results. Versatile teaching and learning include a wide range of techniques that may be tailored to fit various requirements of a wide range of students.

Considering how adaptability is incorporated into all major dimensions of teaching and learning is a vital part of transitioning to a fluid paradigm of instruction and learning. An important opportunity is provided by the adaptability of the curriculum to its full potential. The study of the effect of adaptability in forecasting pupils' web-based learning self-efficacy in maths and their final maths success using

survey data of over 1500 Australian teenagers from 9 different high schools found that adaptability was strongly correlated with greater levels of virtual learning efficacy as well as with improvements in subsequent accomplishments, in addition to the impacts of eLearning requirements, online and family learning support, and reference characteristics. Web-based education self-efficacy was also found to be strongly correlated with improvements in accomplishment and to be significantly influenced the connection between ability to adapt and success. As an outcome from these results, adaptability has been identified as a valuable personal asset that may support learners in their online courses, even during times of remote teaching, such as those experienced during the pandemic (Martin et al., 2021).

Syllabus reappraisal should not only focus on the substance of what is to be learnt and delivered, but also on the ways in which it is to be taught and discussed. The flexibility built in the curriculum should be student based; it should consider the demography and other factors related to students such as accessibility, technical literacy, styles of learning and skills, various knowledge perspectives and a diverse and adaptable range of appropriate options should be ensured. It is necessary to strike the right balance between the acquisition of important fundamental abilities by students and the needs of instructors to achieve the desired results of the program, which is a challenging task.

It is also necessary to take into account **students' participation** in the teaching and learning process. This is related to the development and design of effective educational experiences that ensure that each student has the opportunity to take advantage of the majority of educational options. Universities should explore adaptable distance learning alternatives such as correspondent courses, component-based learning, and project-based training. In case of those students, who have adequate internet access and PC access, simultaneous electronic education, delayed web-based learning, and interactive online learning are options that might be explored.

In emerging economies, digital classes are seen as a viable option to meet the growing demand for university education. An example can be Pakistan, where online education is marketed as learning for everyone, with the goal of reaching out to students living far away from major economic hubs and cities, who cannot cover the costs of traditional

university education (Iqbal, 2010). Also, **virtual education can help to tackle challenges of overcrowded classes, growing enrolment, and a scarcity of qualified teachers** (Ikpe, 2011). In this environment, incorporating digital programs at universities can be a necessity to tackle operational challenges connected to accessibility and the effectiveness of educational experience. Online education is also intended to contribute to the improvement of students' **technological knowledge**, which is in high demand in the modern job market (Bediang et al., 2013).

A number of difficulties was raised in the context of expanding educational software in underdeveloped nations. According to the results of the study conducted among students and teachers at three institutions, poor acceptability of web-based education was attributable to lack of knowledge, lack of adequate computer literacy, unstable infrastructure and network connection, and high cost of deployment of the system (Folorunso et al., 2006). Restricted access of students to internet, insufficiently skilled faculty, and people's perceptions were found among the largest challenges faced by universities and colleges. Also, the fact that the prevalent language in the digital context is English, there is the need to translate the interface into local languages to attract a larger number of students (Iqbal, 2010). Another research found that students' worries of exclusion and technological incompetence were the primary reasons for their opposition to online experience (Addah, 2012).

Researchers also looked at such characteristics as accessibility of technology, possession of a PC, and computer related skills, would promote the acceptance of online learning. Using a poll of undergraduates from Cameroon, Bediang et al. (2013) found that two-thirds of students were unfamiliar with the notion of web-based education, and that seventeen percent of students did not have access to a PC at home. Most students who have used online services, had just rudimentary PC abilities, such as sending emails and doing an online search. Another research conducted in Jordan (Akhu-Zaheya et al., 2011) found that the majority of pupils did not have access to a PC in their residence. Students who had insufficient knowledge felt stressed.

Another research involving online specialists in poor countries focused on identifying key achievement elements (Bhuasiri et al., 2012).

Internet skills, performance expectancy, mindset regarding the technology and technological efficacy were the top four criteria identified by the research and were regarded by ICT professionals as most important. Academic staff placed the ease of technology utilisation and usefulness, stance towards online learning, program adaptability, and sense of direction as four most important factors to consider, while developing a study program. Researchers came to the conclusion that individuals in underdeveloped nations have lower level of familiarity with computers and as a result are significantly more sceptical of virtual programs.

In the creation of structured questionnaires used to measure the acceptance of emerging innovations, a variety of theoretical views have been taken into consideration. Conceptual approaches for technology adoption are anchored in the study of the technology adoption (Lee, 2011), but they each take differing approach. In his diffusion theory Rogers (1983) points to five elements of creativity as follows: comparative edge, interoperability, intricacy, tangibility, and reliability. Using Roger's theory as a foundation, other researchers developed a tool that included two more frameworks: voluntariness and appearance. Voluntary aspect describes that having the opportunity to choose whether or not to utilise innovation should affect the desire to accept it, and the appearance is defined as the extent to which the use of innovation is interpreted to augment one's identity or prestige.

Box 1.3. Tips for increasing the efficiency of digital education

Tips for Students

- Treat your digital course like you would treat a physical course.
- Be accountable for your actions.
- Choose a specific space for studying and keep it organized at all times.
- Actively participate in class activities and engage in all discussions.
- Invest in a stable connection.
- Ask for help without hesitation whenever you need it.

Source: Joubert (2020)

The **Model of Acceptance of Technology**, sometimes known as **TAM**, is another extensively used paradigm (Davis, 1989). User satisfaction, usefulness and ease of use are considered the most important characteristics that impact users' attitudes, intentions, and observable behaviours, when it comes to using new technology. The basis of the theory is that users are more likely to accept innovation if

they believe it will assist them in doing their jobs and if it is simple to use. The TAM model has been used in a variety of online learning projects. For instance, Park (2009) sought to anticipate students' intentions to utilise an online education system by analysing their prior usage of this system. The study found that the components of the Technology Acceptance Model were good predictors of the adoption of online programs. Researchers found that customer satisfaction with the use was highly correlated with mood, and that online self-efficacy and perceived enjoyment were both the strongest determinants of intention to use online learning according to the author's findings.

The Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003) is a model of innovation adoption and usage. Eight conceptual approaches are used in the UTAUT paradigm to forecast aspirations for using innovation as well as behaviour linked to the computer use based on four components. Most studies have used the UTAUT architecture to design surveys, and their results have been published. This approach has been used e.g., to anticipate the acceptance of Music players and Online banking platforms in South Korea and the USA (Bin, 2011).

When compared to conventional face-to-face class lectures, online learning offers a very different setting. The implementation of distance learning significantly affects students' happiness, productivity, and perseverance (Irani, 2005). According to the experts, three types of engagement are critical in e-learning: student to student contact, student to resource interaction, and student to teacher interaction (Moore and Benbasat, 1989). According to the BEAN study of undergraduate and postgraduate students in Vietnam studying in the online classes during the pandemic, the **reliability and quality of web connection was rated as the most important aspect influencing students' educational experience with distance courses**. The following three essential aspects influenced students' online learning experience: a peaceful and relaxing study atmosphere, the encouragement of instructors, the simplicity of the usage of the learning management system. A similar finding was made in research done on the acceptance of blog posts (Pardamean and Susanto, 2012) in which it was found that expectations of effort and social factors played a role in the acceptance of blog platforms. This study used blogs as a reference for identifying how new and upcoming systems and

software are adapted and accepted by the population, which implies what factors could affect the acceptance of a new technology such as online learning. Thus, we may expect that these factors may be relevant also for online learning.

1.4.The assessment of online learning outcomes in the digital setting

In recent decades, there has been a shift in **students' assessment**. Even though the vintage pen and paper techniques are still rather widespread, modern techniques have been developed to support instructors in their endeavour to carry out effective assessment of students.

Generally, assessment/evaluation is a method of collecting data about what students understand as a result of their academic experience in a formal setting. The findings are often used to highlight development needs as well as to guarantee that the program fulfils the achievement of learning outcomes. The general objective of the assessments is to review and improve the experience for students; however, the goals might differ somewhat based on the kind of evaluation that is utilised in the classroom.

There are two fundamental types of assessment in online courses:

Formative assessments are conducted in a virtual classroom or session and are intended to judge how well a student understands the subject matter taught. The effectiveness of this assessment is maximised when it is continual and constant, and when it provides essential information to students.

In certain cases, the examination results are known as a ***qualifying examination***, and they are used to determine what a student has learnt after finishing a program. The assessment may also assess how effectively the class material contributes to the entire learning objectives of the program.

There is little doubt that evaluations are about more than just scores. When they are relevant and well-constructed, they assist students to prepare for the assessment by encouraging them to engage with the material, and share their learning as a response to questions, solve problems and convey knowledge effectively.

Quizzes are a well-established kind of evaluation. Furthermore, when used in conjunction with computers, they are an appropriate tool for engaging students in their study. Multiple-choice questions, fill and blank problems, and spotlight queries are also common types of test questions. Quizzes have an advantage that they are brief and simple to evaluate. Also, the topic sequence and alternatives may be randomised, resulting in a test that is distinct to each learner. Virtual tests are useful for assessing achievement of educational objectives over many participants. Given that all students complete the same exam, analysis and comparison of outcomes across various sections, institutions, and regions becomes possible.

Also, before the start of a course, ungraded digital quizzes may be assigned to students to get a **preliminary survey of their present understanding**. An information check exam may also be embedded within a unit to reaffirm topics presented in the session, or a comprehensive scored quiz can be administered at the end of the course to assess knowledge achieved. Also, various games can be used periodically to assess knowledge and progress of the class, e.g., Kahoot represents a popular site for such learning games.

Opinion-based or essay-based problems are one of the most common forms of qualitative assessment used. They encourage students to examine their ideas, emotions, and views while also assessing their understanding of a course or subject (Reeves, 2000). As a result, this type of inquiry promotes understanding and is particularly fit for assessing undergraduate or graduate degree students. Open-ended problems encourage students to spend more time thinking about, organising, and composing their responses than other types of assessment. When a student links data and applies solution to address a pragmatic problem, this style of assessment is known as a drag and drop test. Adding text and graphics to a drag and drop exercise provides a more authentic experience that is both demanding and entertaining, while also making it more interesting. This kind of evaluation should be used, when students should demonstrate their ability to apply their knowledge in a real-world context.

A **live teleconference** may be also used in online learning to provide a more personalized feel to the educational assessment experience. Academic competency in speaking as well as subject matter may be tested through web discussions in programs in which command

of certain abilities is a critical prerequisite, such as language or music (Yang, 2010). Conducting collaborative interviews may be advantageous in a variety of situations, also the opportunities of situational interviews should be explored.

Student-instructor discussions may also contain a coaching element that allows students to get instant response from professors while also feeling more accountable for their academic progress. It is possible to prepare students online for genuine talks with clients, co-workers and other through the use of interaction simulations. If a discussion exercise is used that is based on a situation that a student would encounter on the job and provide an environment for them to practise before presenting to the class. Also, conversation scenarios may assist students with mastering hospitality and sales services abilities, as well as determining how well they are ready for a business meeting or other professional setting. As a teaching supplementary resource, these exercises may also be beneficial for seasoned people who wish to brush up on abilities that they have not used in a long time (Colman, 2021).

The use of **polls** allows students to provide immediate response and comments on their educational experiences. They may be used to assess everything from academic achievement to the reasons behind the selection of an alternative during a class. Polls done digitally are very interesting for students because they enable them to express themselves, make their voices heard, and are relatively fast to finish. The survey prompts may be also utilized to immediately attract and concentrate students' interest on something vital, such as during a **virtual community interview, or as ice breakers**.

Game tasks transform a sequence of exam problems into a fun game by incorporating them into an activity. For instance, in a quiz show, students could be requested to respond a given series of questions within a specified amount of time, with points assigned depending on the number of accurate answers provided (Evans, 2017). Because game evaluations are seen as "fun" rather than "exams," they are often thought to be a good predictor of genuine abilities and knowledge. Furthermore, they have been demonstrated to improve learning by supporting the development of **non-cognitive abilities such as discipline, risk-taking, teamwork, and problem-solving**. When students are to be involved and pushed in an unorthodox

manner, it is a good idea to include the game tasks into the lesson plan. Game-based events have been proven to be effective in staff development by businesses, and universities have discovered that high-achieving students win in game-based learning.

Peer feedback flips the classroom on its head, putting students in the position of the teacher and allowing them to examine and modify each other's performance. Exercises of this kind provide each students the opportunity to evaluate based on their background experience and offer their comments in an organised manner.

Also, a platform for discussion can be a debate thread that is organised around a certain subject on the internet. It is a good opportunity to assess students' comprehension, spark their enthusiasm, and provide encouragement for their study. In such exercise, students are presented with a topic requiring logical reasoning based on either a lecture or a book/paper, and they are expected to comment. Their responses are put on a platform, and their colleagues have the opportunity to comment (Swan et al., 2019). This approach should be used when students are to be engaged, interact, and cooperate as part of teaching and learning while also their understanding of the subject matter is tested at the same time. Students can also do presentations of their essay type assignments in the digital environment.

Assessment is an important component of online teaching and it should be carried out with the same degree of attention and rigour as other aspects of teaching. Students should learn about assessment methods used and adjust their preparation for assessment based on the assessment forms used.

1.5.Conclusion

Due to the COVID-19 pandemic, especially during its first stages many educational institutions worldwide closed for the onsite instruction, which resulted in an unanticipated transition from conventional learning to digital education and learning. This outbreak has spurred the interest in digital education and led to its development and improvements, which enhanced its potential and created new opportunities for online education beyond the pandemic period. Globally, institutions, organizations, and academic facilities adapted to new circumstances. Students should understand that online learning

and study brings them substantial advantages, which were highlighted in this chapter, but it is also associated with challenges, which students should be aware of and mitigate their potential adverse impact on their online study performance.

Universities and colleges should also understand these challenges and develop their services so as to help students to achieve comparable outcomes in the online learning mode compared to standard programs.

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CHAPTER 2.

THE USE OF TECHNOLOGIES FOR ONLINE LEARNING

Thomas Fotiadis

2.1. Technological aspects of online learning – platforms and other tools to enhance digital learning experience and outcomes

Schooling might be centred around **digitalisation**, systems, and applications, allowing for **remote learning**. Various effective training methods were used relatively rapidly, without any other options. However, during the pandemic, the transition from the physical to the internet world posed a problem in maintaining and offering the same level of quality as it did in the physical environment (Alexander et al., 2019). The present difficulty pertains to learners' and instructors' preparation and preparedness to generate and distribute content. The pandemic has wreaked havoc on school systems worldwide, affecting around 1.6 billion children in 200 nations (Pokhrel and Chhetri, 2021; Subedi, 2020).

During the pandemic, **virtual learning technologies** acted as a rescuer for institutions, colleges, and educational establishments, maintaining the learning system running at a top standard despite the closures caused by the COVID-19 disease. Aside from the problems, the internet has provided possibilities for lecturers and learners by **allowing them to access a variety of subjects, webinars, seminars, and other activities** via multiple channels connected with e-learning systems (Maity et al., 2021). The COVID-19 outbreak might be viewed as a chance to improve education's digitalisation. However, it has surprisingly functioned as a remote educational trial that may be adequately used as a teaching process (Grek and Landri 2021). Even if learners and educators have been obliged to adjust to a new age of academia that has transformed the style of the teaching process, most students and faculty appear to be in terms of internet learning (Annuar et al., 2021).

According to Pokhrel and Chhetri (2021), all instructors' and learners' preparation must be strengthened and encouraged. On the other hand, adaption to virtual classrooms is more straightforward and much more pleasant for learners with a progressive mentality, implying different demands and techniques for individuals (Subedi, 2020). Furthermore, students who remain at home and respond to their academic subjects in their living quarters have faced mental and social suffering, which has harmed their motivation and creativity. As a result, both instructors' and learners' levels of **digital skills** regulate the quality of knowledge offered (Pokhrel and Chhetri, 2021).

Numerous instruments, including Zoom, MS Teams, and Google Meet, have enabled instructors to perform engaging classes and syllabuses. Such instruments refer to connectivity and teamwork with their students, information exchange in text documents, PDFs, spreadsheet files, recordings, activities, experiments, evaluations, and worksheets (Cavanaugh, Repetto, Wayer, Spitler,2013).

Although the surprising move from physical education to virtual engagement was a swift and abrupt change, numerous studies recognised various obstacles associated with virtual teaching, naming **accessibility and pricing** as the two significant issues. To begin with, a dependable broadband connection and electronic equipment are not generally available, particularly in underdeveloped nations and financially deprived children (Botturi et al. 2020). The economic downturn induced by the COVID-19 outbreak also impacted schooling. According to Maity et al. (2021), marginalised individuals will have a higher incidence of dropout. The present problem assumes that children from low-income families and those residing in isolated regions do not have access to quality learning. Taking, for instance, the likelihood of a child not digesting the knowledge supplied by the instructor to the level that it was meant, the professors might obtain a notice from the learners, which is unlikely, or at least much more complex, in the online realm (Maity, Sahu, and Sen, 2021).

Institutions are responsible for improving children's **interpersonal skills**, but instructors are technologically illiterate, preventing them from offering their students the necessary training and direction for healthy socialising and amusement (Persky, Adam and Pollack, 2010). Given that adolescents spend considerable time on the internet, precautions must ensure their welfare. Adolescents are persuaded to

spend a lot of time on the internet, which exposes them to potentially hazardous and violent material and a heightened risk of harassment over the internet. Nevertheless, not all adolescents have the necessary information and abilities to ensure their digital well-being (Pokhrel and Chhetri, 2021; Maity, Sahu, and Sen, 2021).

Moreover, supplementary instruction, assistance, and guidelines are required for learners with special requirements and learning disabilities, even more during the COVID-19 pandemic. In addition, many family members cannot be at their residence, or people seem unable to accommodate the education necessities of learners who have difficulties throughout this time (Subedi, 2020).

Most instructors feel that their technical expertise was poor or mediocre despite beginning with technology skills before the outbreak. On the other hand, other individuals felt that their technical abilities ranged between acceptable and exceptional. This reveals that most teachers require further education, workshops, or materials to develop and strengthen and become more familiar and knowledgeable with web-based learning methodologies (Annuar et al., 2021). Therefore, in summary, **instructors must be aware of and fully comprehend how to use and incorporate computer data, modern communications, frameworks, and techniques for creating sustainable curriculums, contexts, and pedagogical skills to motivate and inspire students to use the internet educational resources** (Subedi, 2020).

Mobile technologies have improved so that most people have direct contact with them. Touchscreen devices, computers with massive power, and easy connectivity have all added to people's primary education (Fichten et al., 2020). In addition, digital phones include a variety of learning resources, such as applications, video games, visual components, and websites, allowing for complex and adaptable teaching with no regard for location or time limits (Fichten et al., 2019).

Smartphone technologies enable students to study at any time and place in academic settings while cultivating vital skills, modern science, inventiveness, and cooperation among colleagues (Hershkovitz & Forkosh-Baruch, 2017). By enabling people to access necessary information and study subjects at their own pace. These existing tools may increase students' passion and curiosity for learning, help them

develop new intellectual achievements, and, most crucially, empower them to study outside of the regular educational environment (Chen, Kaczmarek and Ohyama, 2020). Mobile computing may inspire learners to respond to and accomplish tasks, customise schooling, and educate people to interact directly in the educational cycle (Fichten et al., 2020; Annuar et al., 2021).

Most business organisations rely on digital technology to meet their needs. These services are rapidly being delivered to students and teachers over the web, viewed using web apps (Yadav, 2014). Furthermore, the services are supplied to academic institutions for a significant discount and considerably wider accessibility. Thanks to cloud technologies, learners may download and analyse information from everywhere on the Web (Taylan et al., 2020).

Artificial Intelligence provides considerable benefits to students. Institutions of higher learning hope to merge artificial intelligence capabilities with individual virtual teachers to make learning more exciting and participatory. Furthermore, such technologies may undoubtedly be employed for educational reasons in kids with disabilities to personalise their training (Lynch, 2018).

The progress of instructional Artificial Intelligence can help kids study more effectively, although ethical concerns have been raised. Such problems are connected to equity, inclusion, and confidentiality issues (Alexander et al., 2019). Therefore, tools that employ artificial intelligence for teaching must be built with all children's backgrounds to produce a positive educational environment.

2.2. Effective online teaching methods and techniques

Mobile learning has typically been separated into two types: **synchronous and asynchronous learning**. When discussing synchronous distant learning, the notion of students who study in real-time comes up (Chen, Kaczmarek and Ohyama, 2020). **Real-time remote learning** involves lectures delivered using Microsoft Teams or Zoom programs. As a result, students are given more opportunities for engagement and a sense of community at the price of scheduling and other obstacles (Subedi, 2020). On the other hand, **asynchronous learning** allows students to grasp the material presented to them freely and share their thoughts about it in spaces such as emails and

discussion boards. Furthermore, such strategies enable students to dedicate more time to subject synthesis to sacrifice team dynamics, socialisation, and public engagement (Fichten et al., 2020).

According to Harvard Dental Medicine School research, students' education decreased with the change to distant digital training, leading to anxiety, a shortage of dedication to the knowledge supplied, and a decrease in their attention levels (Chen, Kaczmarek and Ohyama, 2020). Therefore, teachers agreed to record video classes to study the material afterwards to address this issue. Furthermore, teachers overcame technology issues, which boosted student engagement during longer class sessions. Finally, students with necessities and learning disorders like ADHD might profit from specific strategies (Pokhrel and Chhetri, 2021).

The Harvard Dental Medicine School research adopted a simple questionnaire to respond to the first technique in which faculty comprehended and assessed the learners' e-learning preferences (Taylan et al. 2020). The survey was completed by thirty-nine individuals who had previously completed a program at the institution via distant learning. Participants were then questioned on their preferences for digital instructional approaches and if they felt less stressed due to the digital move (Nascimento et al., 2020).

Such a survey leads to significant changes and fascinating observations and recommendations. First, **students benefit more from group exercises than stand-alone presentations.** Second, **students value fewer numbers in groups of educational meetings discussing a newly disseminated case than speeches in remote learning** (Pokhrel and Chhetri, 2021). Third, using different channels throughout the presentation to respond to queries and propose problem solutions at a future point was more interesting for the learners (Lynch, 2018; Nascimento et al., 2020).

Moreover, **formative evaluation** throughout classes to maintain student involvement and concentration for improved progress has been mentioned as a suggestion. Finally, instead of standard 2D technologies, employ 3D techniques to portray items and cell biology effectively. In addition, arrange the synchronous video classes sooner to encourage learners to have a sharp mind throughout the session and create more involved and entertaining tasks after the lectures and

presentations (Kaban, 2021).

Such thoughts and ideas may be utilised to create more pleasant learning settings for individuals with limitations and students who strive for perfection. However, such advancements in teaching approaches can benefit children with special requirements. Students who may not comprehend the material and others might profit from such a method if school leaders or those creating such programs follow expressly stated rules (Goodyear et al. 2020). Organisations, including Zoom or Microsoft, which have made unique software that enables both educators and learners in their daily classroom instruction, may utilise such standards to upgrade their present technology to allow greater inclusivity for students (Annuar et al., 2021).

Learners do not complete their education in schools for a range of factors. Many left due to conflicts with lecturers or a belief that the curriculum did not adequately cater to growing professions. Other findings include poor attendance, class problems, poor educational performance, and inadequate academic aid (Maity et al., 2021; Kaban, 2021). According to an article in the journal of unique technology in education, five significant components impact graduation rates that students and teachers may adjust to decrease the number of course leavers (Cavanaugh, 2013).

Students must grasp and perceive how to govern their training and behave wisely. Students must have engaged information that promotes effective instructional methods to advance. Lecturers should provide a friendly and secure atmosphere for learners to engage more in the curriculum (Pokhrel and Chhetri, 2021). Learners must be surrounded by a supportive atmosphere that recognises and cherishes their actual character. Finally, learners must understand the connection between the content and the skillsets required to navigate life outside the school (Fichten et al., 2020).

Considering current education primarily depends on virtual learning, several old procedures must be modified to make the setting more pleasant for all disadvantaged students. Furthermore, as noted above, learners must comprehend the link between the instructional content and the abilities necessary for career pathways (Cavanaugh, 2013). Such an objective can be attained by the program

administrators' capacity to facilitate more significant interaction through internet exercises or by building more excellent online services to meet the demands of the learners (Annuar et al., 2021).

People with visible disabilities are spotted on school property. People who are blind, for instance, frequently move around with a walking stick or a dog to direct them away from danger. Those with disabilities who cannot walk are also clearly displayed using a wheelchair (Pokhrel and Chhetri, 2021). These folks are easily seen and can be helped by many people. On the other hand, visual issues are almost invisible, especially in the digital classroom. Examining the issues that modern learners experience in terms of education, one could only conclude that people confront technological problems relating to their understanding of such platforms or individual belongings (Cavanaugh, 2013). Even if they have various limitations, they still must cope with many new issues in the modern environment. For example, people with learning disabilities must concentrate on virtual courses and complete their work independently. In other circumstances, learners with significant visual or hearing impairments require alternative syllabus information to be delivered. They must get the information digitally in a clear, accessible manner, with exact instructions for activities to be completed and how they may finish their education without fear of their impairment negatively impacting them severely (Goodyear et al., 2020; Nascimento et al., 2020).

Courses formerly primarily printed text have now been infused with verbal - graphical information, such as digital broadcasting, photographs, online seminars, and links to other internet pages. Unfortunately, such material is inaccessible to individuals who are deaf or blind (Fichten et al., 2020). Therefore, conversion to their chosen comprehension methods is required for learners with special requirements to absorb and retain such information. Subtitles to any sound generated by lecturers or a more understandable voice-over on current presentations are examples of these ways (Kaban, 2021).

Developing basic and approachable training materials must begin with the foundations. Such foundations include the planning, organisation and creation of the material. More foundations can consist of using available technologies, learning the desired teaching technique before applying it, and investigating new digital teaching techniques (Chen, Kaczmarek and Ohyama, 2020)

Among the most effective digital teaching approaches is **simple web designs** (Tandy and Meacham, 2009). This is easily achieved by combining the detailed data from each stand-alone page into a unified HTML layout. A design of this type may be developed to meet all accessibility criteria, and each site will have the same features (Topal, 2016; Zulfiqar, Siddiqui, and Mahmood, 2020). More precisely, some capabilities may be included to encourage learners to browse around the central element of each webpage without having listened to or observed most of the navigating elements presented to them (Kaban, 2021).

2.3. Developing the skills for effective use of online technologies and platforms

Instructors were unconcerned about the transition from human to digital learning, allowing them next to no time to get ready and learn what was yet to come. Educators are expected to include modern media in the structure of their instruction and the growth of this strategy when they interact with their learners. Therefore, instructors and educators were compelled to change how they delivered information to their students, enhance their skills and abilities regarding digitalisation, and get acquainted with Learning Management Systems (LMS), a digital collaborative software. Web-based learning product development tools (Chen, Kaczmarek and Ohyama, 2020). **Learning Management Systems (LMS)** provide characteristics that enable excellent knowledge distribution that is not limited by time or location. The teachers and students may utilise the web to locate, distribute, and access information and material referring to the programs they are taking or delivering. The role of the users influences LMS utilisation and engagement. Unlike physical classroom attendance, LMS does not need the learner, educator, or material to be presented in the same absolute space; better yet, LMS provides diverse learning opportunities through integrated learning and development opportunities (Kaban, 2021; Chen, Kaczmarek and Ohyama, 2020).

Some foundations must be considered for the instructors and students to develop the skills to use such modern technologies effectively. First and foremost, to communicate and distribute data and services among students, proper technologies, including networking and participation, must be offered (Bao, 2020). Second, the platform

should allow improved communication between the teachers and the students via platforms and services like chatrooms and discussion boards to accomplish successful engagement. Third, students should grasp the concepts and apply them to their background experience to answer issues. To do this, students must be equipped with the moral responsibilities, methods, and resources to engage with the curriculum (Zulfiqar, Siddiqui, and Mahmood, 2020). Fourth, the teacher has the expertise and capabilities to alter the content to make it more engaging and appealing to learners while keeping the structure's top quality by introducing new ideas, techniques, and media aspects. Fifth, the **design of web-based educational technologies must be user-friendly, practical, and appealing for learners to quickly reach and manage shared web educational content** (Zulfiqar, Siddiqui, and Mahmood, 2020).

The instructors must generate and distribute the information to their learners. The virtual learning environment must provide the appropriate **resources, services, and capabilities** to aid them in producing more engaging content and appealing to their intended audience (Kaban, 2021). Finally, a new and improved concept resulting from this engagement can boost individuals' abilities and capacity to achieve their educational targets (Pokhrel and Chhetri, 2021).

Instructors can employ a variety of ways to increase learner engagement, attention, involvement, and even happiness in their lessons. The most valuable and famous student engagement initiatives are **multimedia websites** and **interactive gaming platforms** such as virtual reality. In addition, active learning emphasises substantial tasks in which students may actively engage (Annuar et al., 2021). Incorporating innovation into online classroom settings might increase engagement using various techniques and strategies. Furthermore, to make classes more engaging and minimise the loss of interest from the students' side, engaging tactics may rejuvenate old material by providing a new and exciting perspective. People often realise that the best way to learn is by doing. This way, teachers develop the necessary skills to efficiently use online platforms and technologies by actively creating such platforms and tools (Subedi, 2020).

Since it incorporates gaming aspects and an innovative design of activities, **gaming is one of the most successful active approaches for encouraging student engagement.** Including competitive games

combines the collaborative component while promoting maximum potential among students. According to several studies, online tournaments and leagues may encourage and drive students in a plethora of techniques to achieve more and have better and more realistic goals. Therefore, adhering to the set gameplay mechanics is vital to ensure beneficial results and prevent failure whilst also adopting this mindset at academic institutions (Bao, 2020; Kaban, 2021; Zulfiqar, Siddiqui, and Mahmood, 2020).

Challenges need to be mentioned to develop the skills to use online technologies and platforms effectively. The list below shows some of the most relevant challenges one must overcome to develop such skills (Subedi, 2020).

1. Teamwork and competitiveness need to exist simultaneously to enhance the growth mindset of individuals
2. Develop relationships amongst individuals throughout the collaboration or create groups to confront a problem or accomplish an objective.
3. Facing difficulties or barriers helps develop the cognitive capabilities of the students
4. Players are classified based on their scores, and categories are defined.
5. Determine prizes to motivate students to reach the goal set.

Learners may be dissatisfied for reasons apart from feeling alone. Learner satisfaction can be described as a need generated by comparing the seen effect of given goods or services to the theoretical values (Budur et al., 2019). Therefore, it is critical to implement initiatives to increase mental development talents and capabilities, empower students' interest and concentration and build connections among students and faculty to raise their self-belief and accomplishment in their study trials (Bao, 2020).

Educators, in relation to appropriate classroom instruction, must also endorse students in developing self-awareness, social intelligence, and communication skills: in this context, the formation of a beneficial, engaging, and participatory educational ecosystem is vital to minimise

the pressure conceivably encountered by people and connected to the absorption of complex ideas and the task of establishing them (Subedi, 2020). By identifying the unique attributes and abilities of each young person, educators can help learners learn self-control, human empathy, and interpersonal skills (Zulfiqar, Siddiqui, and Mahmood, 2020).

2.4. Working with different online learning platforms – value-added and valuable tricks

Until the emergence of the COVID-19 virus, the most frequent mode of education at colleges was **physical instruction in classrooms**. Children participated in in-person classes, engaged in projects, and internet technology supplemented the local education by presenting research materials, conversation topics, or homework. Maybe the first digital learning is remote training, which arose from the necessity of teaching those passionate about a specific area of study but struggling to attend classes physically (Subedi, 2020). As a result, institutions began to offer programs via distance modes. Initially, these were hybrid methods. One portion of the training was organised in school in numerous programs, and the other was classified as digital training utilising various systems for projects and providing research materials. An utterly online option was established, with no requirement for participants to engage on-site. Learners had greater freedom with the web-based teaching methodology since they could select whether to view video lectures, browse learning resources, or focus on homework (Budur et al., 2019). Physical (including social) interaction amongst lecturers or instructors and learners, on the other hand, has nearly vanished (Bao, 2020; Chen, Kaczmarek and Ohyama, 2020).

Similarly, direct interaction among people in the class has been limited or eliminated. Various publications have examined the possible advantages, as well as the drawbacks, of digital training. The authors discovered numerous favourable computer-assisted web-based learning elements in the specific instance of the postgraduate degree curriculum in leadership at the University of Nebraska. Such potential benefits include: improvement of the learner's educational experiences, increasing accessibility by stripping away limitations constraints, creating possibilities for attendees all over the globe, constructing instructional groups representing numerous civilisations

and ethnicities, cultivating engaged involvement in the educational methodology, providing different routes to learning, and constructing a global classroom community (Zulfiqar, Siddiqui, and Mahmood, 2020). Although the authors examined asynchronous education, the study allowed genuine **digital cooperation** among selected students. Meaningful engagement may benefit digital training since discussion amongst individuals occurs instantaneously, just like it would in physical teaching and learning (Kaban, 2021)

Chiara (2020) also examines the benefits and drawbacks of digital training. Standard techniques of education transmission often involve simply the educator, a handbook, and any extra supplementary resources the educator can assemble (Chiara, 2020). This has altered with the introduction and widespread usage of technology and the easy access to the internet service. **Educators' effectiveness and program excellence are dependent on their adaptation to changing advancements and incorporation into the study programme** (Subedi, 2020)

Nowadays, there are a plethora of different applications for digital learning. For example, several institutions used Microsoft Teams, Zoom, and Discord during the pandemic. Nevertheless, several technologies may be required due to the number of students and the services desired by the institution. For example, Discord is not appropriate for large groups. It can only accommodate 25 people. Zoom and MS teams are better suited to larger audiences (Budur et al., 2019).

Furthermore, Discord lacks the recording capability, which is helpful for asynchronous learning. On the other hand, if you ever want a free service and a limited community, Discord could be the ideal alternative. Finally, Discord does not have a timeframe, unlike MS Teams and Zoom, which have sixty and forty minutes time restrictions for the basic tier, respectively (Chen, Kaczmarek and Ohyama, 2020; Chiara, 2020).

MS Teams, Zoom and Discord allow for chatting and calling; the primary communication service needed based on numerous examples from universities. However, since Discord allows meetings of only 25 members, availability classes are not so efficient, while MS Teams allows 300 people to be in a call and Zoom allows 100 people to be in

a call. Breakout rooms have been proved very efficient when dealing with group projects, and MS Teams and Zoom have that built-in application. However, Discord needs customised bot software to have breakout rooms. As mentioned above, Discord should not be excluded from the equation since experienced programmers with the Discord API can easily program different bots to improve the students' experience (Annuar et al., 2021).

New technologies have demonstrated their versatility as an idea and a commodity by developing domains based on synchronous and asynchronous communication. Archives of interactive multimedia sessions are available for learners who cannot attend a live session. Furthermore, numerous social networking technologies enable individuals to cooperate on collaborative tasks; (Maity, Sahu, and Sen, 2021) such technologies include:

- Electronic mail
- Discussion boards
- Google Docs
- Blogs (Medium etc.)
- Web streaming (Twitch etc.)
- Chatting and messaging software (WhatsApp, Messenger etc.)
- Moodle
- Visual conferencing (Zoom, MS Teams etc.)

2.5. The effective use of technologies for learning

As Nascimento (2020) proposed, a high classroom strategy influences the quality, planning, and actual application of a virtual classroom. The emphasis for the instructor is primarily on **facilitating and direct assistance for learner competency formation and growth**. On the other hand, web-based learning students may be perceived as more independent in the education process. Still, they may have particular interpersonal requirements that should be acknowledged throughout the educational journey. This suggests that a new paradigm is required if we regard physical techniques as

instructor-centric (Nascimento et al., 2020).

From a practical standpoint, digital training provides a distinct strategy for learner evaluation: the ability to immediately acquire numerous learning resources and perform exercises in several instances can improve students' route to competency. As Botturi (2020) suggests, the components and materials associated with them, such as recordings or other tasks, might be the primary focus of digital training, while face-to-face conversations such as talks, press conferences, or meetings may be less critical (Botturi, 2020).

Interaction is yet another essential aspect to take into account when organising an online program: whereas if the ultimate goal is open interaction as well as motivating student involvement, digital learning necessitates more detailed planning (Botturi, 2020): this implies that facilitated interaction must be carefully examined, particularly when constructing the curriculum instead of when maintaining it (Chen, Kaczmarek and Ohyama, 2020). Furthermore, because of the structure of curriculum development, one of the characteristics that should be scrutinised is evaluation: the administration of substantial evaluations (for written examinations or personal interviews) may be challenging to control. This resulted in a thorough reconsideration of virtual evaluation and accreditation (including the continuous, formative, and summative evaluations) and a restructuring of the educational process (Bao, 2020).

The digital engagement phase seeks to familiarise individuals with **conference and seminar presentation technologies**. This phase might be implemented both before and throughout the education. It is important to note that verifying that the instructor has already utilised the framework is always necessary. The teacher's speech is a critical beginning point. In this modern instructional paradigm, the efficacy of interaction between faculty and learners is increasingly more important when learning shifts from physical to virtual (Chiara, 2020).

As Zulfiqar, Siddiqui and Mahmood (2020) suggested, by preserving a polite language while using voice functions like pauses or density variance, it is possible to achieve significant outcomes in education: the concern to be created here is linked to face-to-face physical teaching, where body posture, facial expression, and physical expressions can be viewed as supplementary educational materials. In

the unavailability of such options, instructors must concentrate primarily on their voice presentation. A first clarifying hint may be to talk gently, allowing for breaks that benefit learners gather information on the lecture (Bao, 2020).

From an academic and theoretical standpoint, this implies that sound-visual connections are a possible source of risk and, therefore, should be evaluated ahead of time to prevent difficulties during classes. In addition, speech effectiveness and usage may require additional training for educators as part of their lifetime education journey to guarantee successful understanding for learners throughout virtual education (Maity et al., 2021)

Communication in the virtual classroom is one technique to attain accomplishment in education. According to Kaban (2021), a greater degree of conversation can lead to more involvement during classes. This also extends to research projects, project teams, and response gathering (Kaban, 2021).

Before the virtual class period, educators might send emails (or publish messages on communal spaces) including all prerequired recommended reading, directions for accessing the educational setting, audio-visual data linked to the program, and so on. Furthermore, the instructor might invite learners to summarise their understanding of content discussed during web classes to keep the debate active. This will aid in the improvement of the virtual teaching session (Pokhrel and Chhetri, 2021)

If the learner has studied the subject suggested by the instructor, they may respond to questions. In this way, if learners understand what to anticipate from their education and are pleased with it, it is feasible to support the establishment of constructive connections with other classmates in a virtual space (Subedi, 2020). Additionally, students are entitled to internet learning recordings via cloud computing wherever practical. This video will be helpful for learners who missed the class or want to review any aspect of the session (Annuar et al., 2021).

As previously said, training materials and activities must be changed in light of the new viewpoint of distance learning. In this regard, research (e.g., Persky and Pollack, 2010) suggests that developing creatively assessing educational materials may be difficult in physical teaching methods but thinking outside the box capabilities are

typically nurtured in modern class settings. These two parts can be addressed using online services: **during distance learning, teachers can offer case studies to individual learners and then ask them to display and share their thoughts, views, or criticism**. Thus, this may be viewed as a way to increase electronic learning talents and the general efficacy of the educational route (Maity et al., 2021).

There is a substantial indication that learners may benefit from a more varied sequence of assignments: some of these actions are linked to real-time education or instructor-student discussion, whereas others, such as identifying activities and types of work, utilising pre-prepared resources, or in a more collaborative methodology, may not involve the existence of the instructor (Chen, Kaczmarek and Ohyama, 2020; Goodyear, 2020)

According to Botturi (2020), a great teacher can be a true facilitator between both the curriculum content and the learners themselves: this implies becoming capable of creating educational experiences that all learners can access effectively, even though every learner differs in information processing, inspiration, attitude, and amount of personal sense of worth. With the change to virtual education, the books could no longer serve as only mediators. In this respect, particular studying styles may impede learners if the instructor relies solely on text or does not set aside time and space for an alternate path to information for learners who cannot absorb it at the beginning (Botturi, 2020; Chiara, 2020).

A vital component is the **quality of the learning material**: when the resources are accurate and significant in substance, available to learners, and appropriate to their amount of independence, they should indeed be called good. These resources must also be appropriate for the entire educational journey. Some components may be deemed suitable as they provide a chance for learners to reflect; others may be deemed good because they encourage action and communication with the instructor or research co-workers. Still, others may be deemed reliable because they introduce the components efficiently and unambiguously. The same might be said for learners who work together to create resources: this component must only be addressed if integrated into a more significant academic activity (Botturi, 2020; Goodyear, 2020; Maity et al., 2021).

Stops and rests benefit educators, even though their sense of time may vary due to learners spending too much time on web-based education than educators. Furthermore, there are issues with internet access or gadgets that may impact students' academic progress (Subedi, 2020). In this regard, instructors should examine adaptability in their techniques to facilitate learner engagement. Yet again, these elements can be seen as an aspect of a "soft skill" growth strategy for educators (Nascimento et al., 2020; Subedi, 2020).

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CHAPTER 3.

EFFECTIVE METHODS AND METHODOLOGIES IN THE DIGITAL ENVIRONMENT – HOW TO STUDY EFFECTIVELY IN THE ONLINE WORLD?

Mónica Moreno

3.1. Introduction

In higher education, chances for **online learning** are growing and more and more varying. Initially, online degrees, certificates, and courses catered to the educational needs of older, non-traditional, fully employed students (Venable, 2018).

Studying online brings benefits to a student, such as **flexibility**, more **personalized treatment**, more **continuous contact with the teacher** through multiple communication channels (chat, e-mail, forums) and, among others, the possibility of improving their digital and personal skills. But it also brings challenges, such as the need for self-discipline, self-organization and time planning, as well as exercising autonomy and self-learning.

In distance training, the role of a tutor has also changed, and this affects the learning process of the students themselves. According to Domínguez (2013), the tutoring and orientation of the teacher, within distance learning and online, should be aimed at helping and supporting the student so that he can progress in his learning without diminishing the didactic use of it. And you, as a student, have to take into consideration this new role, also for being a successful student.

To become a successful online student, students must have several characteristics in their personality, which must be aligned with the demands of the career or academic program that a student is studying. Studying under e-learning mode is not as simple as many people think. The students must have a lot of dedication and work hard to meet the objectives that each subject presents. The online students must be

autonomous, since they are to adjust their study times and schedules. In this sense, the word responsibility takes on essential value.

The problem is that many people accept the challenge without taking into account that this modality of this type of study, which appears to be easier than the face-to-face modality, requires the development of study skills and habits to obtain the best possible benefit. In this chapter, we want to offer different ideas and suggestions for being an effective online student. Normally, university students only look at the advantages of studying online, but they do not take into account its intrinsic difficulties and this is an aspect to consider in order to become an online student with positive results.

3.2. Skills and knowledge requirements for success in online education

To obtain success as a virtual learner, it is required that a student possesses specific skills such as self-management, self-discipline, critical thinking and collaborative work. These skills are fundamental to expand quality and ethical interactions with other fellows.

However, learning in a remote classroom requires developing effective communication abilities. Effective communication in an online learning environment is based on several factors such as described in Box 2.1.

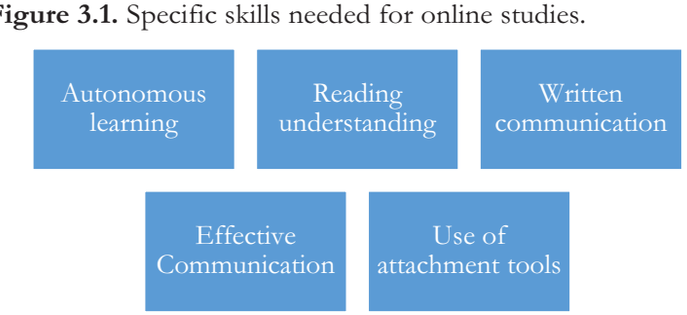
Box 2.1. Basis of effective communication

- **Active listening:** It is essential to actively listen to your classmates and teachers. In this way you will be able to learn from their points of view and knowledge.
- **Kindness:** It is relevant to establish a feeling of connection with our peers and teachers and being polite within academic interactions.
- **Feedback:** Feedback will allow us to measure effectiveness and will have a positive impact not only on our learning, but also on our mental well-being.

- **Self-efficacy:** It is one of the most important points of good communication skills. When you reach a certain level of self-efficacy, you realize that your learning methods are becoming more effective.
- **Empathy:** When virtual classroom participants show empathy, the atmosphere in the classroom becomes more pleasant and this leads to greater retention of new content and greater motivation.
- **Emotional intelligence**: By developing emotional intelligence, online learners are able to respond better and act more accordingly to the current communicative context.

Venegas (2020) highlights four relevant skills such as **autonomous learning, reading comprehension, written communication and the use of ancillary tools** (web 3. 0/ 4.0 tools) as necessary aspects for obtaining good results and marks.

Figure 3.1. Specific skills needed for online studies.



Source: Information retrieved from Orozco & García (2017).

A. Autonomous Learning: Involves time-organization and planning abilities.

***B. Reading understanding*:** Implicates the use of indispensable strategies for comprehension of texts and instructions for conducting online activities.

C. Written Communication: Demands the use of communication strategies such as planning, writing or using graphic organizers.

D. Effective Communication: Implicates the ability to be effective in oral or written speech considering academic situations such as, participation in online forums, collaborative tasks and exhibitions.

E. Use of Attachment Tools: Requires knowledge and mastery about different tools and web applications which complement the development of an e-learning experience.

Finally, we should highlight motivation as a key attitude for online students. In this sense, we should distinguish two sorts of motivation, intrinsic and extrinsic (Charlotte Nickerson, 2021). If you want to remain motivated at all times, we recommend you to follow the following simple steps:

Keep your curiosity

Try to find the resemblance between what you study and real life. Encourage your curiosity and make a subject attractive and easy to learn.

Be realistic with your goals

The best way to gain self-confidence is to achieve the goals set. For that purpose, create daily goals that are reachable, reach them, and improve your motivation to study.

Always stay positive

Remove *I can't* from your personal vocabulary.

If you start from that premise, you will start studying with greater confidence in what you are able to achieve.

Reward yourself because you deserve it

When you've finished with the daily plan and achieved your proposed goals for the day reward yourself for a good job.

3.3. Tips for online study success and specific skill requirements.

Online learning has become an increasingly popular option for many students and during and after the pandemic experienced by COVID-19, online training has become for many students "a dream when attending classes" but for others "it is a nightmare."

We want to offer you a series of tips and actions that you can follow, to improve your online training (if you are an expert) or to deal with your fears (if you are still one of those students for whom a look at the screen generates stress and mental chaos).

3.3.1. Keeping a routine

How to establish a routine? Why is it important? Creating routines gives you:

1. The ability to progress in your skills through daily consistency.
2. Predictability to know what will happen each day, which also helps to reduce stress.
3. An opportunity to develop persistence (stick-to-it determination even through challenges) in reaching goals.
4. Clear path to accomplish your daily tasks and benchmark future goals.
5. A way to create smooth and peaceful transitions throughout the day.
6. Early daily wins which set the stage for continued progress and success throughout the day.
7. Efficiency and economy of movement because we plan how best to accomplish tasks.
8. The ability to build in "must-do" tasks that help us to make adequate progress towards completing a project.

What does it mean to use a routine in learning? Having an established routine can offer a structure for life, to lessons and indicate to your brain " it is time to get work done " and treat your study from home as if you are going to the library/classes will help during your online lessons.

Make sure, that you follow routines in your everyday live, whether you think about it much or not. Research has shown that routines are important for helping people manage stress and anxiety (Cherry, 2020). School-based routines offer you some sense of predictability and comfort to help ease those anxieties. In addition, routines can help you lower your stress, form good habits, be more productive, and feel more focused.

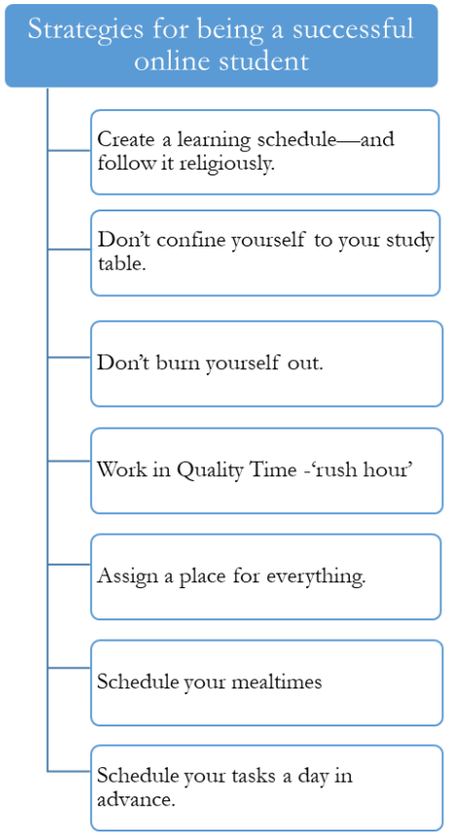
Frequently, students become very stressed and emotionally overwhelmed basically because they feel unproductive. Though it's not

easy to instantly become a productive person, there are few habits one can form to make the move towards the learning goal. One of those is to create routines!

Distance learning gives a lot of freedom, but it also means you have to create more diligent working habits to replace the routine and structure of on-campus life.

Before jumping into a routine, it is important to think about your priorities and what goals/tasks you want to complete each day, then, you can start creating and build a productive learning habit.

Below are highlighted a few strategies that successful online students have used to create manageable routines:



The key is to create a new online routine in order to get on track, and at the same time not to miss what a student should be learning with

each passing day. But at the same time, it is necessary to remember that following and receiving instructions in a physical classroom is easy, but online learning requires some adjustments. Online learning gives you a major advantage with **flexible work schedule**.

3.3.2. Prevent procrastination: A brief and useful proposal

Procrastination can be defined as a tendency to spend time, delay and intentionally postpone something that needs to be done even while being aware of the negative consequences that this may entail (Klingsieck, 2013).

This involves postponing a task, completing it at the last moment, exceeding the time limits set for the task or even avoiding it completely. According to Rozental and Carlbring (2014), procrastinating learners take an active role, when they decide to carry out certain tasks rather than those which they should face, often for compensations or just for eluding aversive experiences.

Box 3.2. Causes of procrastination

- Lack of motivation
- Low self-confidence and fear of failure.
- Problems about understanding.
- Short sustained attention span.
- Poor organization skills.

Source: Information retrieved from Garzón and Gil, (2017).

Using simple techniques such as the '**focused study technique**', you can begin to design and maintain these longed-for habits. Another strategy that can be used is to create a good, ideal study environment (beyond the fact that at later stages of the learning process, it is advisable to alternate study locations), putting aside all the distractions that usually lead students to procrastinate (e.g., smartphones).

Tips for online learners to avoid procrastination

A. ***Divide your work or project into small tasks:*** Splitting up tasks or projects might help students to develop concrete skills such as planning and time management.

B. ***Give real sense and meaning to your tasks:*** Figure out how to apply your work in a real-world scenario and

transform it into a fulfilling experience.

C. ***Boost your confidence and self-esteem:*** Eliminate negative nuances about failure and generate a positive attitude toward your work, making it easier to get start.

D. ***Study in a quiet* space:** Without a particular study space, students can become distracted by everything going on around them—something that directly provokes procrastination. Students generally perform better in a structured environment. Discussing your 'quiet zone' with your family or friends may be beneficial as well so they understand that your time is crucial to your academic success.

E. ***Establish clear objectives:*** Setting realistic and achievable goals will help online learners' expectations and track their daily progress.

F. ***Create a schedule:*** It helps you to optimize your time and follow deadlines.

G. ***Develop study habits and skills:*** Encourage critical, creative and problem-solving thinking by doing challenging tasks.

Figure 3.2. Three key factors for dealing with procrastination

3.3.3. Dealing with distractions

One of the best tips for online learning success is to actively try to identify and eliminate common distractions.

What is qualified as a distraction?

A distraction is whatever that takes your focus away from the task that you have to do. Some of the tasks may be listening to recorded audio lectures, reading the textbook or to be attentive to what your academic says on the screen.

Think about this, have you ever sat down to complete your tasks online and you have found that you have somehow wandered over to YouTube and you are now checking some playlist or watching crazy videos?

We have to face it; the Internet can be a very distracting place. You can be taking an online class or simply doing or completing homework and all your efforts of productivity can get thrown out of the window as soon as a viral video pops-up on your social media feed.

The Internet can be an invaluable resource that contains more knowledge and information than any other thing that ever existed, but it can be a great distraction and hinderance to your classwork.

Ask yourself; how can you compose an email, proofread a document, text a friend, browse YouTube and take notes at the same time? Can you be a multitasking student and at the same time be a successful one?

When you attempt to absorb new information while you are doing different things at the same time your concentration starts to decline almost immediately. If one is a multitasking student while attending an online class or doing homework, it is likely to negatively impact the retention and the quality of the work produced.

Digital multitasking also affects mood and sleep cycles. With so much to do and so many distractions, one often becomes stressed and exhausted. When you don't sleep well, your ability to prepare for tests and complete projects suffers and this can be worse when one is learning online.

Do you have an issue with digital distraction?

- Do you check your phone or constantly browse social media while trying to complete schoolwork online? Is there a bit of anxiety when you are separated from your phone or social media? You cannot put down your smartphone? Are you suffering of FOMO (fear of missing out)? Studying and attending an online class are incompatible with any other activity. In this sense, one of the internal causes of distraction is the panic to miss something and it affects more and more students due to the increasing use of social networks.

- Are you more interested in catching up with your text messages than on your screen? You never look up from your device?
- You must constantly bring your attention back to your academic work and you sometimes seem to not catch what is said through the screen. You might be digitally distracted, and you miss out on conversations and lessons.
- Are you falling behind with deadlines, procrastinating with self-structured online coursework, struggling to get organized and remember assignments? You fall behind with your responsibilities.
- Does the lack of face-to-face social contact with your classmates and teachers affect your motivation and generate moments of distraction and lack of interest?
- Do you get bored during lessons and do you feel exhausted?

If you answered yes to any of these questions, here is some advice on how to manage the distractions.

Advice and techniques for reducing distractions while studying at home

Learning online can be a challenge, mainly due to the distractions in the home environment. If you find it difficult to focus on your work while learning from home, in Figure 3.3. you can find a few suggestions on how to improve your focus and your online learning experience.

Figure 3.3. Proposals to reduce distractions

Source: Authors' own elaboration (2021)

3.3.4. Look after your mental well-being. A short guideline for psycho-social support

According to Vivanco-Vidal (2020) the COVID-19 pandemic has impacted the lives of university students in economic, academic and psychological terms. Among the consequences on their **mental health**, we can find mood changes, depressive symptoms, anxiety, concentration problems, etc. According to IELSAC (2021), the loss of social contact and socialization routines that are part of everyday

experience of a higher education student will have cost. The isolation that is inevitably associated with lockdowns and social distancing will have effects in terms of socio-emotional balance and will leave their mark, particularly on those students with pre-existing mental issues (e.g., chronic anxiety). In case of more vulnerable learners, isolation strikes them even harder.

According to the research conducted by Villani et al., (2021): 'Our results show that 35.33% of our sample of university students had symptoms of anxiety and 72.93% of depression, although with mild symptoms. The pandemic increased common mental health disorders across the population, with a prevalence of anxiety and depression of about 32.9 and 35.3% in Asia and 23.8 and 32.4% in Europe, respectively' (p. 12).

This situation causes constant emotional fatigue among students. How could it be better managed?

Emotional fatigue or burn-out syndrome can be treated if symptoms are detected as soon as possible. **To prevent further consequences, it is needed to develop effective strategies such as:**

A. Mindfulness
Mindfulness provides tools to disconnect from what produces tension. Being in the present moment, with an attitude of acceptance and compassion towards ourselves, minimizes the impact of emotionally stressful situations.
B. Self-reflection
It can help us to figure out the triggers of emotional fatigue.
C. Physical exercise
It brings many benefits at a psychological level, so the usual practice can lead to an escape route for the mind: it improves self-esteem and promotes the release of chemicals in the brain related to happiness.
D. Psychological therapy
If you ever feel overwhelmed by your symptoms, it would be recommended to discuss the problem with a therapist, who will provide you with tools and techniques to deal the situation.

You can do this test to check your mental health condition:

1. Have you been having trouble sleeping for a few days or even months?
2. Do you have difficulty communicating with peers, friends or family?

3. Do you not feel like eating?
4. Do you use any kind of drugs or alcohol to make up for any problems?
5. Do you experience problems with focusing on your studies?
6. Do you often lose track of time?
7. Do you perform multiple tasks throughout the day and feel like you can't stop?
8. Do you suffer from constant mood changes?
9. Do you have trouble starting or finishing a task?
10. Do you tend to isolate yourself?
11. Do you feel too tired or constantly low on energy?
12. Do you experience lack of self-esteem?

***Note:** If you answered 'yes' to more than five questions, there is no doubt that you should consult with a mental health professional as soon as possible.

Understanding some common mental health issues

Anxiety may occur after an alert reaction and may be associated with fear and anxiety concerns. It is an emotion experienced as unpleasant that arises in a concrete situation before an individual perceives a threat, with possible negative consequences.

Stress, on the other hand, is a phenomenon that occurs because a person does not possess (or thinks he does not possess) enough capacities or time needed to deal successfully with a specific situation.

According to Leblanc et al. (2019): 'Many factors contribute to the heightened risk for anxiety among college students. For example, sleep disruption caused by drinking excess caffeine and pulling all-nighters is associated with increased anxiety among college students.

Loneliness also predicts mental health problems, including anxiety'. According to Ajmal & Ahmad (2020), 'Compared with classroom education, there are many factors identified in distance education of poor results and high dropout rate; boring courses, economic difficulties, lack of feedback and encouragement, isolation, lack of motivation, dissatisfaction with requirements or regulations, and

changes in career goals' (p.34).

Students with lower digital skills are exposed most to negatively experiencing the events of technological immersion, causing them feelings of frustration and even triggering symptoms of stress and anxiety (Castillo et al., 2021).

Academic anxiety harms quality of learning because a student eagerly divides his attention to task-solving cognitions and irrelevant thoughts centred on himself, leading to greater distraction and, consequently, to a loss of cognitive efficiency. Anxiety may even be a relevant variable for understanding dropout rates at universities and other educational problems.

Tips for dealing with anxiety

A. Learn how to detect anxiety and panic attacks

It is important to observe your body and know what it tells you. Over time, you'll know, when a panic attack may be triggering, and you'll be able to act as soon as possible to prevent it from getting worse and harming you.

B. Look at reality differently

Students should face reality from a positive perspective, learning from each lesson and be ready for any sort of circumstances along their study life.

C. Breathe deeply

If you detect that you are suffering a panic attack, stop doing what you are doing and focus on your breathing. Take ten slow and deep breaths and follow how the air enters into your body. If you do this, it can help your mind and body relax.

D. Divert your attention

Anxiety occurs on many occasions because we cannot stop thinking about what we are worried about. To avoid this repetitive and negative thinking, it is important that you divert your attention by focusing on something else or doing an activity. Doing physical exercise or practicing meditation could be beneficial.

E. Consider barriers as opportunities

Problems may represent opportunities to learn new things and grow also as a person. Don't forget that changes embody possibilities to move forward, abandon the comfort zone and overcome fears.

3.3.5. Time management and communication support

Time management is a critical academic aspect and, at the same time, a precise **predictor of successful performance in university studies**, ahead of others such as intelligence (cognitive and emotional) or time spent on study (Olowookere et al., 2015).

Time management constitutes a central factor of the self-regulation of learning related to other cognitive (self-assessment and self-monitoring) and motivational factors (self-efficacy and control beliefs about the apprenticeship) present in self-regulation. However, there is no agreed definition of the 'time management'.

Tips for time management

1. Sleep enough and socialize

Spend time to socialize in order to balance your life. Besides, you should get enough sleep. Most people need seven to eight hours of sleep each night to stay focused during study periods.

2. Be flexible but realistic

It is important to remember that studying is a job, and you should dedicate to it a lot of hours per week if you want to reach good marks. Sometimes, there are some things that take longer than expected. So, give yourself some extra time in those cases.

3. Manage changes

No matter how well you have planned everything, there is always a situation where a last-minute change or a task you need to add appears. You must include it in your planning, rather than taking it outside of your planning. Give yourself the time to manage changes to your calendar whenever needed!

4. Avoid distractions

One way to avoid distractions is to think about the different places you've been studying and ask yourself – 'Where were you most

focused? Where were you most distracted?'

5. Work out to disconnect

Doing physical exercise works the same way that sleep does. It might help you clear your mind between study sessions.

6. Ask yourself if your time organization has been effective

Constantly reviewing and re-evaluating your schedule can help you recognize if you need to make any changes to help complete college assignments.

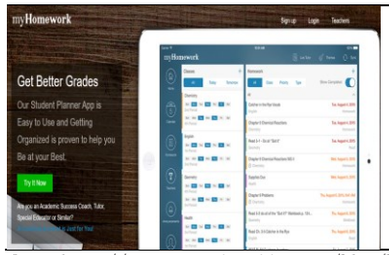
7. Establish a schedule

Whether it's a planner, calendar, or app, find an organizing tool that works for you and add your to-do list.

8. Use specific apps

Technology can facilitate time management. You can find some of the top apps for time management in Box 3.4.

Box 3.4. Apps for time management and planning focus sessions for university students

App	Link
Trello	https://trello.com/
	https://pomofocus.io/
	https://myhomeworkapp.com/

Source: https://www.topuniversities.com/blog/best-time-management-apps-students

3.4. The proper use of ICT tools (using resources to the advantage) leads to being a successful online student

In the previous part, we provided tips on how to successfully study online, but **how can ICT tools be used to the advantage**?

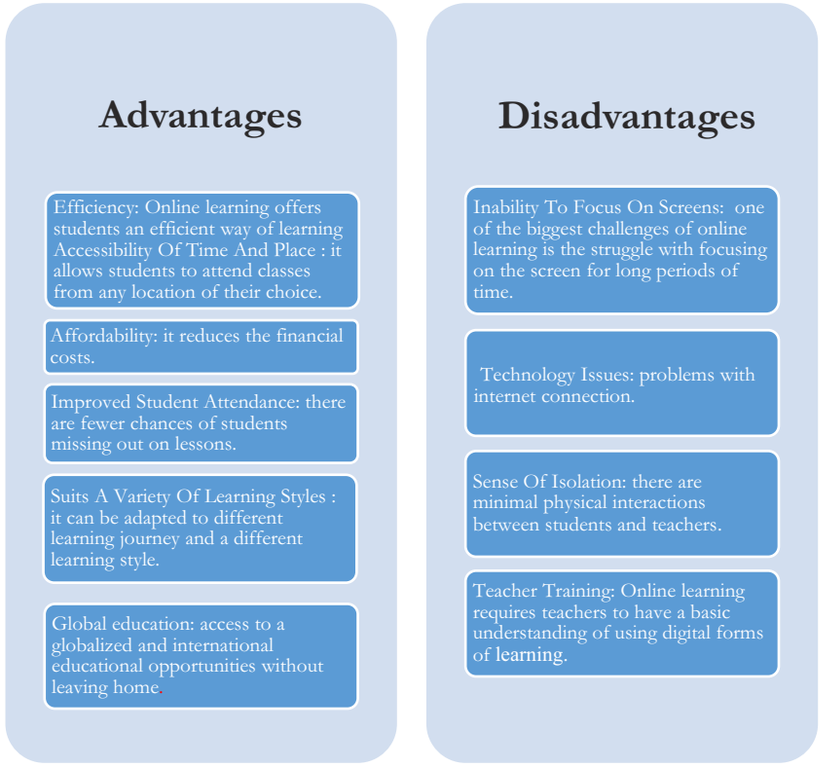
Information and Communication Technologies (ICT) provide multitude tools that can be very useful and effective when you study. Depending on your goals and abilities, you can choose those that best suit you to achieve the desired results.

As Haag, Cummings and MaCubbrey (2002) suggest ICT is made up of any tool that people use to work with information, support it and process information needs. ICTs are computers, the Internet, mobile phones, and all kinds of similar devices.

There is a wide range of resources that facilitates learning. Ranging from the programs dedicated to the organization of a study plan, time management and document storage to the applications to working collaboratively, exercising memory or creating concept maps.

Although it is great to have so many options at the disposal, it can be challenging to decide which ones to use. Moreover, online learning also has its advantages and disadvantages. Decoding and understanding these aspects will help you in creating strategies for learning your lessons more efficiently and ensuring an uninterrupted learning journey.

Figure 3.4. Advantages and disadvantages of ICT tools



Source: Own elaboration (2021)

How can you benefit from the ICT advantages and use them for using ICT correctly?

Think about this: When using new technologies to study, it is advisable to know, how to study best, since depending on how to learn better, the choice of online study techniques and resources will depend on them.

These resources can be:
Writings (summaries, content reading, underlining the information ...).
Visuals (concept map, flashcards ...).
Audiovisual (videos).
Hearing (podcast).

Source: Authors' own elaboration (2021)

What Makes a Successful Online Learner?

Knowing yourself, you will be able to correct the use of ICT tools, because you will know your online learning needs and your ICT knowledge.

We can start with answering the following question: what is expected from you, your academics and tutors?

An online student is expected to:

Participate in the online classroom and check in regularly
Be able to work with others in completing projects
Be comfortable with technology
Be able to manage time effectively and complete assignments on time
Enjoy communicating in writing.

Source: Adapted from What Makes a Successful Online Student? https://www.uis.edu/ion/

Do these sentences describe you?

- I am a self-motivated and self-disciplined student.
- I am able to work independently with little direction.
- I have good time-management skills that allow me to schedule specific times throughout a week to work on my online course.
- I can adequately prepare and study for exams.
- I can effectively communicate any questions or concerns to my teachers/lecturers.
- I am comfortable expressing myself in writing using grammatically correct, written statements and/or essays.
- I am not a procrastinator. I like to get things done today and not tomorrow.
- I will not miss the face-to-face interaction with my instructor and classmates.

- I do not give up easily, even when confronted with obstacles.
- I am comfortable spending five plus hours each week on a course to review course lectures/videos, complete course assignment, participate in chats and threaded discussions, etc.
- I agree that online courses can be more challenging than face-to-face classes.
- I consider myself an average to above-average reader.
- I have basic computer skills and can use word processing software, download software, install software, use a web browser, etc.
- I have access to a computer that is connected to the Internet and have a backup plan if something happens to my computer.
- I am comfortable in a "virtual environment" - email, sending attachments, threaded discussions, chat rooms, etc.

Source: Fairmont State University https://www.fairmontstate.edu/academics/distancelearning/successful-student

After getting to know yourself better, are you ready for being a successful online learner? It is very common for students to sign up for online classes with an unrealistic vision of what will be required from them to be successful.

Time management, routine, lack of procrastination and distractions, mental well-being and communication support are ideas and concepts we introduced in this chapter. It is important to take them into account and develop routines that will help students to achieve their goals.

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CHAPTER 4.

DIGITAL LEARNING FOR STUDENTS WITH SPECIAL NEEDS

Daniele Garulla

4.1. Introduction

The learning process is unique for all of us. We can be subjected to the same educational environment and stimulus, but what and how much we learn can be totally different. An **effective learning environment** is one, where the largest possible number of students (theoretically all students) learns something and has the opportunity to improve their knowledge, skills and competences. In this perspective, two parties have been relevant actors involved in the learning process: **students and teachers**. But, in the last years and especially after the COVID-19 pandemic, a third element has entered overwhelmingly the learning process: i.e., the **digital tools** (Ali, 2020; Hwang, 2018). Of course, digital skills have played an increasing role in teaching and learning activities, but in many cases the two aspects of the learning process were disconnected from each other. During the past, this state of disconnection, although self-contradictory in an increasingly interconnected world, may have appeared tolerable and with limited (while present) consequences. Today, especially after the experience during the lockdowns, the digital tools have shown their relevance as an instrument to improve the quality of teaching but, at the same time, they have made clear that an unlinked educational system is no longer effective (Verde and Valero, 2021). Currently, a system, where all relevant parts involved in the educational process are linked to each other, is of fundamental importance for the learning system to be effective.

This new character of the learning system is even more relevant for students with special needs. They need to be properly engaged in the learning process and the only way to do that is by creating a system of connection among all relevant parts of the learning process (Panisoara

et al., 2020). Here, we focus on what students can do to increase the quality of their own learning during online lessons. From our perspective, the central point is the concept of the engagement, because learning is not a place, rather it is a relationship between a teacher and a student. Students (with special needs or not) must feel a connection with teachers to learn well. This connection fuels engagement both in-person and online, but virtual connection is not the same as a "real" connection. We can be connected by digital instruments, but this does not mean that we are connected with each other. Creating connection and, therefore, engagement, during traditional classroom teaching implies a different approach for teachers and students than what happens in a virtual classroom (Dereshiwsky, 2013). This applies to all students, but it is especially important for those **students with special needs**. These students encounter objective difficulties in being involved in teaching activities, especially because of their particular needs.

In the next section, we focus on specific needs for all impairments that students may have. All types of special needs require a specific answer in the traditional or virtual classroom, therefore, the first step towards an actual engagement of all students is an awareness of students' needs.

4.2. Specifics of digital learning of students with special needs (considering different types of impairment)

Students with special needs are learners with learning, physical, and developmental impairments; behavioural, emotional, and communication disorders; and learning deficiencies. From this perspective, the concept of "special needs" refers to a wide range of impairments and all of them call for a specific approach by teachers and the educational system. Of course, this does not mean that universities, and in general the educational system, should favour or simplify exams for students with special needs but, rather that universities should enable them to pass the exams to ensure the same opportunities as students without any impairments have. Having more time, using a digital tool or a computer program, having a tutor at disposal does not mean that these students have an advantage, but are able to "equally ride" with the others. In other words, it is not a matter

of favouritism, but it is a matter of **equity** (Cavanaugh et al., 2013).

We believe that Figure 4.1 explains very well which is the main point of view. Currently, **the main approach of universities is based on the concept of "equality".** Following this perspective, universities provide to all students the same instruments and tools to achieve learning goals, overlooking their specific needs. This happens in the traditional classroom and it happens also in the online classroom where, in many circumstances, the impairments are much more relevant.

To make it possible for all students to have a real access to knowledge and skills at university level it is necessary to implement a radical shift in the concept of education and to provide all students with specific opportunities to learn. The shift is from equality to equity. Equity means providing different support to students based on their needs to achieve a fair outcome. In other words, and this is the main point, equity means that all students have right tools to achieve their learning goals. The same book, the same time, the same instruments do not mean the same actual opportunity to learn because not all students have the same needs. Different tools, types of books, different timesheet or different instruments for different students mean the same opportunities.

Figure 4.1. Equality vs Equity in learning activities

Source: https://cities4forests.com/lg-social-equity/social-equity-concepts/

Following this perspective, the first step towards a real **shift from equality to equity** is teachers' awareness of students' special needs.

Therefore, communication among students, teachers and university administration is a fundamental added value for the implementation of an effective educational process. Teachers and university administration must be aware of specific requirements of their students in order to technically organize teaching and training activities to match students' needs. Obviously, this last point doesn't mean that teaching activities at the universities must be modified according to students' needs but, rather, that didactic providers must have access to those digital tools that allow all students, regardless of their potential impairments, to be able to effectively attend online courses.

Table 4.1. highlights different types of impairments and potential specific needs for students in the given impairment group.

Table 4.3. Matching the type of impairment with special needs

Type of impairment	Potential Special needs
Students with motor disabilities	• Virtual keyboards • Ergonomic keyboards • Mouse clicking software • Voice recognition systems • Sip-and-puff systems
Students with visual impairments	• Screen-readers • Virtual vision • Braille keyboards • Speech recognition math software • Software to translate written text into speech
Students with hearing loss	• Assistive listening accessories • Interpreter of sign language • Software to convert voice into text and vice-versa

Source: adaptation from EARLI (2020).

Students with motor disabilities at first glance could be seen as benefiting from online classes thanks to the chance to follow lessons from home without having to face the difficulties related to movements to and from the university campus. That is true but, at the same time, students with motor disabilities might encounter difficulties in using a standard keyboard, to use a mouse and, in more general terms, to interact with electronic devices.

Students with visual impairments are among those students, who encounter the greatest difficulties in adapting to online lessons if not properly organized. The visual disabilities can prevent a fair and effective educational path by limiting students' academic programs. The impairments can widely vary – from the need to enlarge images shown on the screen to the need to replace images with other alternative.

Finally, **students with hearing impairments** may have serious difficulties with audio provided by electronic devices: in this sense, they need assistive listening accessories working on the streaming of audio directly into students' prosthesis. These tools enhance the quality of the sound that a student receive. Things are more problematic for those students, who communicate in the sign language. In this case there are two paths: first, an interpreter during the lectures; second, a software able to transform sounds into written text.

All conditions described above create impairments in learning process of each student with such disabilities. But, at the same time, impairments also create barriers in their ability/chance to interact during the lectures. Their actual possibility of being able to adequately and promptly interact with teachers and with their classmates is very often compromised by technological difficulties that they may have. This relationship is a fundamental aspect in the learning process, especially at the university level, therefore, if the environment is not comfortable for the implementation of interactions between involved actors, the quality of teaching will inevitably decrease as well as skills acquired by students. Moreover, those students, who would benefit most from an integrated approach to teaching will lose most in terms of learning.

The list of impairments is not just a list, but it makes it clear, how different are the needs of students with special needs that they face every day in online courses. Technology is the problem, but at the same time, it is also a solution. Online classes made possible by the technology create problems that traditional classes do not have, but technology can help students to overcome these problems. In recent years, online courses have grown exponentially and even institutions traditionally not inclined to change towards online teaching, such as universities, had to adapt, and the COVID-19 pandemic has accelerated this transition (Ali, 2020; Verde and Valero, 2021).

Nevertheless, the whole paradigm for adaption and implementation remains hard and complex and certainly not yet finished. The aim of this work is to provide suggestions on which tools should be implemented in order to complete the digital transition of universities in the best possible way. In the next paragraph, we will focus on technologies to address students' special needs during online learning.

4.3. Technologies to address special needs of students in the digital environment

Technology is a powerful tool for transforming learning. It can help affirm and advance relationship between teachers and students, reinvent pedagogical approaches to learning cooperation, shrink long-standing equity and accessibility gaps and especially match the needs of all students. As clearly suggested by the former U.S. Secretary of Education, John King, "*one of the most important aspects of technology in education is its ability to level the field of opportunity for students*" (Office of Educational Technology, 2017, p.3).

Educational standards require that students with special needs should be provided with opportunities and instruments to fully realize their potential. They should participate in education and training on the same basis as students without disabilities and that they are not subject to discrimination. Due to the progress in the IT industry, digital technologies are easily accessible and widespread which enables students to learn in a way that accommodates their individual learning styles and limitations. In general, **technology enables all students to** (Coombs, 2010):

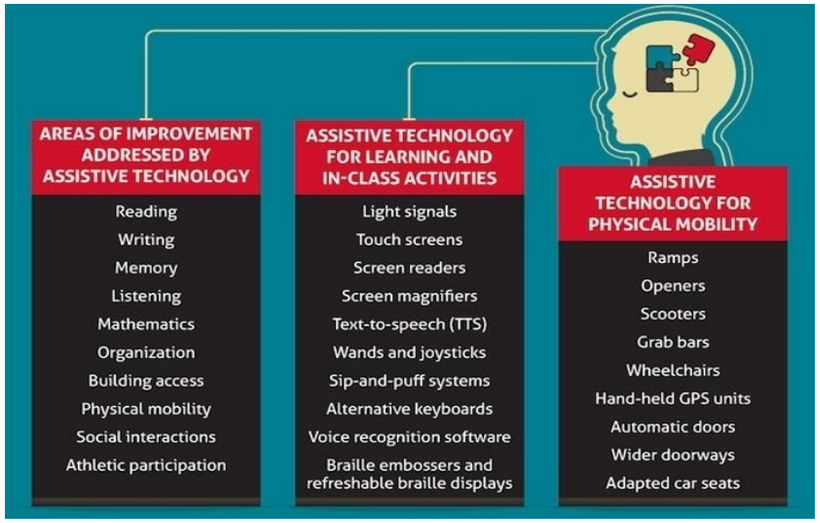
- Increase their independence;
- Decrease anxiety;
- Improve connection with their classmates;
- Create conditions for natural, comfortable and effective communication;
- Increase academic efficiency in study course.

Thus, special technology is key to enable and foster the independence of students with special needs, freeing them from the constant need for direct teacher involvement. As a result, a student can

choose the speed of learning that is convenient for him and allows them more personalized learning. When a student doesn't inhibit the learning process for the whole group, it helps to reduce anxiety, which plays a significant role in education as well. The implementation of technologies in special education allows simplifying the communication and improve the academic skills of students with disabilities.

Nowadays, technology is the main way to provide teaching, therefore, it is essential to rethink the relationship between teaching and technology, and in the future, it will be even more important. As the use of technologies makes (potentially) "accessible" online contents to all students, therefore, the optimal strategies should be focused on accessibility from the beginning of the course development process. This approach has been well established in the field of architecture and it is known as "universal design". Universal design is "*the design of product and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialize design*" (Mace, 2008). The main goal of universal design is to ease life and work for everyone by making products, communications, and build the overall environment more accessible for as many people/users as possible at little or no extra cost. In this sense, the Universal design is a beneficial paradigm for people and students of all ages and abilities. In this perspective, instead of modifying specific facilities to meet the needs of certain users (students), all facilities should be designed to accommodate as broad population as possible. This means that all products should be designed to be usable by all students regardless of their needs. An example can be sharing an image on the screen during a lesson, which is a fairly common procedure, but it may happen that some students need to widen the image to be able to see it, but the image may become grainy and therefore not visible. This problem could be overcome by creating an image accessible also for students with visual disabilities.

Figure 4.2. Technology and students' improvements



Source: https://elearningindustry.com/use-of-technology-in-special-education

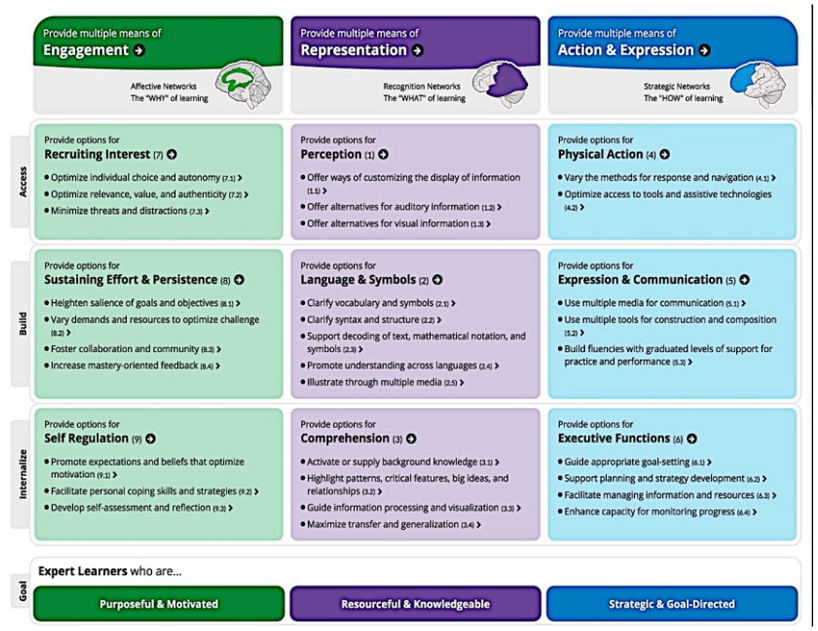
The following three basic principles lie behind universal design for learning (UDL):

1. **Provide multiple instruments of representation in order to allow students to approach information in multiple ways.** Examples could include e-books, specialized software and websites, screen readers including accessible features such as subtitling, text-to-speech, changeable contrast in colours or light, adaptable text size, selection of different reading levels or materials written in the learner's primary language.
2. **Provide multiple means of expression so that all students can demonstrate and express what they know.** Where appropriate, examples could include providing different possibility to express their learning approach, which can include options such as writing, online concept mapping, speech-to-text or translation programs.
3. **Provide different ways and activities for engagement in order to stimulate interest and overall motivation toward learning.** Examples could include the provision of a number of activities for learning activities or content for a particular

competency or skill, providing opportunities for increased collaboration or scaffolding, or providing tools, such as digital storytelling, to ensure grade-appropriate content material is accessible to many learners.

The keyword of UDL is **flexibility** meant as a **tool for adapting, supporting and modifying** the information presented to students, in order to guarantee everyone the same opportunities for educational success.

Figure 4.3. UDL implementation scheme



Source: https://udlguidelines.cast.org

This type of approach, however, is a plan for the future. Unfortunately, in the short-term, especially at university level, the UDL is hard to implement because of organizational obstacles to change. A change in the teaching approach implies a cultural change within universities, and this requires times, resources and inputs. Moreover, this kind of cultural change is also necessary among students. They must be aware of their role in the learning process and what they have to do during online lessons. It is quite simple: to establish a relationship, it is necessary that there interact at least two parties

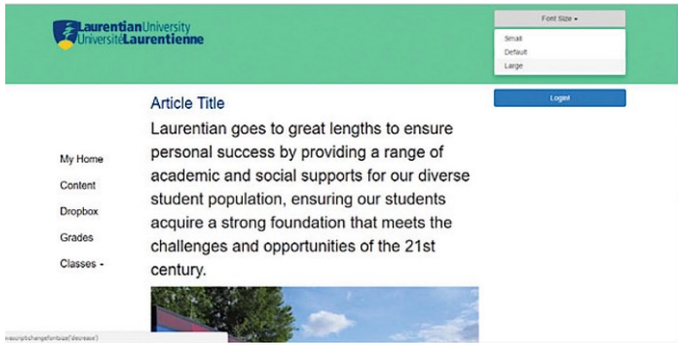
(teachers and students), otherwise, the channel of communication is ineffective. This point is especially true for online courses, where establishing a connection is more problematic than in a traditional classroom.

Farhan and Razmak (2020) propose a new e-learning interface with interactional features to be used by students with varying visual and hearing needs. They propose an illustrative example of how a website, or an online course, can be projected from the beginning to satisfy all students' requirements. In designing the suggested interface, task–technology fit was understood as an e-learning system's capability to support users in performing their learning tasks through such "*means as interactions with other users, accessing learning materials, or answering online assessments, while making them suitable for a variety of user abilities"* (Al-Samarraie et al., 2018, p.12). **In particular, the following components of the interface have assistive and adaptive features:**

1. **Button voice:** contents are read aloud;
2. **Tab voice:** users hear the button, when they tab between the buttons;
3. **Text voice:** users place the cursor over the content and it is read aloud and/or it is provided in the sign language;
4. **Zoom text:** users are able to adjust text size to meet their needs;
5. Font and background colour: users can modify font and/or colour in the background to match their visual needs;
6. **Lecture media:** users can attend lectures using radio or using video-based-sign language.

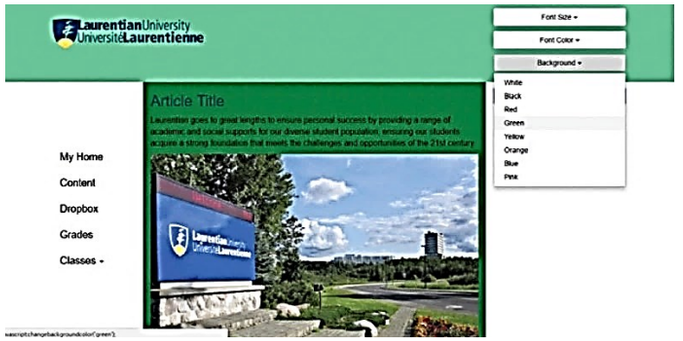
Figures 4.3. – 4.6. show how the interface gives students the ability to manage and control all relevant features of the website that can potentially provide obstacles for their learning process. Figure 4.3. presents, how students can easily modify the font size; Figure 4.4. shows the display feature that adjusts the colour content and background; finally, Figures 4.5. and 4.6. represent the sign language, which supports hearing-impaired students to interact with the e-learning content.

Figure 4.4. Control of font size using "zoom text"



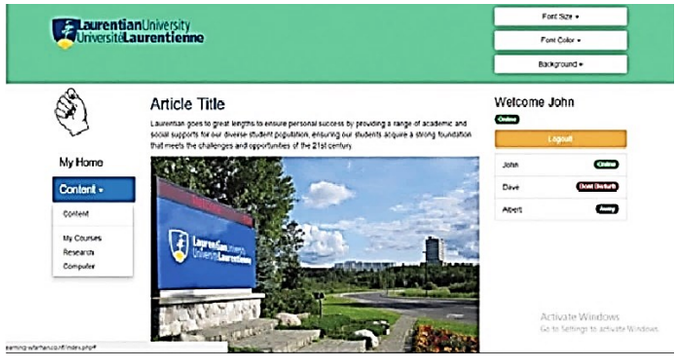
Source: Farhan and Razmak (2020)

Figure 4.5. Control of background colour



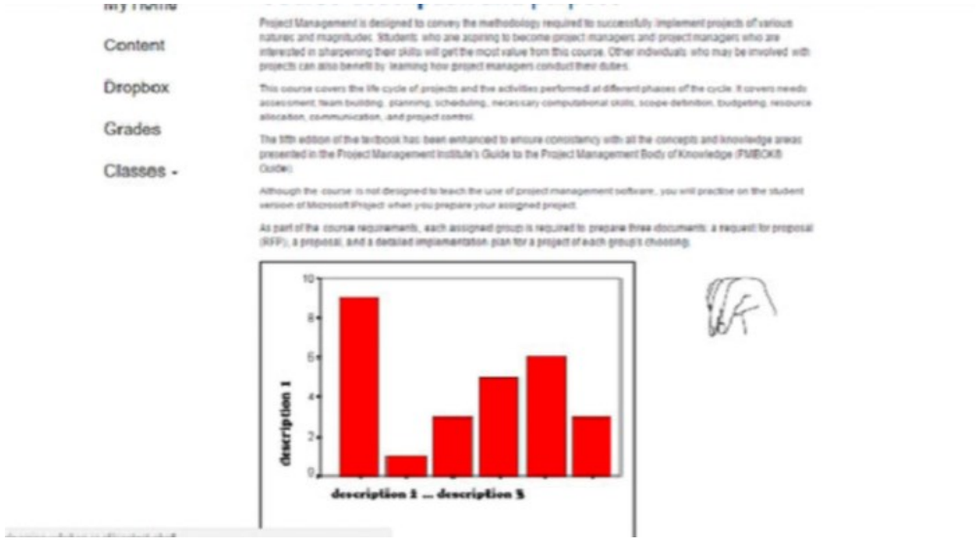
Source: Farhan and Razmak (2020)

Figure 4.6. Sign language feature to read command in toolbar



Source: Farhan and Razmak (2020)

Figure 4.7. Explanation of a graph using sign language



Source: Farhan and Razmak (2020).

An online course projected in this way does not need to be adapted to special requirements of students, but it is ready to adapt independently to their specific needs.

Unfortunately, the use of this approach in university courses is very limited because it implies a radical change of the cultural perspective in teaching and administration of the universities. They tend to adapt their learning process to students' special needs by using **Assistive Technology (AT)**. But, from our point of view, the two ways are not alternative but, rather, complementary. **UDL is a systemic approach**, whereas **AT operates at individual level** and makes it possible for all students to properly achieve academic tasks. Assistive technology is defined as *"any product whose primary purpose is to maintain or improve an individual's functioning and independence and thereby promote their wellbeing"* (Khasnabis et al., 2015, p.2229). McNicholl et al. (2019) suggest that AT could be a key source to support students with special needs in their path toward academic success, by enhancing learning and promoting students' engagement both inside and outside of the classroom. Brown et al. (2011) report that if used properly, assistive technology devices are key elements in producing positive effects in students with special needs. Table 4.2. describes which kind of

technological devices students and teachers can use to make all contents of online courses accessible.

Table 4.4. Assistive Technology to Address Educational Special Needs

TYPES OF IMPAIRMENTS	ASSISTIVE TECHNOLOGY	EXAMPLE
VISUAL IMPAIRMENTS	• Magnification device or software • Screen reading software • Tactile graphics • Accessible instructional material with refreshable braille display device	• Ruby • VisoBook • ZoomText • Jaws • NVDA • Read2Go
HEARING IMPAIRMENTS	• Voice-to-text software • Vibration alert device • Personal sound amplification system • Hearing loop system	• Dragon Dictation • FM Sound device/listening Systems • Text to speech App: C-Print; Typewell • Sign language text-reader: TTY, iCommunicator
PHYSICAL IMPAIRMENTS	• Switch input for computers or environmental controls • Dictation software • A tablet computer to read accessible educational materials • Speech generating device	• Dragon naturally speaking • Intellykeys • ACAT • Adaptive keyboard • Virtual On-Screen keyboard
LEARNING IMPAIRMENTS	• Manipulative • Visual timer • Literacy apps or software with dual colour highlighting	• Text-to-speech: C-Print; Typewell • Kurzweil 3000 • Graphic organizer

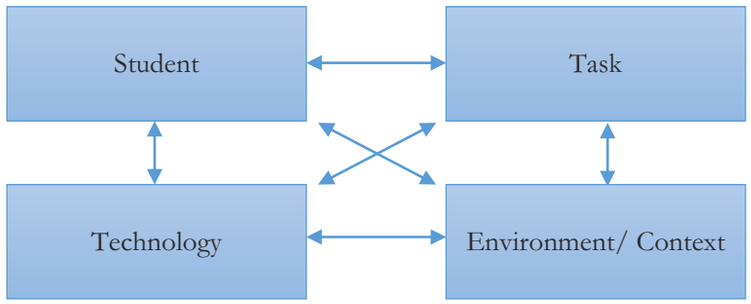
4.4. Tips and tricks for effective digital learning of students with special needs

Digital education is a challenge for all students and involves sacrifices and complications that were not present in traditional lessons. In addition to the obvious **technical difficulties,** some recent studies conducted during the COVID-19 pandemic have highlighted other problems: greater distractions, time management, maintaining

motivations, lack of interactions with peers and the use of unfamiliar tools. Such barriers towards effective education and training are even more evident for students with special needs because they need additional technology to be able to fully benefit from lessons. During "normal" times, the first step for students with impairments is that they are referred to the "Student Access Office" that carry out an intake evaluation to understand special needs and requirements by students. During the pandemic, the requirements were very different.

Given the problems highlighted above, in this part, it is our intention to provide students with some suggestions how to choose the right assistive technology (AT) in order to increase their learning potential during online courses. AT has the potential to **enhance the quality of life for students with learning disabilities** by providing them with a mean to compensate for their difficulties, and highlight their abilities. Because students with learning problems have individual strengths, limitations, interests, and experiences, a technology tool that is helpful in one situation or setting, may be of little use under different circumstances. As a result, selecting the appropriate technology for a student with impairments requires careful analysis of the interaction between (a) the individual; (b) the specific tasks or functions to be performed; (c) the technology; and (d) the contexts or settings in which the technology will be used (Figure 4.8.) (Zabala, 2005).

Figure 4.8. Matching AT with individual needs



AT assessment is a **collaborative process** that involves many persons and it is not a one-time event by a specialist. As illustrated above, this process should consider not only students' learning strengths and weaknesses, but also the nature of specific tasks to be performed, and the environments in which a student perform these tasks.

Each element of the evaluation process (student, environment, tasks and technology) requires data and information for an appropriate "technology match". These data can be collected by answering to the following questions as suggested by Zabala (2005):

- **Students:**
  - What does the student need to do?
  - What are the student's current abilities?
  - What are the student's special needs?
- **Environments:**
  - What is the instructional setting?
  - What is the physical arrangement?
  - What materials and equipment are currently available?
  - What support is available?
  - What are the attitudes and expectations?
  - What are the concerns?
- **Tasks:**
  - What tasks occur that enable students' progress toward their educational goals?
  - What are the tasks that allow the student to actively participate in daily life?
  - What is everyone else doing?
  - What are the critical elements of the activity/task?
- **Technology**
  - What system of no-tech, low-tech, and high-tech tools should be considered to support the student in performing the tasks identified in these environments?
  - What strategies might be used to increase student performance?

- How might these tools be tried out with the student in the customary environments in which they will be used?
- Do students have adequate skills to use the technology? If not, is there a tutorial and training?

The information that has been compiled about a student, environments, technology and tasks should provide a clear picture of the educational expectations for an individual student and areas that need to be addressed. Having all this information available, it will then be possible to select the most suitable technological tools.

At the starting point, the information is crucial to make the right choice of AT. Collecting, sharing and obtaining information about needs of actors involved in the learning process makes it possible for students to select and adopt the right AT.

Communication is an imperative in this perspective. University administration and teachers must be aware of educational needs of their students. Secondly, students themselves must be fully aware of what awaits them during the courses, which materials will be used and therefore, what additional equipment they will need. Third, students have to keep in touch with professors and tutors during the entire course. Things may change over time, hence, it might be necessary for students to use additional technology. Having a **permanent channel of communication** with teachers, tutors and university administration is crucial. Moreover, teachers and universities should receive constant feedback which would allow them potential adaptation of the training strategies during the course.

4.5. Conclusions

"*The world of education is currently undergoing a massive transformation as a result of the digital revolution*" (Collins and Halverson, 2009, p. 1). Because of this "digital revolution," it is both important and practical to make use of the availability and accessibility of technology in designing educational or training programs. Technology has the potential to contribute to better quality of life for students with intellectual disabilities, which is more than just a matter of convenience (Wehmeyer et al., 2008). In this chapter, we have focused on assistive technology for students with special needs and how important and crucial its role in the e-learning process is. In particular, we suggest that

adopting a "**universal design for learning**" with "assistive technology" are the main ways to create a higher education environment able to actually include all types of students, regardless of their educational specificities. This represents a change of paradigm, as the design of contents and learning schemes should overcome the simple translation or adaptation of these elements to special needs and become a guiding light in the creation process. Nevertheless, the starting point here is the ***awareness***. The awareness of students about their specific needs and tasks, the awareness of professors about needs of their students and the awareness of university administration about students' learning barriers are key. However, the awareness is built through an accurate collection of data and information and the first and most relevant step in this direction is communication. A channel of communication must always be open for students through which they can express their needs to teachers and university management.

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CHAPTER 5.

HYBRID MODE OF LEARNING – AN ALTERNATIVE FORM OF EDUCATION AFTER THE COVID-19 PANDEMIC

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5.1. Combining online and onsite mode of learning – hybrid mode of delivery

The hybrid model of learning is a term that is used to describe the mode of education where teaching is provided by using **both online and onsite learning methods** simultaneously (Carter, Cummings and Cooper, 2007). This is different from the most common education approach, which uses full time onsite and face-to-face classes. The hybrid mode of learning has been more frequently used since the onset of the COVID-19 pandemic. Given this new experience with teaching and learning, many institutions and students perceive its advantages and disadvantages for its further use in the education process.

Historically, the onsite mode of formal education was the first mode used. Of course, this is also due to **available technology**, which in the past was not suitable for developing a digital, or hybrid mode of teaching and learning. However, even earlier, non-formal education or education in remote geographical areas was usually provided at home, by parents or siblings. But in the developed world, most students adopted the attendance of school as the most common mode of education since the early 19th century. However, in the middle of the 20th century, people started questioning the efficiency and sustainability of school education. This trend led to an increase in home-schoolers in American and European countries. Today, hybrid learning has been implemented in most parts of the world and has become an alternative to fully onsite learning in schools in many countries. This has been facilitated by the growth of the internet, which enables most people to **obtain information very quickly** if they have necessary infrastructure such as phones, tablets, computers, or laptops. During the COVID-19

pandemic, many students were forced to study remotely at home to mitigate the danger of spread of infection as a consequence of overcrowding in classes or at school premises.

The hybrid learning requires the availability of necessary resources. First, a school that has never applied the hybrid mode of learning may find it challenging to implement it. However, as the challenges can be easily overcome with the practice and the experience with the hybrid mode of learning, **the effectiveness** of this form of instruction becomes a routine and teachers may fully concentrate on their teaching, not on the technical issues related to the change in the delivery mode. As a result, they are able to respond more effectively to weaknesses and strengths of their students (Hester, 2011). Also, the hybrid mode of delivery is perceived to be able to better prepare students for life away from school compared to the face-to-face delivery mode. Some students may learn better in a different than a school environment, since they are less held back, disturbed, or distracted; some students may not feel overwhelmed by specific assignments, which are normally done on school premises.

As mentioned above, hybrid learning has developed as an option for families in remote rural areas, but also for those, who frequently travel and cannot adopt full schooling education. Moreover, health problems and special needs can also play an essential role in making people adopt the hybrid learning system of education (Balls, 2010). This is due to students having the need to spend some time with their care givers. The onsite mode of delivery including in-person learning may not be applied in such situations, as their specific needs are not met by schools limiting their accessibility. Sometimes, even though the technical infrastructure is available, it can be too expensive for students, schools and other educational institutions.

A significant reason for preferring hybrid learning compared to fully online instruction is that in the later case students suffer from **lack of social contacts**. Thus, the use of exclusively online education may result in poor social skills of students (Hester, 2011). Due to this, a hybrid mode of delivery combines advantages of online and onsite learning. Students study in two different environments having their negative and positive impact on their learning performance. Even though there exist studies that indicate that students in the hybrid mode of delivery **perform better** than those in face-to-face education on

standard tests, they also have **better social skills**, and they participate more in cultural and family activities as compared to those in onsite school learning (Hester, 2011). In addition, other studies show that the hybrid mode of learning is more likely to build **higher self-confidence** of students, to be able to make friends more quickly and to have better interpersonal relationships. Most importantly, students educated in the hybrid mode of delivery have lower tendency of being influenced by their peers.

Each delivery mode – the online learning model and the offline education – has its advantages and disadvantages. In some countries, the hybrid learning has been extensively implemented and its quality is ensured by multiagency organizations. These are established to ensure that the hybrid mode of education is successful, and students receive quality and recognized education. The hybrid learning movement has been spread worldwide, including such countries as Australia, Canada, the United States, Mexico, Russia, the United Kingdom, France, or some African countries. Every country has its own motivation to favour the hybrid mode of learning and regulates time that students must spend at school and in the distance learning mode.

In 2003, in the USA, the National Center for Educational Statistics (NCES) conducted the National Household Education Survey (NHS) with the participation of stakeholders, who were interviewed on the hybrid learning and were asked for particular reasons for their involvement in this learning mode. Out of 31 interviewed hybrid learners, 31 percent preferred it out of concern about the environment at schools, 30 percent due to both religious or moral aspects, and 16 percent chose it due to dissatisfaction with the academic environment at schools. As we have already mentioned, there must be a specific structure in place to implement hybrid learning to achieve educational goals, keep the quality of teaching process and not to decrease knowledge taught in lectures and seminars.

The survey from three American universities providing MBA programme showed that among survey participants, the hybrid mode of delivery at universities had enhanced the programme quality of the programme and class satisfaction. Beyond this positive impact of the hybrid mode of delivery, hybrid education integrates different approaches and values to the education model (Scaringella, Górska, Calderon and Benitez, 2022).

Normally, the blended form of learning combines the use of technology and digital media with other traditional instructor-led classrooms activities. This provides students the **flexibility to customize their learning experience**. Some of the methods used in the blended learning model include the face-to-face driver model, where much time is allotted to in-person lessons and only part of the assignment/ activities is allocated to the online learning mode. The flipped model of the blended form of learning allows teachers to prioritize the active form of learning during traditional classes and online learning. The advantage is that learners receive materials and presentations provided by teachers or lecturers before the class (onsite and online). Some schools adopt the enriched virtual learning mode, where students may actually stay at school and have access to the lessons through the online technologies but in the school environment. This method would be applied also for the exams or other forms of tests and evaluations. Thus, students are in the classroom physically, but their exam or test is conducted in the online environment. This method helps to avoid cheating that would be possible if the testing was done in the environment outside of the class.

The hybrid mode of learning has similar disadvantages as the application of online mode. So far, we have seen that some of the challenges faced by schools during the pandemic are related to the **internet connectivity and the stability** of the internet connection. Some parts of the world, with very slow or unstable internet connection, face a lot of difficulties in implementing the online or hybrid mode of delivery as online classes depend on the availability of technologies, which need a stable internet connection for their proper functioning. Most of the countries have taken measures for implementing hybrid mode of learning during the pandemic. The objective of these measures is to provide the same quality education as it would be during the non-pandemic times that was mostly based on the onsite education provided in face-to-face mode of delivery. It means that the **educational goals remain the same** and the education curriculum approved by the government, accreditation institutions or universities do not change and are expected to be fulfilled and respected. Apart from technological and internet connection issues, the formal approval of the hybrid mode of learning is also necessary. In order to provide quality learning, the use of the hybrid mode of delivery must be approved by the government or other

responsible authorities and agencies. For instance, the university study programs are accredited by government appointed authorities or agencies. These programs normally go through the accreditation process and must be approved.

The blended form of learning has offered a lot of benefits both to students and to schools (including teaching staff) in terms of **the time management**. When teachers are unable to attend the lessons due to some unavoidable issues, the hybrid mode of delivery allows to reorganize the education process. Timely information sent to students about the change of the class to an online mode can avoid disruption to the teaching process, and an online class covers the same topic and content as the onsite class. The only exception for rescheduling classes to an online mode would be classes that require physical activities on school premises, which is not possible to perform in an online environment. The hybrid mode of learning may be considered as the future of education and we may expect that many classes or study programs will be accredited and provided in the hybrid mode of delivery taking advantage of both online and onsite instruction

The governments should identify schools at any level of education that have adopted the hybrid mode of learning and provide them necessary support needed for this method of teaching and learning. After implementing the hybrid mode of delivery, authorities should offer the necessary support to return learners to full-time education and solve any challenges related to the online or hybrid education (Frost and Robinson, 2007). They should provide adequate **technical support** including funding for equipment such as laptops, tablets or other gadgets as well as software. Also, the **support relating to methodological aspects** of the hybrid mode of delivery should be provided as well. If such support is not provided, the hybrid mode of learning would not work properly, and would not represent a suitable substitute for the face-to-face learning as some students would not have adequate conditions for learning and the performance of students would differ due to having or not having access to the technical equipment. Another issue to be addressed is the appropriate methodology as the methodology for onsite and online classes requires different approach of teaching and learning. For instance, some onsite activities should be adjusted for their use in the online environment. One of the examples of such support could be the use of flexible hours.

This means that lecturers would decide how many hours can be held online and how many classes are to be provided in the face-to-face mode of delivery in classroom. Thus, the staff would have an opportunity to choose/change their classes to suit them and their students' needs (Braun and Clarke, 2006). Moreover, the hybrid mode of learning must be introduced and discussed with the public. The institutions should acknowledge and build the understanding of these trends so as **teachers can be supported and appreciated by the public for their work for society** to educate students and young generation and thus, create preconditions for developing a well-educated and knowledgeable society.

The recognition of learners (students) should go along the same lines. Only in case of well adopted hybrid mode of learning students will receive the same quality of education as it would be the case in the traditional onsite learning. If the hybrid learning is considered to be inferior, students educated this way will never be recognized as well-educated. This is a reason, why hybrid mode of delivery must be clearly defined and recognized by responsible authorities. Lastly, **the support needs to be personal**. For instance, during the pandemic, everyone was affected in a different way and authorities must consider such situation and provide individualized arrangements for lecturers and students. There has to be a follow-up to ensure that the measures and the support will bring positive results in favour of learners undergoing a hybrid education model as well as lecturers providing education in this mode. The role of authorities, but also school, universities and lecturers is to identify **students who require special needs**, especially when applying hybrid mode of delivery. Only after identifying these students, the support (material or methodological) can be effectively provided.

Carter, Cummings and Cooper (2007) state that there is often a confusion of distance learning with a hybrid education model. They define the hybrid model of learning as a term used to describe how students are to be taught or take studies while in their home setting using a combination of online and onsite simultaneous learning methods. We saw a surge in the utilization of distant and e-learning resources during the pandemic, especially in humanities, economics or business studies, where the online mode of delivery does not cause the reduction of the quality of education and the onsite mode of delivery

is not so crucial as in some other areas of studies, such as the medicine. Even though a hybrid model of education combines online and onsite learning and teaching, students have **to follow a curriculum approved** by the specific school or by responsible authority as it would be if the education was provided only in the online or in an onsite mode of delivery (Braun and Myers, 2006). In addition, Braun and Myers emphasize that there have to be clear evaluation methods used in order to ensure that both modes of delivery in hybrid learning bring adequate and expected performance of students. In addition, teachers should be also qualified and certified to provide education in both delivery methods if teaching in a hybrid mode of delivery.

To ensure the quality of education in the hybrid mode of delivery, the control mechanism set by the government or other authorities should be applied. These authorities might be also agencies designated by government. Studies conducted in several countries have shown the contribution of such institutions in ensuring the needs of students while adopting the hybrid learning (Carter, Cummings and Cooper, 2007). A country or its authorities must ensure that students participating in the hybrid mode of learning have equal rights and get the same conducive environment as students participating in the face-to-face mode of delivery only. In addition, there cannot be set any other additional conditions for those students, which would create a pressure on their activities of performance. The authorities have to ensure that every learner receives **equal access to education** regardless of the approach used to learn and respect the decision of students and their beliefs (Munro, 2011).

With the onset of the COIVD-19 pandemic, a lot of schools were not ready to shift to the online of hybrid mode of delivery and some of the schools have also incurred financial losses that came as a result of closing down schools during lockdowns. This was a challenge mostly for private schools as they did not have necessary funds due to low enrolment of students who were not willing to study in solely online environment but wanted also to physically attend the school and be part of a social group of students. The solution is to provide the hybrid mode of learning combing the advantages of onsite and online learning. Firstly, during the lockdowns and bans for physical gatherings and attendance of classes, the online phase of the hybrid mode of delivery was provided. Usually, schools have used various online

applications such as MS Teams, Zoom, Discord, Google Meet or other platforms present in the online environment. Such change was a challenge not only for teachers but also for students who were mostly used to study in the face-to-face mode of delivery. However, the adaptation process shows the advantages of the online mode of delivery and even after the lockdowns, many schools have continued with partially online education process and the hybrid mode of delivery became commonly used. The use of the blended form of learning and teaching is presently considered by many as the best option. A suitable combination of online and onsite classes has the potential to increase the quality of provided education and improve the performance of students.

Relating authorities must make their education policy related to the modes of delivery clear and transparent. In addition, it should also provide necessary resources to implement the education policy focused on hybrid learning and teaching. Moreover, Braun and Clarke (2006) emphasize that the authorities should **offer the guidance** to any institution providing hybrid education and to any hybrid learners taking part in hybrid mode of delivery. This support should be related to technical or material equipment of either schools or students that have enrolled in the hybrid mode of learning, to support the software purchase, installation, and trainings for teachers/students of its use as well as any support related to methodologies used in the hybrid mode of delivery.

The role of the regulator or authorities is also to assess if the hybrid education mode is suitable for a particular study program. If the regulator considers **the hybrid mode as a suitable mode of delivery**, it should be ensured that the outcome of education in this mode will be at least as good as when using other forms of delivery. Such situation might be applied e.g., when deciding about the application of hybrid education to students with special needs. In this case, the hybrid mode of delivery should be applied to ensure that their unique needs are met and that they receive the same quality education as other students in the same study program. Even though in many countries the focus is on developing policies to ensure that there is not a single learner left behind, it is difficult to educate some students due to their special needs even when using the hybrid model of learning (Hall, Slembrouck, Haigh and Lee, 2010). There are several reasons that may cause such

learners not to receive adequate education. An example of such a situation can be the need for special equipment by these students to participate in education.

The research focusing on the hybrid learning or hybrid education have several aspects that are not explored in depth and more research needs to be conducted. Hwang (Hwang, 2018) suggested six potential streams of research in the field of hybrid learning. Those streams are (i) diversity of team members, cultural values and team cohesion; (ii) flipped classroom models; (iii) the role of lecturers and their interactions with students; (iv) research of transfer of learning from education to workplace skills and development of the metrics to measure such transfer; (v) infrastructure and requirements to support online and hybrid learning environment, and (vi) research of online and hybrid mode of delivery in business and management programmes to uncover the possibilities to improve those modes of delivery.

Studying in the online and offline mode – the advantages and disadvantages

Teaching is a continually evolving process, especially with the rise of technology and identification of new – more effective methods of teaching and learning. Presently, schools are more open to innovative education methods, which helps them reach out to more students and improve their learning experience. Traditional physical class attendance (i.e., face-to-face mode of delivery) is no longer the only option that learners have. There is an option of remote learning (i.e., an online mode of delivery) with the help of technology. The launch of the remote learning has led to the spread of **a combined mode of delivery – a hybrid learning model** that can be applied in most higher education institutions. In this system, students can either attend the class physically or virtually from whatever location they are in. Schools at all levels of education, have to find a way to engage all students after school resumed in the traditional learning mode, since some students could not attend classes physically due to e.g., the fear of the spread pf the COVID-19 or the pre-existing conditions. Also, many students have not attended schools for a long time in the onsite mode of delivery and must get used to adapt to the in-class learning. The educators can teach onsite students and remote students at the same time. However, such situation brings **additional requirements and additional workload** for teachers. To provide such blended teaching, teachers

may use video conferencing tools such as MS Teams, Zoom or Google Meet. In some institutions, hybrid learning is conducted using pre-recorded audios/videos, online exercises to support the onsite classes. Then, students can follow the lessons independently at their convenience. This system could make education more enjoyable and attainable for many students.

Many university students find the hybrid mode of learning to be more convenient. They get **flexible learning experience** without the pressure of attending school physically so frequently. There is a flexible learning schedule that includes several modes of teaching, which **makes the lessons more fun and engaging**. A learner can still attend class remotely from home whenever they are unable to go to school physically. Shy or timid students can ask questions more freely and engage the teacher without fear. This can boost their **confidence**, encourage better **performance** and deeper **understanding** of taught concepts. The students taught in the hybrid method have the advantage of the synchronous communication (Graham, Woodfield, and Harrison, 2013). They can learn online and whatever they do not understand, they can always come to the physical class for group discussions of face-to-face communication. They can form a relationship with their peers both online and in the physical environment. Moreover, such relationships are not formed only among people in a close geographical proximity or neighbourhood as the online environment provides them the opportunity to be in contact with their **classmates from any location**.

The hybrid learning model enables self-driven students to excel in their studies since they can plan their schedules. Online learning allows them to better manage themselves, and the freedom that comes with it enables them to explore different modes of learning and presentation. The content shared online by their instructors makes it easy to always refer to and read for an in-depth understanding. There can be more **digital resources** explored by both the instructors and the learners. The hybrid learning model is more efficient in terms of helping students to understand the topic and the content of the class. Learners have different learning modes that they can always explore,

whether in the online or offline classes, since they both coincide. The resource optimization is a guarantee in learning institutions with a hybrid learning model (Lothridge, 2013).

Learners participating in the hybrid learning model exhibit an increased **interaction between their peers and instructors**. They can old physical discussions in groups and engage their teachers more and have a more interactive environment due to the various modes of teaching. An increased engagement makes the lessons more attractive, and the students tend to look forward to the classes. There is also the potential for a greater involvement of students in the course work. The fact that learners do not have to attend the classes onsite can make them more at ease and **reduces the expenses of the traditional class attendance**. Their transportation cost and other in-class related cost are significantly reduced.

The study by Setiawan (Setiawan, 2021) revealed that hybrid learning is very useful to improve learning outcomes, course implementation and student´s experience. Applying the hybrid mode of delivery **increases students´ engagement** and also improve students´ performance and more students are able to pass the curse. The study also showed that hybrid mode of delivery is more valuable and students are more excited and enjoyable. Similar results were found by Xiao, Sun-Lin, Lin, Li, Pan and Cheng (Xiao, Sun-Lin, Lin, Li, Pan and Cheng, 2020) based on the exploring learning competences of learners at Shanghai Open University studying in hybrid learning environment. The result showed that students' engagement has increased. However due to the hybrid mode of delivery and keeping both option for learning, students do not have certain competences, but **cognitive engagement competence** associated with their ability to figure out the optimal mix of learning options. On the other side, study of Wang, Griffiths, Christensen, D´Angelo and Condon (Wang, Griffiths, Christensen, D´Angelo and Condon, 2022) found that the students 'outcomes and engagement are comparable across all three modes of delivery – onsite, online and hybrid. However, the hybrid mode of learning, respectively thy hybrid program is increasing the access to legal education. Relating to the availability of legal services, the hybrid program is found insufficient to increase the availability of such services.

An important part of the hybrid mode of delivery is **the effect on**

behavior of students. Li (Li, 2022) provided the learning behavior analysis under the condition of hybrid learning environment and the cluster algorithm. The student cognitive participation was modeled in the analysis. The proposed algorithm model of behavior was consequently proved by the executed experiments.

The hybrid mode of learning has a lot of benefits for the learners, but it still has a few disadvantages. To ensure that hybrid learning would work effectively, **organizational skills** from educators and the students are needed (Aurini and Davies, 2005). The educators have to find a hybrid learning model that works for them based on the course content and their expectations for the students' performance in a particular class or group. The instructors have **to map a plan** that works for both an online and offline mode of delivery and for students participating in those individual modes of learning. They need to develop learning materials, activities and assignments that can be administered and used by both groups. Instructors have to set their course's goals and communicate them early to the students. It means, they should issue a detailed schedule to their students at the beginning of the semester to be aware of the compulsory synchronous group sessions, class expectations, and their responsibilities as learners. **A trust-based learning environment** has to be established to ensure efficiency in the hybrid learning system and encourage class engagement for both offline and online students. Learners with poor organizational skills may not thrive in the hybrid learning model, especially if they opt for the predominant share of online classes (Arnall, 2018). The hybrid mode of delivery requires excellent **time management** by lecturers and learners. Lecturers must plan the activities in accordance with the distribution of the online and onsite classes simultaneously while recognizing the content that is more effectively taught and learned onsite and which is more suitable to be provided online. From this perspective, also learners must manage their time effectively to attend the course online/onsite and submit the tasks on time.

As mentioned in the previous part, hybrid learning must be well planned and implemented because it relies heavily on technical resources and tools to work effectively. Technological issues can significantly **hinder the hybrid learning**. The tools and software used for the online class have to be **regularly updated**, **reliable**, **easy to**

use, and positively impact the learners and their entire learning experience (Garrison and Kanuka, 2004). To be able to provide hybrid mode of delivery, the same requirements as for the online mode of delivery are needed. Online learners must have computers, laptops or other devices at their disposal as well as an internet access. Unstable internet may lead to learners missing classes and the opportunities to engage with the teacher during the class sessions. Additionally, some tasks and assignments may require purchasing software programs, which would be otherwise available at school. Online learning also does not allow students the opportunity for face-to-face interaction with their peers and instructors. Many students who attend online classes also admit that they can **easily get distracted** by other sites such as social media during an ongoing class. This interferes with a learner's progress in school and would not represent such a problem if the class was provided in the face-to-face delivery mode.

The hybrid learning model has proved to be satisfactory and successful for learners. The achieved improvement in their interaction and engagement significantly contributes to it. The use of **information and communication technologies** in class has improved student attitudes towards learning (Saritepeci and Çakır, 2015). Learners have more confidence in what they study, and they can evaluate their understanding of concepts through tasks and assignments provided by their instructors. Education expenses were significantly reduced while using this learning mode since most materials are shared online (Bhopal and Myers, 2018). **The feedback** from instructors is almost immediate since the tests and assignments submitted online are scored faster and the feedback is much easier to be provided. The learners can also study at **their own pace** using all materials provided by their teachers. There is less boredom as a student does not have to sit in one place throughout the classes but is free to choose time for their study and study at their convenience. This approach can be applied in both asynchronous and synchronous classes.

The hybrid model of learning represents a flexible learning experience with **flexible learning schedules**, opportunities for using **diverse teaching models** and a more comprehensive range of **communication mechanisms** between teachers and students. Hybrid learning can also be used to support the face-to-face classroom learning. The educators may decide to use online exercises and pre-

recorded videos for better understanding. The emergence of online learning makes education more attainable to many more learners (Boyarsky, 2020). Hybrid learning can be successful, when maximum effort is put in by both educators and students. The educators need to ensure that the online and face-to-face classes are appropriately combined to create a fully functional learning experience. It is evident that using the technology for education boosts the class engagement, triggers learners' curiosity and results in better learning, understanding and performance of learners.

Of course, online and offline classes have their advantages and disadvantages. Students in online courses have accessibility of time and place. They can attend lessons from whichever location they are in. They can also catch up on what was taught in class, since online courses can be recorded for future reference. They can learn in the comfort of their own home. Students attending online courses can interact with more diverse people from different regions. This gives them new ideas and can generate solutions that they can grasp from their classmates. Normally, students attending online classes have an improved student attendance compared to their peers who opt for an onsite course. The possibility to participate in class from any location gives learners fewer chances of missing a class. As we have already mentioned, online learning is also quite affordable compared to the traditional class attendance since most extra expenses such as transport, accommodation and school lunches are reduced (Thompson, 2021).

However, online classes have also some disadvantages. Many students, who attend online courses, admit that they can easily **get distracted** by other sites such as social media during an ongoing class. They also tend to experience **technical issues**, such as poor internet connection, which interfere with their progress in learning, or they may face insufficient or lack of technical equipment. Offline classes have been available for a long period of time, and their primary benefit is that the student and teacher interaction is at a face-to-face level (Bendall, 1997). The learners can engage more with their educators and seek a deeper understanding of concepts. Similarly, the students can discuss topics and content amongst themselves and engage more, making it easier to understand complex concepts with the help from their classmates. Traditional physical class attendance also makes it possible to access the school facilities and available resources at the

institution. But offline classes cost students much more, since there are several additional costs such as transportation, lunches, or textbooks. Mandatory class attendance leads frequently to boredom, especially if an educator is not engaging and innovative.

Learning for the new era – alternatives and digital resources with a particular focus on economics and business studies

According to Neelakandan (2021), the hybrid model of learning is one of the most effective ways that many learning institutions worldwide have embraced. This mode of learning is sometimes referred to as blended learning, which combines online accumulation of knowledge and traditional classroom attendance methods. Online learning became more popular and highly recommended, when the COVID-19 pandemic broke out and the learners had to stay home (Bennett, 2018). Authorities, schools and teachers had to find a way for the students to continue their learning during lockdowns and school closures. Online learning has proved effective, and even after the return to traditional physical class attendance, some classes continued to be conducted online. The hybrid learning model **allows students to benefit from online and physical courses simultaneously** (Neelakandan, 2021). It creates an ideal learning opportunity for learners since some students get to attend class physically while others follow them virtually from wherever they are. Also, some activities can be done exclusively online, or exclusively onsite. Normally, educators would have some additional work to provide both modes of delivery, even if they conducted both types of delivery simultaneously and they did not need any extra hours for separate classes. This cost could be associated with the need to set up both modes of delivery, but they should not be preclusive. It seems that the hybrid mode of learning has gained wide acceptance, especially in those study fields where the physical presence in class does not affect the achievement of the learning outcomes which includes economics and business studies.

There are several **methods** that teachers may use for their online classes to increase their effectiveness (Arora, 2006). In business programs, educators may use e.g., simulations, or case studies. **Simulations** engage interactive controls that involve learners in activities with a wide range of parameters allowing them to see real-time changes in their final results. The models used are usually specific and give clear picture of expected outcomes. **Case studies** are widely

used to understand the topic in the complexity of interactions between variables and relate them to practical use of learned knowledge. **Graphics** and **animations** can also be used for clear illustrations. The use of **videos** in learning has also proved to be efficient since learners easily remember, what they have seen compared to what they only heard or read. The use of graphics makes it easier to share with a wide range of audiences (Ashley, Roskill, Fraser, Featherstone, Haresnape and Lindley, 2011). There exist business databases with a wide range of management and economics topics, including business reports on the markets, and case studies evaluating global business trends. E-journals focused on finance, business management, economics and accounting can also be used for assignments and in-class discussion. Several **applications** might be also used and are suitable for both the students and teachers in the business classes, e.g., Visme application that allows to create presentations, infographics, reports and visual contents. It has several templates that assist in visualizing any form of data.

As mentioned above, hybrid learning has more benefits compared to education that only focuses on students attending classes exclusively in person or purely attending online classes mainly since it offers them **a flexible learning experience**. Schools have adopted the hybrid mode of delivery due to its flexibility related to the learning schedule, teaching modes, engaging with different learning materials and in collaboration and communication between peers and the instructors. It allows to plan the education process not bound to the in-class or online learning and teaching and any changes can be introduced flexibly as required by the situation. For instance, if many students got infected and sick, classes could be easily shifted to the online environment and students would continue with the education process without any disruption on classes.

Secondly, hybrid form of learning provides involved parties **the freedom of independent academic exploration**. When a student is learning in an online mode of delivery, he or she learns on their own how **to manage time**. In the face-to-face mode of delivery, the time management is given or restricted and students do not have the flexibility to decide on their own about the time they devote to studying. Also, students have the **freedom to attend classes** at their preferred location, go through the learning materials any time they want and at **their own pace** when participating in the online classes

(Brint, Contreras and Matthews, 2001). This teaches them to be their own managers which may be useful in their future careers and it is relevant especially for students of business programs. In addition, hybrid learning gives students the opportunity for more efficient allocation of resources. This leads us to the conclusion that whatever learning activities can be done online should be done so without wasting additional time and resources related to the onsite class mode. There can be even a physical class, where students all do assignments in the virtual environment even though they attend classes in person (Aldrich, 2000).

Hybrid learning models have different forms. When applying the hybrid mode of delivery, school management must have ample time to plan the launch of the hybrid mode of delivery to avoid future confusions. **Adequate planning** is also needed for teachers, who need to carefully plan e.g., the schedule of assignments, their format and the way of their submission. The class activities must be planned with the same caution. Teachers must decide, which assignments and activities are more efficient to be conducted online and which would be better provided in the onsite form. Some assignments, e.g., those that require research can be done online as they require little supervision and ample time should be given to students to carry them out, but some activities need more supervision and discussion. The class schedule should be designed in such a way that when students attend classes in person they should engage in activities, which benefit from their personal presence. Also, it is a good practice to assign days, when classes will be done online only, and those days, when physical presence is required onsite.

For the development of **a successful hybrid environment for economics and business studies students,** students should make sure that the following aspects should be considered:

- The semester *goals are set clearly*. By setting both the long- and short-term goals of the hybrid learning, students are allowed to form their expectations about the study and teachers can also prepare for this mode of delivery. After setting the goals, it is needed to track if these goals are being met.
- After setting the *goals,* it is necessary *are mapped out*. The students' performance should be assessed only after a

certain period of time. After the assessment of the online and onsite mode of delivery, teachers should decide which mode is more suitable for which activity/assignment and adjust the class structure accordingly. *Mapping the learning and teaching process* also provides information about the loopholes in the learning system and allows filling those loopholes to improve the course and the study program for better results.

- It is clear *which course objectives can be better achieved by online activities than by the onsite activities*. Some course objectives require students to carry them out in the laboratory environment (e.g., such as the Bloomberg trading class), some others allow them flexibility and to do them on their own. In the hybrid mode of delivery, such objectives should be included in onsite learning regime as they bring better results comparison to the online mode[1].

We expect that the popularity of the hybrid form of learning at the university level will increase in the future and this mode of learning will replace fully onsite form of learning. This is due to its advantages, which become even larger with **the progress of intense digitalization and digital resources**, which become available throughout different study fields, including economics and business studies. The hybrid mode of delivery combines advantages of purely onsite and purely online learning system and brings them together when applying hybrid mode. Its flexibility without jeopardizing the learning outcomes are strong arguments to promote the use of this learning method even after the epidemiological restrictions are over.

Tips for student focused hybrid mode of instruction and learning

Even though recently its use has increased substantially, online learning has been used by many universities for a long time. The most common use of the online mode of delivery was provided in the form of distance learning. The distance learning was launched to educate people who could not attend the school physically and take classes onsite. Such learners may be employed, parents taking care of their

[1] For mode details see: http://www.scie.org.uk/publications/introductionto/childrenssocialcare/furtherinformation.a)

children, lifelong learners or students from remote areas that would not be able to travel to the school location. Students, who enrol to distance education use online platforms to learn and graduate from the program.

Many universities have experienced the hybrid mode of learning during the COVID-19 pandemic and have found benefits from this delivery mode. Some of universities consider this delivery mode as optimal for their students, embrace it and are planning to use it in the post-pandemic period. Thus, it is important also for students to be aware of the specifics and opportunities provided by this learning mode and to get ready to get involved in an efficient way with both formats. The following tips can help **educational institutions** to develop hybrid form of learning so as it was beneficial for students.

- First, universities should establish a *productive learning environment* for students both online and onsite. The onsite classes should reflect the need for active engagement and interaction in class and the use of up-to-date technologies. The online environment should be based on the use of a consumer-friendly learning platform, where the class can interact during the online segment of the instruction.
- Students should be *assigned tasks and assignments on a regular basis* and they should be required to turn them in within specified deadlines to ensure that they follow through the topics covered and progress in their learning throughout the whole semester.
- Students should have the opportunity to stay in the *university accommodation* so they can learn from there. This may create a suitable learning environment among other students that often adds motivation to their study and allows them to interact informally with other students on the topics and assignments of their program.
- Universities need to *provide appropriate internet access* to facilitate the learning process by installing WiFi networks on campus, in student housing or dormitories or even by enrolling students to free mobile data plans renewed on a regular basis. By doing so, the disadvantaged group of

students will benefit to the same extent as others.

- Universities need to *set a strict and clear schedule for the learning process*. This allows students to plan ahead and contributes to improving their study results and performance. This involves setting specific time/days for online learning and specific time/days for onsite learning. A well-managed schedule is needed as some courses require lecturer's demonstrations and need to be done onsite, otherwise the classes can be carried out online. The benefit of such distribution of classes accrues to both students and lecturers.

The students may prepare for the blended/hybrid mode of study program delivery by taking the following steps:

- *Have a good and reliable laptop available*. There are many brands of laptops available on the market at different prices. Students should consider a best fit for them given their needs and budget. They should ensure that the laptop they choose will last a long lifetime and it will be smoothly operational. They should explore which software will be made available by the university for them before they decide to buy a laptop, since frequently they can get software at a discounted price if purchasing it as a bundle with the laptop. They should also be aware that universities usually provide licensed computer software to their students only for the period of their studies. Of course, it is possible to connect to learning platforms such as MS Teams or Zoom using another device such as a tablet of a smart phone. However, this solution should be avoided since it does not allow for a full functionality and comfort needed for online learning.
- *Have a connection to a stable and reasonably fast internet.* A stable internet connection will ensure reduced class interruption and protect students against the loss of information while learning online. It will also allow the student to fully participate in discussions and contribute to the online class. Even though landline connection has been considered as most reliable, recently the progress of the digital networks reached such progress that on large territories also the

mobile data coverage allows for sufficient internet connection needed for full online class engagement.

- ***Be ready to travel to school as needed.*** The proximity to school or easily available transportation options are important for the hybrid mode of instruction. Sometimes onsite classes or student meetings can be organized ad hoc, and students should be ready and available to participate in them.
- ***Develop a strong network of classmates.*** This is important especially for students, who live in more remote areas, which does not allow them to travel to school that flexibly. In such cases, information can be distributed through a class representative or more informally, through a network of classmates. It is a good practice for students to have a group on social media, where they can post information, ask questions, or discuss unclear issues. Getting information earlier would help in efficient planning and preparation of classes.
- ***Have a notepad ready to take notes.*** Even though presentations are normally made available to students, it is considered a good practice for students to take notes both during online and onsite classes. This practice was found to improve attention and focus of students during the class and increase their understanding of the material. Therefore, students should be ready to take notes while attending classes.
- *Fully concentrate in classes.* Full concentration in both online and onsite classes is required for students to grasp the concepts. It is well known that the content covered in lectures and tutorials represents the core and should be learnt by students and it will be most probably included also on the assessment. Students should understand this and focus on learning in class as much as possible. Also, in class they have the opportunity to ask, if they do not understand something, but if they do not pay attention, then, it is hard to ask any sensible questions. Trying to catch up on their own makes it much harder and time-consuming for them.

- Students should make sure ahead of the course that they ***have access to all online platforms and sources required for the course.*** They should adjust their other engagements so as to be able to log in and follow the online classes during the time period allocated to them in the course schedule (this applies to both synchronous and asynchronous learning).

- Students should be aware that even though hybrid mode of learning provides them with more flexibility, they should *focus on appropriate time management,* not to procrastinate on their learning. Because the learning outcomes in a hybrid learning mode are the same as in the fully onsite mode, students should plan to devote the same time to learning and studying in the hybrid mode, as they would need to devote in the fully onsite mode.

- Students, when studying from home, should focus on b*eing in a calm environment and have a designated study space*, where they are not disturbed by other members of the household or any other external factors, so that they are able to avoid distractions. For instance, using a couch is not ideal for participating in the online learning as the relaxed position may decrease the degree of focus and attention. Also, students should put aside their mobile devices they use for interacting on social media as they did not divert their attention during the learning activities

Onsite classes are important in blended learning as students are able to interact with their peers and with teachers in person, network and develop their **interpersonal skills**. Hybrid form of learning is more beneficial as it allows combining e-learning with in-person social interactions. Students have the opportunity interacting with their lecturers or their peers and take advantage of the comfort provided by the online learning. It is not possible to create a relationship with a person (a teacher or other students) only through the online learning. The social interactions and meetings in-person bring the trust and perception of belonging to the group and, thus, increase confidence, satisfaction and social dimension in students. Also, in the hybrid mode, they can engage in such learning activities that are not possible to be

carried out efficiently in the online mode. Thus, onsite classes should include **practical demonstrations** and follow after the online classes, where the topic was taught theoretically. It means that hybrid mode of delivery requires both onside classes and online classes to be synchronized. Teachers should prepare specifically in advance for onsite tutorials and practical demonstrations that follow upon and expand the theoretical background provided in the online class. Students should make sure to carry out the online learning activities before they attend the onsite class. Then, this method supports and encourages students to understand the topic effectively.

Schools or universities in which hybrid learning is implemented should ensure that a comprehensive system is in place that allows tracking students' comprehension and the progress towards the achievement of learning outcomes. There should be support staff available to assist teachers with technical, methodological and other issues which may arise in the process of hybrid instruction. The support staff should be qualified and experienced to perform the assigned tasks to ensure the success of the programs and courses. Teachers should be provided appropriate **methodological and technical training** early on, including tips for what works best in this mode of learning. Also, students should be well acquainted with technical interface and online sources that will be used in class. This can be achieved through trainings during the induction period for new students, but also through making available technical guides through used learning platforms.

The students should make sure that their behaviour is transparent and ethical during the exams and other forms of assessments, universities should consider carrying them out onsite. In case of online exams, such exams must eliminate the chance to cheat, for instance using open questions with no pre-defined answers that might be easily copied from the study materials. Also, assignments and exams can be launched in the open book format, when students are allowed to use all available resources. In such format it is important that students are required to apply available information to solve a specific problem and document skills, which will help them to solve similar problems in real life situations. In this case, students can be also expected to be motivated to study harder, more intensively and focusing on active understanding and application of the material, since

they are aware that only this approach will help them to perform well on such a problem focused exam. Thus, this is the way, how to avoid that a student memorize material without fully focusing on understanding it. In the current period, when information is easily accessible, one of the key aspects of learning should be the focus on the ability to find relevant information and apply it appropriately in appropriate contexts.

Some students may find it **difficult to shift from the online learning model to the hybrid form of learning**. Generally, any school or college should try to blend its learning system to allow students enrolled in solely distance learning to have a chance to interact or to be taught also in the onsite format. This is the best done in connection to those activities/topics, which need to be explained either directly or through practical exercises. As the hybrid mode of delivery is considered to be the most effective method of learning, bringing benefits to both schools and students, authorities and individual schools should introduce policies favouring this mode of learning. Such measures might be introduced generally by a regulatory authority (such is a ministry of education), which will promote this form of learning, or by educational institutions as such that will give preference to courses or study programs in a hybrid mode of delivery. In this case, an educational institution should introduce the policy that students enrolled in the offered programs will be provided the opportunity to attend both online as well as onsite classes/courses.

However, the hybrid mode of learning has both **strengths** and **weaknesses**. Each student should understand those aspects and try **taking advantage from strengths of hybrid mode of delivery and eliminate or diminish the impact of weaknesses**. Then, the hybrid mode of learning can have even more positive impact on student learning and their performance. In addition, to provide a more complete SWOT analysis, hybrid mode of learning can be evaluated according to its **opportunities** and **threats** coming from the external environment. As in the internal analysis, also here it is up to students to understand and use the opportunities and focus on reducing the impact of existing threats on their mode of learning. The following table provides an overview of strengths and weakness, opportunities and threats of the hybrid mode of delivery (Singh, Steele and Singh, 2021).

Table 5.5. SWOT Analysis of the Hybrid Mode of Delivery

Strengths: • Self-accountability • Self-pace • Accessibility for disabled students • Virtual learning • Safely learning and interacting • Autonomy	**Weaknesses:** • Lack of student buy-in • Minimal interaction • Work ethics complacency • Lab requirements • Compromised software • Timelines of interaction
Opportunities: • Technological advances • Cloud-based potential • Multiple courses facilitation • Creativity • Mixed software platforms • Synergy	**Threats:** • Technologically compromised • Computer compatibility • Personal integrity • Subject matter buy-in • Software options/costs • Technically challenged individuals

Source: Singh, Steele and Singh, 2021.

The following approaches are suggested to be introduced for students **to learn effectively** in the hybrid mode of delivery.

Table 5.6. Methods for students to engage in effective ways of learning

What should a student do?	**Description of tasks for effective learning in the hybrid mode**
Have a positive approach and remember it's a learning process	A relationship of students and lecturers is crucial for delivering knowledge. A good relationship between students and lecturers encourages students to express their ideas and perspectives and creates a suitable environment for education. But negative attitude and relationship with a lecturer creates demotivating environment. It is necessary to realize that getting used to the hybrid mode of delivery might be challenging and not go perfectly all the time. However, all mistakes should be considered as an opportunity for improvement.
Communicate with teachers and peers	Regardless, if the course is held in an online or an onsite mode, communication with a teacher is essential. Asking questions, writing e-mails or chatting by the using any available platforms used by the university should be respected and students should use those communication channels. The communication with teachers engages students' performance, but also increases the demand for teachers' improvements. The communication with classmates and peers is necessary. Most importantly, communication might reduce the. Some of the classmates may have the same experience with the learning process, struggles or problems with the internet or devices, but a student will never know it if they do not communicate with each

	other. An open communication with classmates and teachers positively impacts the study.
Learn using new technologies and familiarize with technology used, check your devices	Students should try to use the new technologies in the learning process. The impact of the technologies used in the learning process is immense as they provide us with many opportunities to study more effectively. Using this opportunity in online classes, but also in onsite classes helps to improve students' performance. If students are used to new technologies, applying them in the education process and learning became more attractive. Students should also check the functionality of their laptops or other devices used for the course before the course starts. Such control might identify malfunctioning of devices or the necessity for upgrades (including also software upgrades) and prevent from inconveniences during classes.
Be flexible in planning your study	The hybrid learning may be scheduled in a flexible way. Students may use the opportunity and visit onsite classes when necessary but also attend online classes. The flexibility given by this mode of delivery creates the efficiency in the learning process as the participation in class would be convenient for students. It is more convenient for some of them and comfortable to attend class in an online mode, for some of them it is the in-person attendance. The hybrid mode of learning gives us opportunity to choose as suitable for the students.
Be open to new approaches (methodologies) in learning	Most of the students were used to traditional in-class method of teaching. However, the methods used for onsite learning would not be effective for online learning. Students have to adapt to new conditions and be able to pick up new methods of learning. An advantage of hybrid mode of delivery is that students have not to adapt to all new methods used immediately as part of the classes is still held in the traditional onsite mode of delivery with traditional methodologies of learning and getting used to new methodologies of learning is gradual.
Use the freedom you get	As the hybrid mode of delivery combines online and onsite classes, students have freedom to choose the best and most convenient option for them. Students may read or progress with the topics at their own pace and during any time they want, but also visit classes or tutorials onsite to discuss the topics with peers or lecturers. If they prefer online communication (e.g., introverts), they may type a message, chat or use other forums to ask questions.
Create a workspace and minimize distraction	Students should prepare a convenient study space, in which they are most productive. The workplace would support the focus of student on the lecture, seminar or tutorial and not include any distractions, e.g., television, social media or disturbing noises.
Know the dates and types of assignments, submissions and check for updates regularly	Many assignments will be assigned and turned-in using online platforms. Keeping track when, where and how the assignment should be submitted is crucial for the course performance evaluation. To be engaged in class, students should check their e-mails, messages or discussion platforms regularly to be informed about the plans for the classes as well as for changes that might be done by lecturers. Also, following the website and social media of the university or the collage is suggested. An option for students is to sign up for alerts that will help them to get information immediately after their publishing.
Stay ahead with the class preparation and stay organized	Be prepared for any unexpected situations as the laptop malfunctioning, electricity problems, slow or no internet connection or similar problems. If students have their work done ahead of time, these problems will not affect their performance, or they will not be late with assignment submissions. It is suggested that students should finish and submit their work at least a day before the submission deadline. Knowing the dates and modes of submission, students will be well organized and able to improve their performance. Moreover, it is necessary to know, where the class agenda, study materials, reading, notes or other information are to be found – for instance uploaded in the course online platform.
Manage your time	The hybrid mode of learning may induce laziness or decrease students' activity. Students are suggested to manage their time and actively work on the task or assignment during the whole semester. The hybrid mode of learning is thus, a good practice to learn, how to manage time effectively.

Sources: Neelakandan, 2021; and Student Success Agency, 2020.

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