

# The Impact of the Pandemic on Teachers' Attitudes toward Online Teaching

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## Abstract

The pandemic affected the most on the student population in the shortest time. The number of students whose studies were discontinued in March 2020 was about 300 million. The number reached to 1.6 billion on April 2020. To provide basic education for the students during the pandemic, many countries transferred to a mandate of distance learning for the education system. Use of different platforms for distance learning has helped reduce learning gaps. The Corona virus has forced educational systems to enter in a mode of digital transformation and to leave physical classrooms. The impact of this situation was felt at every level of the education system, from kindergartens to universities. This situation creates not only challenges, but many opportunities. Learning in the global open space creates new learning environments and the use of new learning materials.

A case study was conducted in Israel. Self-prepared questionnaires were given to 123 educators who teach in elementary schools, middle schools and high schools Teachers who participated in case study teach exact sciences (mathematics, physics, science, and technology), multi-text subjects (language, literature and history) and foreign languages (Arabic and English). The purpose of the case study is to examine the habits of using tools for distance learning, to examine whether there is a difference in the habits of using technological tools between teachers at different age groups, to examine teachers' attitudes to distance learning assessment tools and to examine teachers' recommendations for different subjects and different age groups.

The findings indicate that middle school and high school teachers prefer close help and support during online learning. High school and middle school teachers would prefer to continue distance learning even when face-to-face teaching is possible, unlike teachers who teach in elementary schools who prefer face-to-face teaching. The recommendations of high school teachers also indicated that it is necessary to increase the support system during online learning. When we examined the differences between the different subjects, we saw that teachers of science and mathematics subjects feel that most students do not take an active part during the lesson. Despite this, teachers that teach humanities subjects report that they feel that students are actively participating in online learning processes. Teachers report that changes must be done in assessment's methods. Teachers also report that during distance learning it is more difficult to follow students' progress.

**Keywords:** distance education, online learning during pandemic, online teaching, digital learning, blended learning, teachers' attitudes

## 1. Introduction

In order to stop the spread of the corona virus, governments have had to take extreme measures, such as social distance, isolation, travel restrictions, military regime, etc. Many were forced to stay indoors in order to slow the spread of the plague (Hebebcı, Bertiz, & Alan, 2020). On March 2020, 46 countries on the five continents decided to close schools. In 26 of these countries, schools were closed (Almanthari, Maulina, & Bruce, 2020). The COVID-19 virus has closed classrooms all over the world, even models for hybrid learning, so that not a pinch of personal and social interaction remains (Kulbakova, 2021).

The corona virus has posed a serious nuisance to the education system around the world. Within a few months countries around the world closed the gates of schools and educational institutions to curb the spread of the virus (Tria, 2020). Efforts to frame COVID-19 have included school closures around the world. These closures have left more than a billion children out of classrooms (Onyema et al., 2020). The pandemic affected the student population

the most in the shortest time. The number of students whose studies were discontinued in March 2020 was about 300 million. The number reached to 1.6 billion on April 2020. Education is the main sector which is most affected after the health sector during the pandemic (Hebebcı et al., 2020).

The mandate to use distance learning in many countries during the pandemic was transferred to education system, in order to provide basic education for students. The number of distance learning students is growing day by day all over the world. Use of different platforms for distance learning has helped reduce learning gaps among the students (Robinson-Neal, 2020). Distance learning has many benefits and many challenges. Lack of infrastructure, economic challenges, technical problems, lack of awareness of the learning community, lack of technological literacy of students and teachers - these are major challenges of distance learning (Hebebcı et al., 2020).

After the "dust socket", there is time to do some reflection and "recalculate the route" in education. Many questions are asked (Kulbakova, 2021):

- Were the teachers prepared enough?
- What is being done to adapt learning to new ways of teaching?
- What did we learn from distance learning?

There are many benefits to face-to-face teaching: real time interaction, class discussion that elicits questions and answers. Face-to-face meetings are motivating, creating a sense of community and providing learning encouragement. In classroom, teachers can absorb non-verbal cues in order to make appropriate adjustments in teaching processes (Singh et al., 2021). There is a place to think about what is good for face-to-face teaching, and whether there is room for a combination of distance teaching and hybrid teaching.

Blended teaching is a method that includes the effectiveness of face-to-face teaching in the classroom along with improved technological options of the online teaching approach (Singh et al., 2021):

- student centered teaching where the student is active learner
- opportunities for new interactions among teachers and students, availability of content for learning
- diversity of options for evaluation and not just for quantitative evaluation.

Educational teams must rethink the appropriate pedagogical approach and the use of innovative technologies in ways for teaching and skills development. Developing meaningful learning environments requires team effort based on collaborations between academia and the community of teachers and curriculum developers (Mayo, 2020). The combination of digital learning diversity opens every educational institution to different worlds and cultures. Diversity of opportunities have been created for students with a wide range of different abilities, different cultures, different backgrounds, specializations and strengths. The post-pandemic world will need new ways of learning and communication (Passantino, 2021).



Figure 1. Digital Learning - New possibilities

### Online Teaching in the Background

Online learning through history was first conducted in correspondence. Thanks to technological development, online learning has also evolved into broadcasting lectures on radio and television. Due to the development of satellite

communications, fiber optics and personal computers, distance learning today is supported by innovative and advanced technologies (Hebebcı et al., 2020). Online learning is a general concept of learning and teaching with the help of technological tools. The success of remote teaching depends on many factors including: communication and good internet access, platforms and programs, technological skills and availability of technological tools (Onyema et al., 2020). Online learning is computer-based learning, where interaction between learners and teachers occurs only through a computer and is provided in places where face-to-face lessons cannot be delivered due to various limitations (Hebebcı et al., 2020). When online teaching came into our lives in the late 20th century, most teaching programs were synchronous programs and included the use of chat rooms, text messages and correspondence. In that context, the learning process was based on synchronous learning and allowed users to see who was actively participating in the discussion. In the literature, online learning is called by various names: e-learning, online education, virtual learning, computer-based learning, and more. All names are names for a teaching approach in which a teacher teaches remotely with the help of teaching support tools (DeAlwis & David, 2020).

Researchers have argued for years that teaching staff and students should be prepared for a situation of online and blended teaching (Hartshorne et al., 2020; Davidovitch et al., 2017). Extensive use of networking options has provided opportunities for the development of Internet-based communities and groups. Platforms for e-mail, video-conference, google drive, google docs, Dropbox, Facebook and more, have also come into widespread use in distance learning environments. In the last decade there has been an increase in the use of digital learning materials available and accessible to teachers for the purpose of conducting a learning material that includes innovative curricula that combines technological tools, simulations and more (DeAlwis & David, 2020).

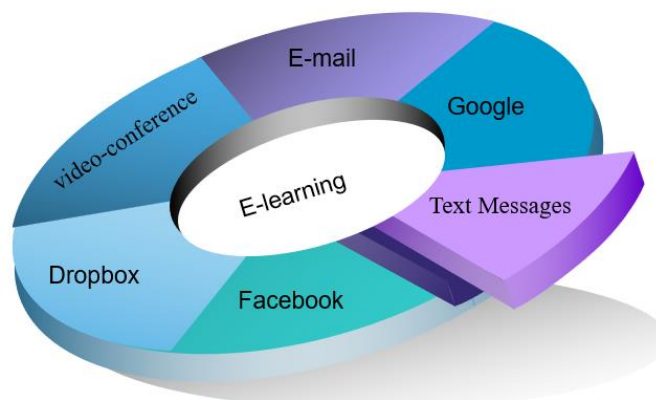


Figure 2. E-learning Tools

Teachers have been struggling with online learning for years. While technology has not enabled teaching at all levels, not all educational institutions have used it (Robinson-Neal, 2020). Discussions addressing ways to advance online learning and e-learning as a tool for improving learning processes and learning skills have been at the top of dictation in academia around the world. Although it seems that the revolution would take over the academic world and changes the form of learning and teaching, despite many efforts and expectations, it did not happen. In the last two decades, the focus on e-teaching has become the main factor that has accelerated technological progress (Cohen & Sabag, 2020). Distance learning was considered a promising innovation with flexible learning environments. It can be seen that communication has gone from face to face in the physical classroom to online communication, to the form of communication in which learners are separated from the teachers with the help of infrastructure and the use of technology. Promotion of online teaching forces teachers to reorganize pedagogy for the purpose of enhance teaching (DeAlwis & David, 2020).

Since the invention of personal computers and the global Internet network in the 1980s, the use of digital information and computerized technologies has been introduced for the purpose of streamlining learning processes and improving learning outcomes. Computers have become an integral part of teaching tools in schools that promote innovation in education (Park et al., 2021).

The roots of online learning are in the e-learning approach for an emergency situation. There is a wide range of virtual teaching tools used for emergency learning (Onyema et al., 2020). Technology is used to deliver lessons and lectures, virtual classroom and diverse web-based activities. With the significant entry of the Internet and wireless

communications all over the world, online learning platforms have been used to reduce gaps in education and reduce the level of global unliterary. Not many schools have built platforms that enable distance learning that integrates digital tools to hybrid learning, anywhere in the world and anytime. As the world quickly became a digital space, the use of technological tools became necessary and required digital literacy compatible with the 21st century. At the same time, innovative applications and integration of information technologies in education are biased towards rich countries that can adapt reality to practice (Park et al., 2021).

### **The Corona crisis in education**

To prevent the outbreak, the following steps have been recommended: personal hygiene improvements, such as washing hands with alcohol gel, covering the mouth and wearing masks, social distance and reducing contact with people through isolation at home and avoiding unnecessary trips (Onyema et al., 2020).

### **Masks**

Due to COVID-19 virus, students and teachers were asked to wear masks during their time at school, in classrooms and in common areas. Wearing masks in enclosed spaces makes it difficult to breathe, affects the ability to absorb speech, facial expressions and causes great frustration among the population and students in particular. Similarly, there was a shortage of masks and medical equipment as a result of the high demand for individuals and hospitals (Onyema et al., 2020).

### **Social distance and prevention of gatherings**

In order to prevent the spread of the plague, education teams and students were forced to maintain a social distance. Although the pandemic is a new thing, it has far-reaching implications for humanity. Only in a few months, the disease changes the world order in which billions of people were forced to stay at home and maintain social distance, study and work from home. In addition, educational institutions are hubs of students' social activities, school closures have prevented children from interpersonal and social communication which is very essential for students' development (Onyema et al., 2020). Furthermore, to all means of protection and masks, the pace of teacher-student encounters has been significantly reduced. This has led to a significant shortage of classrooms and learning spaces, a shortage of teachers and teaching aids stuff (Tria, 2020).

### **Lockdowns**

During the outbreak, there were closures all over the world and people were asked to work and study from home. Some countries have switched to military regime policy to enforce the closure regime. The eruption of the COVID-19 affected on various areas. The closure caused a halt to various social activities: sports, entertainment, politics, public transportation and more. While the whole world is under the threat, the field of education continues to be the most significantly affected (Onyema et al., 2020). The closure has affected nearly 1.2 billion learners worldwide. As a result of the closures and social distance, educational institutions have been instructed to continue teaching in virtual environments as online learning (Tria, 2020). In addition, there was an impact of the closures on the parent population, who were forced not only to work from home but to assist their children during online learning (Kuhfeld et al., 2020). The closures enhanced the gaps between the students and as a result the number of dropouts increased. Also, school closures have led to an increase in juvenile delinquency due to student leakage and negative social impact (Onyema et al., 2020).

### **Disabling the education system and immediate transition to distance learning**

The closure of schools posed new problems and challenges: how to make the transition to distance learning from home and how to provide those (boarding schools), who need schools for the provision of housing, food and security. The closure of the schools caused an increase in pressure among the students, teachers and especially the parents who had to not only deal with the finance of the home but also make sure that their children would continue to study at home as well (Onyema et al., 2020). Different countries around the world have launched different and varied solutions for further learning during the pandemic. The accepted platforms: google, TV broadcasts, video lectures and more. At the same time, distance learning posed risks, problems and challenges for both teachers and students. The transition to online learning has not always been smooth and effective. During the COVID-19 pandemic, schools and universities immediately shifted from face-to-face teaching to distance learning and teaching. Educational systems and schools that have incorporated the use of teaching technologies for emergencies prior to the outbreak, have demonstrated a significant advantage (Onyema et al., 2020). Schools with limited experience or no experience at all, schools that did not prepare learning materials experienced significant difficulties (Almanthari et al., 2020). Teachers were required to teach remotely and students had to deal with the new form of learning and new teaching approaches (Onyema et al., 2020). The transition from classrooms to e-classrooms has forced teachers to adapt their

pedagogical approach to new conditions. Along with remote teaching solutions, there are quite a few difficulties resulting from technological innovation: from software installation to errors in downloading digital materials, difficulties in connection and problems with video and audio equipment (Dhawan, 2020).

### **Advantages of the new situation**

The closures in the education system (partial and full) have become the norm for a period between a few weeks and a few months. Providing learning for students has been spread across a variety of different approaches: from lessons delivered as sessions developed for distance learning to sending printed worksheets to students and broadcasts via radio or television (Gurr, 2020). The new situation brought with it not only challenges and problems, but also advantages that had not appeared before. The Corona virus has forced everyone into entering a mode of digital transformation, leaving physical classrooms. The impact of this situation was felt at every level of the education system: from kindergartens to universities. This situation creates not only challenges, but many opportunities. In the digital universe and learning environment, opportunities for more unique learning content are created than ever before (Passantino, 2021). Distance learning provides continuity of learning while face-to-face learning is not possible. Of course, there are limitations like flexibility in teaching, schedule and time management (Hebebcı et al., 2020).

### **Teachers' professional development**

Teaching during the CORONA virus has created opportunities for development of a new curricula that encourage teachers to develop, adopt and produce new learning materials (Cohen & Sabag, 2020). After examining the situation, the four most common approaches to teacher training were found (Abdelhafez, 2021):

- Virtual learning - because of the global pandemic, teachers all over the world have had to change their teaching methods from face to face to virtual that includes development and creation of digital content. The use of technological and pedagogical knowledge has created a framework for practical experience of teachers. This framework has enabled virtual teacher's learning that provide a support system for the pedagogical, practical and technological aspects of virtual teaching.
- Video conference - is an alternative support system for distance learning and learning during quarantine in educational institutions. This allows teachers to interact with each other in large and small groups similar to face-to-face meetings. Dividing rooms on different platforms, such as zoom, allows instructors and teachers more intimate meetings in small groups and even couples.
- Global webinars - meetings of this kind in the middle of the global crisis have provided an answer at the right time in the right place. And these webinars have proven to be an effective tool for a broad and global worldview, collaboration between teams, cities and even different countries that are in the same crisis.
- Texting correspondence - is another strategy for remote support and peer learning. This approach provides accessibility, support and communication between teachers and the support system.
- Following approaches, collaborations have been created between different educational institutions, such as: different schools and even in different countries, between higher education institutions and schools, between teacher education institutions all over the world (Cohen & Sabag, 2020).

### **Technological Innovation**

As the pandemic turned all educational system into distance learning, digital tools promoted active learning and enabled a combination of synchronous learning and asynchronous learning. A wide range of technologies available for distance learning have enabled educational institutions to adopt both synchronous and asynchronous teaching method. Interpersonal communication between teacher and student has been replaced by communication through technological platforms, such as: Zoom, Skype and more (Cohen & Sabag, 2020).

Technological tools also have the ability to engage students for learning and increase learning motivation through games, creation of interactive learning materials and more. Another important aspect, many digital tools have enabled training systems to continue teacher training and coaching (Hartshorne et al., 2020). Pedagogical teams using new technologies to conduct innovative learning environments that develop learning skills, creating meaningful collaborations between academia and the educational community (Mayo, 2020). Technology makes it possible to conduct learning from anywhere including at home. While the whole world tries to slow down the pandemic, the use of online learning platforms is becoming the new reality of educational institutions, teachers and students. Technology is necessary for communication between teachers and students, especially in lockdowns, as a result of health or security crises. Technology is essential as a tool that offers educational, psychological, spiritual,

social and medical support to educators, students and parents. With the help of technology teachers and students can engage in learning and teaching process in order to reduce the impact of closures (Onyema et al., 2020).

Learning in virtual spaces creates new learning environments and the use of new learning materials. Recently, the use of learning materials published in the net has increased, such as digital books, videos of laboratory experiments and more (Cohen & Sabag, 2020). During COVID-19 pandemic educators have widely used learning processes mobile communications, virtual reality tools and digital databases (Passantino, 2021). The use of teaching technologies and adapted platforms increases the accessibility of learners and teachers to educational databases and diverse teaching approaches that meet the unique needs of students in different subjects (Onyema et al., 2020). Another aspect of the global pandemic is the opportunity for increased use of content and tools of a new reality in which teachers and students interact with the digital world. The crisis opened gates for building collaborations between decision makers, researchers, educators and teachers and made it possible to reach a breaking point in teaching methods and strategies and even for change in the education system (Park et al., 2021).

### **Educational processes**

At the beginning of the crisis most educational institutions were not ready for any kind of online learning and teaching. The immediate transition of the schools to a state of distance learning influenced the effort made by the schools to bridge the gap. Educational institutions have recently developed models, tools and learning materials to provide a learning solution for students (Cohen & Sabag, 2020). Teachers and students were not prepared for a learning situation in which face-to-face communication is taken out from the learning processes and other alternatives are insert (DeAlwis & David, 2020). Thanks to new situation and access to new teaching technologies, students learn from different and varied new sources of knowledge and information. Students continue their learning process outside of study settings. Students' attitudes relate to a different conduct of learning processes: more efficient, more professional learning, there is a focus on material being taught in the lessons, there is continuity of learning, there is diversity in the use of technological tools, learner comfort and improvement in self-management processes (Hebebcı et al., 2020).

The learning model that includes synchronous and asynchronous sessions allows learners to take control of their learning process. In addition, flexibility in learning processes has allowed parents to be more involved and help pupils during learning in closure because of flexibility in time and place (Abdelhafez, 2021). Education teams hope that a new norm will be a mix between face-to-face teaching and distance learning - a hybrid teaching that will focus on student involvement in learning processes. Equally, at the school level, student attendance is of great importance for additional purposes, such as socializing (Gurr, 2020).

Online learning is digital learning that enables the development of skills of 21st century, includes teaching and learning methods along with innovative technologies, development of communication skills in digital learning environments, a combination of the use of learning databases and digital learning materials. Also, online learning helps to develop skills of independent and critical thinking, personal responsibility for learning, increasing motivation for internal learning and involvement in the learning process. Learners' use of new technologies promotes learning anytime, anywhere and at a personal pace (Cohen & Sabag, 2020).

### **New dynamic in a classroom**

Along with all the difficulties, many factors have contributed to the efficiency of learning during the pandemic. Online and distance learning have empowered students who do not normally attend in class. Following the rapid transition from teaching face to face to online forced teachers to reinforce the material being taught in the classroom, while new learning materials were not ready yet. Students had reinforced what has been learned so far (Kuhfeld et al., 2020).

Using online learning technologies establishes more personal communication between teachers and students. It enhances learning experience, improves and upgrades the learning content, causes sharing of learning materials, improves the assessment and feedback processes. Teachers can reach out to their students from anywhere at any time with an emphasis on student participation (Onyema et al., 2020).

### **Different evaluation approaches**

During online learning, teachers changed their role and became “guides and facilitators” as learning became the student's centered learning. Along with the development of online teaching, teachers are also required to develop a distance assessment method. Therefore, the evaluation processes are also different from the evaluation processes of traditional learning. One of the major challenges is preventing cheating. How teachers will make sure that students do not cheat during exams while assessment that take place not face to face but online. Remote evaluation requires

different evaluation criteria compared to conventional assessment processes. In the traditional classroom teachers rely on their physical presence for the purpose of monitoring student activity. The integrity of the learners is of great significance for the teachers for the purpose of conducting a remote assessment. At the same time, they can still rely on the tests delivered through platforms, such as zoom, skype and video platforms where students can be seen (DeAlwis & David, 2020). It is important to note that the use of innovative and advanced technologies creates interest and interest in learning, raises and improves self-confidence, creativity, improves learning outcomes and also prepares learners for the real world (Onyema et al., 2020).

### **A new role of teacher**

Recently, the spotlight has been aimed at the role of teachers in classrooms. During a face-to-face instruction, in exhaling voice and speech, teachers activate additional channels for the transmission of information, such as: body language, tone of voice, facial expressions and more. During online learning most of these channels are not activated, therefore the role of a teacher changes from a mode of face-to-face frontal teaching to a mode of distance teaching - online (DeAlwis & David, 2020). New teaching approaches, such as flipped classroom, are integrated into distance teaching and can be extended to hybrid teaching. This approach allows teachers to work directly with students, along with them instead of lecturing them. This approach promotes learning, collaboration between students and promotes shared learning, critical thinking and personal learning (Cohen & Sabag, 2020). Teachers understand that the lesson cannot be converted to a remote lesson and adjustments must be made (DeAlwis & David, 2020). The increasing use of technology in education has changed teachers' methods from a traditional approach as "pouring" knowledge into a more flexible approach in which they serve as "founders", guiding and motivating learners to participate and learn (Onyema et al., 2020).

During the pandemic the focus is on the importance of the teacher's role that is beyond of teaching content. The role of the teacher includes social and communicative aspect. It is important to notice that students with special needs have a great deal of influence of teachers who educate them (Gurr, 2020).

### **Challenges among students**

Closure of schools and universities during the pandemic has affected many students (Hebebcı et al., 2020). At this point, it is still unclear what the impact of online learning will be, given that the majority of the population, teachers and students, have little experience in distance learning processes and there are large gaps in technological literacy, infrastructure and technological tools worldwide in different countries (Kuhfeld et al., 2020). Students report negative effects of distance learning on the learning processes they go through, including: teacher-student relationships are impaired, there is a great impact on the social sphere and their mental state, decreased academic motivation and more (Hebebcı et al., 2020). Students describe online learning as boring and not engage to learning processes. Online learning allows too much flexibility so students do not find time for it. Most learning is theoretical and the learning processes do not achieve their goals without proper practice and laboratory experience (Dhawan, 2020).

Accordingly, a number of concerns have been raised about what is happening in 2020. Educators are concerned about the mental and emotional states of the students. The impact on children's development due to discontinuity in teaching is still unknown. Uncertainty in continuity stresses teachers and students, and online learning has created large gaps and caused dropouts among high school and university learners (Gurr, 2020). Four types of challenges can be distinguished in the educational system. The same challenges affect: teachers and students, curricula and schools. Problems that affect learners often include financial problems, learning motivation problems, social distance, lack of learning skills, and time management problems (Almanthari et al., 2020).

### **Lack of communication between teachers and students**

Following social distance and the transition to online learning, personal interaction between teacher and student has been greatly reduced. During distance learning classes all students use cameras during the class. Also, the interaction between teachers and students in classrooms, in laboratories, in shared physical spaces has completely disappeared (Tria, 2020). One of the main problems among students is that during online learning there is not always an immediate availability of a teacher. A teacher who can solve a problem that learners have encountered during learning (Hebebcı et al., 2020). Also, according to a teachers' poll conducted in the first week of April, only 39% of teachers reported communicating with their students once a day and most teacher-student communication occurs by correspondence only (Kuhfeld et al., 2020).

**Lack of social interaction**

Following social distance and closures, situations are created, in which there are no scientific activities in the laboratory, social activities such as graduation proms, trips, sporting events and more (Tria, 2020). During online learning students report a lack of classroom atmosphere socially and academically (Hebebcı et al., 2020).

**Mental state: loneliness, distance, eating disorders**

During the Corona virus outbreak, teachers reported that students were experiencing social and mental difficulties. One of the existing shortcomings is the lack of guidance and preparation of teachers in dealing with such difficulties, with an emphasis on social processes that students go through in a state of social distance and closure (Hartshorne et al., 2020). The mental health of the learners should be treated also. During pandemic outbreak, situations like depression, anxiety have become common among learners who are in isolation and social distance. This effect cannot be cured with the help of the vaccine (Punjabi, 2021).

The disruption of the education system created by the pandemic lasted longer than expected. An unplanned closure in schools negatively affected the academic motivation and academic achievement of the learners. If learners are not harnessed to learning, it leads to idleness, a decline in academic achievement, dropout and ultimately youth involvement in crime. School closures could have a spillover effect on a large number of learners not only among normative students but also among students with special needs and students who need communication and the physical presence of educators. Through technology it is possible to reach some of the leavers but the importance of a face-to-face meeting between teachers and students cannot be replaced (Onyema et al., 2020).

**Dealing with new learning methods**

New teaching methods force students to adopt new learning methods and learning habits as well. Technological and educational accessibility does not exist equally among all students: not everyone has a quiet area that allows for meaningful learning. Also, some students need more teacher meter support and distance learning significantly reduces teacher-student interaction (Cohen & Sabag, 2020).

**Lack of equipment and internet access**

The integration of new technologies in online learning requires the presence of students in front of computer equipment connected to the Internet. The integration of teaching technologies creates problems for students whose hand is not accessible on computers or who have limited access to the Internet (Tria, 2020). The negative impact of the lack of technological tools on students with disabilities can lead to an increase in dropouts among learners (Cohen & Sabag, 2020).

All of these challenges need to be considered when faced with a global event like pandemic which forces the teachers and students to immediately adapt to the new learning situation like online teaching and distance learning (Almanthari et al., 2020).

**Challenges among teachers**

Teaching in the 21st century has significantly changed due to the crisis that has conquered the world. The global pandemic crisis has forced everyone to dive into the world of online learning regardless of whether they have been instructed or prepared for it (Mayo, 2020). With the use of new teaching technologies teachers find it difficult to keep up with the pace of change. And now many teachers and teaching staff find themselves unprepared to face the new challenges (DeAlwis & David, 2020). These challenges include: creating new learning materials appropriate to the virtual spaces, familiarity with new technological tools, understanding of pedagogical approach to distance learning, communication or lack of interaction with students, lack of experience in operating new tools and teaching methods (Hartshorne et al., 2020). These challenges can be divided into two categories: material and non-material. Material problems relate to the lack of information and information systems. Non-material problems relate mainly to teachers, teachers' knowledge and skills. Teacher challenges related to distance learning are affected by many factors, such as: lack of knowledge, challenges of assessment and more (Almanthari et al., 2020).

**Difficulty in building new learning materials: lack of technical support, lack of time, workload, multiplicity of tools**

Teachers' negative attitudes towards online learning are due in most cases to their low familiarity with technological tools. Education teams in light of the situation of closure and social distance were engaged in building learning materials from home. One of the major problems posed to them is technological difficulty (and not only) in building learning materials (Tria, 2020). Teachers also report heavy workload, their inability to provide quality instruction and availability for their students (Gurr, 2020). Educators that teach from a distance will be much more successful if they



have direct access to staff who will guide them through the process of developing and building learning materials and provide them with on-site technical support (DeAlwis & David, 2020).

After forced experience with remote teaching processes, teaching teams have identified significant challenges that need to be addressed. One of them is a lack of knowledge planning, design and construction of quality learning materials combined with new technologies suitable for online learning (Hartshorne et al., 2020). Making distance learning management systems more user-friendly for teachers will encourage them to increase the use of these systems for teaching purposes (DeAlwis & David, 2020).

### **Difficulty in developing new learning - adapting frontal lessons to distance learning lessons**

After drawing conclusions from educational processes that take place during the pandemic, it seems that the system of support and guidance for teachers for the preparation of distance learning materials requires redesign. Although there are remote teaching practices that are integrated into teaching processes, teaching staff and educational students still do not receive ongoing support or guidance. There is a lack of knowledge on how to build and design an effective online learning experience. (Hartshorne et al., 2020). New teaching methods force teachers to adopt new assessment methods as well. Assessment methods in light of online learning are changing and pose a challenge for educational staff, school principals and teaching program developers (Tria, 2020). In order to achieve the learning goals, distance learning courses need to be dynamic, interesting and interactive. Curricula should be designed as student centered, creative and group-based way (Dhawan, 2020).

The pandemic has affected not only experienced teachers but also educational students. Educational students are a significant component in the teacher preparation process. When this process was interrupted, the educational facilitators were forced to produce new and alternative teaching opportunities. These opportunities provide a partial solution for young teachers, as some of the significant factors in teacher coaching can only be controlled by face-to-face experience, such as classroom factors (Abdelhafez, 2021).

One of the additional challenges among old and new teachers is time management (Almanthari et al., 2020). One of the necessary resources is time. Teachers need time to become familiar with the new technologies, to experience learning technologies and platforms for themselves, to put together the learning environment that is right for them to teach and to build a curriculum accordingly (DeAlwis & David, 2020).

### **Dealing with the student population - lack of communication, lack of infrastructure and equipment**

Some of the studies described in the literature suggest that the main challenge in implementing online learning is at the student level. Students have neither the required knowledge nor the required skills in using distance learning tools. It is also noted that there is a lack of accessibility for students to computers or Internet communication that is essential for learning. The researchers report that students were not prepared for distance learning before the pandemic. Also, at this short notice the issue poses a challenge for teachers in preparing them for learning in a virtual environment (Almanthari et al., 2020).

In conclusion, teachers are facing the material and non-material challenges. Access to technology and the Internet, lack of tailored curricula and any assessment to measure student learning effectiveness, teachers' self-confidence in using new technologies and access to teachers' distance learning tools are some of the factors affecting educators' teaching quality and ability to cope with the new situation (Almanthari et al., 2020).

### **What is the goal for the future?**

Given the situation, distance learning and hybrid learning probably represent a new norm that will continue. In the future, special emphasis will be placed on how the use of technology will support distance learning processes (Mayo, 2020). Educators believe, there are significant consequences of using online learning during COVID-19 pandemics. Teachers highlight a number of important emphases that may change the face of teaching in the future (Hebebcı et al., 2020): streamlining and expanding learning to new horizons, significantly changing the role of the teacher, integrating hybrid teaching into formal learning processes, strengthening and expanding teaching infrastructure and increasing the use of digital tools, changing teaching programs and more.

### **Application of new tools - after field test and experience**

During closures and social distance, many teachers have been forced to learn, explore, and experiment with distance learning platforms. Each educational community or institution has chosen to use a platform that suits its needs. Sharing information from different educational communities enables the building of an effective support system and approach to teacher training with an emphasis on "doing, knowing, calculating and implementing." It should be mentioned that sharing is done after the tool or platform has tested in the educational field (Hartshorne et al., 2020).

It is important to evaluate tools collaboratively to make sure they are appropriate for use and meet the educational needs of both teachers and students. Also, after such extensive experience with various tools and platforms in the real-world situation, it is worthwhile to gather information on how teachers, students and their families use technological tools to determine the efficiency of use and application of technology during distance learning (Mayo, 2020).

### **Implementation of new teaching approaches: after field test and experience**

In the end of the epidemic, there is some fear that the skills acquired by the teachers during online learning will fade and will not be reflected later. In order to create continuity, educational institutions place emphasis on implementing new approaches that have been tested during teaching even in a pandemic-free situation. It is not just about using new skills, but also improving pedagogical skills and combining distance learning and combining hybrid teaching (Hartshorne et al., 2020). After a large-scale field trial in using online teaching, ways to integrate distance learning in situations when it is not needed can be explored (Mayo, 2020).

### **Lessons learned from the new situation**

The global pandemic has a major impact on education highlighting the need to improve technological skills, learning new technologies, improving access to shared learning materials. As a result, teachers, parents, and students need the skills required in the 21st century: digital literacy, critical thinking, and independent information processing capabilities (Park et al., 2021).

Recent studies focus on discovering and collecting experiences of teachers, principals and students, gathering their perceptions towards distance learning. Most of the findings point to the lack of preparation and guidance of teachers (Parket al., 2021). Teachers' attitudes toward online learning during the pandemic were mixed. On the one hand a lack of knowledge and technological support which causes teachers a sense of uncertainty and insecurity. On the other hand, guidance and support from professionals can prepare teachers to adapt and cope with the new situation (DeAlwis & David, 2020).

The transition from face-to-face learning to online learning requires additional models for the development of teachers and teaching staff that includes professional development, a training system that combines synchronous and asynchronous online teaching experience, a technical support system for teachers and teaching staff. Teachers and guides should be given opportunities to develop and experiment with online learning processes and hybrid learning processes (Hartshorne et al., 2020). As part of the teacher support system, emphasis should be placed on educational goals that have been affected in the long term by the Corona plague, such as: completing a learning gap, dealing with difficulties, challenges and more (Yeigh & Lynch, 2020). There is a need to develop support system and assistance programs in order to reduce learning gaps (Cohen & Sabag, 2020).

Recently, online learning and teaching have raised the need for teachers who are able to adapt to the changes involved in technology, who are able to look beyond face-to-face meetings and explore the new ways (Mayo, 2020). During the transition to distance learning, it is recommended to strengthen the use of the various technologies. However, do not restrict the use of single platforms, such as zoom, messenger, google classroom. The recommendation is to combine several platforms together in order to produce meaningful learning outcomes through hybrid learning (Tria, 2020). Promoting the development of distance learning is essential for the development of technological skills among teachers who understand that the use of new technologies is critical to continuity (Mayo, 2020). For this purpose, teachers who use technology effectively must be located to build guidance and support systems. This will allow for targeted guidance from within the schools and will contribute to the upgrading of teachers' technological skills (Yeigh & Lynch, 2020). Knowledge from the teachers constitutes "knowledge of the masses" and building learning communities provide pedagogical resources for new and experienced teachers who will integrate during their teaching online learning (Hartshorne et al., 2020). Also, another significant factor that affects the quality of online learning is the quantity and quality of learning materials. Efficiency of teaching processes refers mainly to pedagogical learning materials that support the process. Successful implementation of online learning accompanied by infrastructure, appropriate tools and learning materials leads to the advancement of students in the academic field. However, a high level of interaction and social communication is not easily achieved during distance learning as occurs during face-to-face learning (Hebebcı et al., 2020).

## **2. The Case Study**

A case study was conducted in Israel. During the study a questionnaire was administered to 123 teachers in elementary, middle and high schools. Teachers who participated in research from the following fields: exact sciences (mathematics, physics, science and technology), multi-text subjects (language, Jewish studies, literature and history),

foreign languages (Arabic and English).

The purpose of the case study is to examine the habits of using tools for distance learning, to examine whether there is a difference in the habits of using technological tools between teachers at different age groups, to examine teachers' attitudes to distance learning assessment tools and to examine teachers' recommendations for different subjects and different age groups.

### *2.1 Research Population and Sample*

In this case study participated 123 teachers from all fields and age groups, among them: 36 primary school teachers, 66 middle school teachers, and 21 high school teachers. In the analysis of teachers who teach different subjects are: 72 teachers of multi-text subjects, 35 teachers of exact sciences and 16 teachers of foreign languages.

### *2.2 Research Tools*

The case study adopted a survey design. Self-prepared questionnaires were given to 123 educators who teach in elementary schools, middle schools and high schools. The questions for the survey were based on common issues discussed among teachers at schools in Israel due to traditional classroom teaching being replaced with online teaching during the COVID-19 pandemic.

The questions were divided into six sections:

1. Questions relating to teacher data, age group taught and profession.
2. The statements refer to the conduct of the lesson during distance learning.
3. Statements relating to the operation of digital tools during distance learning.
4. Statements relating to the pedagogical processes during distance learning.
5. Statements relating to student evaluation during distance learning.
6. Recommendations for further learning after the Corona Age.

Teachers were asked to rate their agreement with the statement scale from 1 to 5, with 1 not agree at all, 5 strongly agree.

### *2.3 Findings*

After collecting and analyzing the teachers' responses, here are the findings of the questionnaire.

#### *2.3.1 Teacher Communication with Students*

Most teachers in all age groups turn on a camera during online learning and prefer face-to-face communication through the cameras with the students. Also, most teachers are not satisfied with open microphones for communication with students and are not ready to communicate through text with students. At the same time, teachers teaching in the middle, high school and teachers of exact sciences and multi-text subjects feel that students do not take an active part in distance learning classes. The percentage of teachers' agreement with the statements on distance learning lessons are shown in Table 1:

Table 1. Percentage of teachers' agreement with the statements on distance learning lessons

	<b>elementary school</b>	<b>middle school</b>	<b>high school</b>	<b>multi text</b>	<b>exact sciences</b>	<b>foreign languages</b>
I always turn on a camera during synchronous lessons.	93%	91%	98%	98%	88%	100%
In distance learning classes, I prefer my students to open a camera and microphone together.	80%	80%	86%	81%	80%	87%
In online classes, it is enough for me that my students open a microphone only.	36%	45%	26%	41%	41%	30%
In online classes, it is enough for me that my students write to me in chat.	30%	37%	31%	34.1%	36%	26%
I feel that most students in synchronous classes do not take part in learning.	57%	72%	74%	60%	75%	53%

2.3.2 Using Digital Tools during Distance Learning

Teachers' responses have highlighted a number of aspects related to the use of technological tools during online learning. Findings are presented in Table 2:

Table 2. Percentage of use of digital tools during online learning

	<b>elementary school</b>	<b>middle school</b>	<b>high school</b>	<b>multi text</b>	<b>exact sciences</b>	<b>foreign languages</b>
I prefer to receive written learning materials and adapt them to my personal needs.	94%	91%	98%	99%	88%	95%
I prefer to create learning materials on my own.	80%	80%	86%	81%	80%	87.5%
I am well versed in one of the distance learning platforms (moodle, classroom and more).	36%	45%	26%	41%	40%	30%
I am well versed in digital tools for conducting learning materials (word, google forms, power point and more).	30%	37%	31%	34%	36%	26%
I successfully deal with all the technical issues that occur during distance learning.	57%	72%	74%	60%	75%	52.5%
I prefer to have full support while using digital tools in synchronous	59%	77%	70%	75%	75%	50%

and asynchronous classes.						
I prefer to use one platform for distance learning, for building tests, assignments and assessment.	69%	73%	80%	66%	74%	76%

**Proficiency in technological tools**

The results of the survey indicate that middle school teachers are better skilled in the technological tools both in the use of online learning platforms and in the preparation of learning materials. Looking on various subjects, consider that foreign language teachers have a high degree of control platforms and exact science teachers are well versed in the tools for making learning materials.

**Dealing with technological challenges**

The results of the survey indicate that primary and secondary school teachers are successfully coping with the difficulties that arise in operating technological tools and high school teachers prefer close help and support. Looking at different subjects it seems that teachers of exact sciences deal very successfully with the difficulties that arise.

**Multiple technological tools**

Middle school teachers prefer to use a number of technological tools for building learning materials and online learning management, high school teachers prefer to use a single platform for online learning and classmanagement. In terms of teaching subjects, it is seen that teachers of exact sciences multiply both in platforms for managing online learning and in tools for building learning content lessons. Foreign language teachers prefer to use one lesson management platform and several tools for building educational content.

**2.3.3 The Pedagogical Processes during Distance Learning**

A questionnaire delivered to teachers focused on a number of key aspects related to pedagogical processes that occur during online learning. Findings about percentage of teachers' agreement with the statements on learning processes during online teaching are presented in Table 3:

Table 3. Pedagogical processes during distance learning

	<b>elementary school</b>	<b>middle school</b>	<b>high school</b>	<b>multi text</b>	<b>exact sciences</b>	<b>foreign languages</b>
I teach synchronous lessons as I teach in class.	57%	56%	50%	56%	56%	50%
I adapt all my lessons (synchronous and asynchronous) to distance	71%	85%	84%	75%	82%	82.5%

learning.						
I experience different discipline issues during distance learning than in class.	53%	56%	70%	61%	54%	70%
During distance learning I feel that students learn well the various learning skills.	63%	56%	66%	63%	55%	68%
During distance learning I feel that I focus mainly on low levels of thinking (remembering and understanding)	48%	53%	46%	47%	54%	48%
.						
During distance learning it is important for me to emphasize the emotional aspect of the students.	89%	82%	88%	87%	84%	92%
During distance learning I manage to have a meaningful discussion with the students on the subject of study.	70%	70%	76%	70%	71%	80%
I would adopt the distance learning approach even for days when face to face learning would	57%	80%	84%	74%	76%	60%

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be allowed.						
During distance learning I feel there has been a change in my role as a teacher.	65%	76%	70%	78%	74%	40%
During distance learning I conduct a lesson as I conduct a face-to-face lesson.	65%	51%	56%	47.5%	60%	56%
During distance learning I stick to the curriculum dictated by the Ministry of Education.	73%	57%	72%	66%	64%	68%
During distance learning I am in sync with the curriculum schedule.	65%	63%	74%	71%	62%	80%
I am aware of the degree of understanding and listening of my students during distance learning.	84%	77%	82%	79%	80%	84%
During distance learning I manage to reach each student on a personal and emotional level.	61%	56%	70%	67%	54%	64%
During distance learning I manage to reach an	64%	60%	76%	67%	59%	76%

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optimal level  
of learning  
with my  
students.

### **Online teaching**

The results of the questionnaire indicate that teachers in all age groups and in all subjects adapt the lessons to online learning lessons and these lessons are conducted differently from face-to-face lessons.

### **Learning processes**

From the results of the questionnaire, it is seen that teachers think that no significant learning processes take place, learning skills do not develop, teachers do not focus on high levels of thinking. In other words, in light of the results of the questionnaire, no significant learning takes place.

### **Emotional processes**

From the results of the questionnaire, it is seen that for all teachers it is important to emphasize the emotional processes that students go through, most teachers report that synchronous lessons are not enough to make meaningful contact with the students.

### **The teacher's role**

In the questionnaire, teachers were asked about the role of the teacher as perceived by them during distance learning. The findings are:

- High school teachers prefer the distance learning approach even during face-to-face learning, middle school teachers feel that there has been a significant change in their role as teachers during online learning.
- Elementary school teachers continue to conduct themselves during distance learning as they would conduct themselves during face-to-face learning and high school teachers do not conduct themselves in the same way.
- During online learning middle school teachers do not stick to the curriculum dictated by the Ministry of Education and fail to meet the set schedule.
- According to teaching subjects it can be seen that foreign language teachers do not prefer remote access over face-to-face teaching approach, teachers of multi-text and exact sciences feel that there is a change in their role as teachers, foreign language teachers claim to meet the schedule dictated by the Ministry of Education.
- Most teachers are aware of the level of understanding and listening of their students during online learning and foreign language teachers are able to reach optimal learning with their students.

#### 2.3.4 Students' Assessment during Online Learning

Table 4 shows the percentage of teachers' agreement with the statements regarding the evaluation of learners during distance learning.

Table 4. Teachers' agreement with the statements regarding the evaluation of learners

	<b>elementary school</b>	<b>middle school</b>	<b>high school</b>	<b>multi text</b>	<b>exact sciences</b>
I concern of cheating during online assessment.	70%	69%	75%	66%	73%
I conduct tests as I conduct them in classroom and it takes me a while to check them.	44%	47%	53%	48%	50%

It helps me a lot that my students get instant feedback as part of the assessment process.	75%	79%	84%	78%	80%
I adjust the exams so that cheating is not possible.	63%	70%	75%	62%	72%

From the results of the questionnaire, several things can be distinguished:

- Foreign language teachers are concerned of cheating during exams
- Most teachers do not conduct tests as they would during face-to-face learning
- In all subjects' teachers have indicated that it is important for them to give immediate feedback during online learning
- Teachers do not adjust the tests so that cheating is not possible
- During online learning, teachers multiply in small assessment tasks

### 2.3.5 Recommendations to Continue after the Pandemic

After analyzing the results of the questionnaire, a number of aspects that the teachers recommend stood out are presented in table 5:

Table 5. Degree of teachers' agreement in percentages with the statements regarding future recommendations

	<b>elementary school</b>	<b>middle school</b>	<b>high school</b>	<b>multi text</b>	<b>exact sciences</b>
I prefer learning as it was before the CORONA-virus: face to face only.	82%	53%	60%	62%	62%
I prefer to continue to teach in distance learning.	35%	48%	34%	41%	42%
I prefer hybrid learning that includes synchronous, asynchronous and in classroom teaching.	65%	87%	84%	76%	83%
I prefer to include an alternative assessment as an assessment of distance learning.	75%	84%	80%	78%	85%

- Teachers teaching in primary schools would prefer to return to face-to-face teaching only, although middle school and high school teachers prefer to incorporate online teaching in the future as well

- Middle school teachers and exact science teachers would prefer a combination of online learning along with face-to-face teaching - hybrid teaching.
- Exact science teachers, high school and middle school teachers recommend incorporating alternative assessment processes (remote assessment processes) during face-to-face learning.
- High school teachers recommend receiving help and support for distance learning processes.

### 3. Conclusions

After reviewing the results of the questionnaire, we saw significant differences in several aspects:

- Middle school and high school teachers prefer close help and support during online learning. The recommendations of high school teachers also indicated that it is necessary to increase the support system during online learning.
- High school and middle school teachers would prefer to continue distance learning even when face-to-face teaching is possible, unlike teachers who teach in elementary schools who prefer face-to-face teaching. This difference is also emphasized in some of the teachers' recommendations for continuation after the pandemic.
- When we examined the differences between the different subjects, we saw that teachers of science and mathematics subjects feel that most students do not take an active part during the lesson. Despite this, teachers that teach humanities subjects report that they feel that students are actively participating in online learning processes.
- Teachers who teach science and math cope better with the technical challenges that occur during distance learning.
- Science and math teachers adjust the assessment during online learning so that copying between students is not possible.

### 4. Discussion

After examining the new situation, teachers' opinions on online learning were divided into two types: positive opinions and negative opinions. Positive opinions focused on the following aspects: online learning as a partially effective learning and there is success under certain conditions, there is an advantage to distance learning as accessible teaching anytime and anywhere and especially in emergencies when there is no other choice. Along with positive opinions, there were also negative opinions that focused on the following aspects: during online learning there is a significant lack of interaction between teacher and students and between students, there are quite a few problems of infrastructure, equipment and technical problems. Teachers also report that during online learning it is more difficult to track students' progress (Hebebcı et al., 2020).

In this case study, stood out data on issues related to students' active participation in classes, the use of technological tools and assessment processes during distance learning.

Most teachers prefer students will turn on their cameras during synchronous lessons and are not satisfied with turning on microphones or correspondence. Accordingly, teachers feel that not all students take an active part during online learning.

According to the findings, most teachers report a lack of instruction on the use of technological tools, that include learning management platforms and tools for developing digital learning materials. The issue was mainly emphasized among teachers who teach foreign languages and teachers in primary schools.

Most teachers understand that conventional assessment methods are not suitable for assessment methods when online learning takes place. Case study results indicate that many teachers are adjusting assessment methods to suit the new situation.

### 5. Limitations and Future Research Directions

#### 5.1 Future Research Directions

Following the effects of the global pandemic, many areas have been opened up for future research (Robinson-Neal, 2020):

- In what ways and forms has the pandemic affected on primary, post-primary and academic education?
- What are the academic gaps created among students under the influence of the global pandemic?
- What are the psychological effects of pandemic on students and teachers?

- In what ways has the pandemic changed classroom teaching in elementary, middle, and high schools?
- In what ways has the pandemic created and widened gaps for economically disadvantaged and marginalized populations, those who do not have access to technologies and those who have a government restriction on Internet access.
- Promoting research on online learning as an effective approach in professional development, that will serve as “scaffolding” for professional advancement and teacher support (Hartshorne et al., 2020).

## 5.2 Limitations

Along with the results of a case study it is important to note the limitations of the study.

Sample included 123 teachers and is not wide enough to draw comprehensive conclusions. It is recommended to increase the research population and even add teachers from other fields, such as: kindergarten teachers and lecturers.

Most of the teachers who participated in the case study teach in the center of the country. There is some heterogeneity among students but this is not distinct. There is a difference between schools in the center of the country and schools in the periphery in terms of economic status and in terms of infrastructure and connection to the global network. It is important to note that a case study do not present a population of religious and Arab schools.

The sample of teachers does not represent an equal distribution in subjects and ages. In order to draw conclusions, equal amounts of teachers in primary, middle and high schools should be examined. It is also recommended to choose a sample that is equally representative of all subjects: multi-text, exact sciences, and foreign languages.

The scope of use of educational technologies varies between elementary schools, middle schools and high schools. Also, the student's mastery of technological tools for distance learning differs in different age groups. Case study results should take into account the age of students who need parental and teacher assistance in operating the technological tools.

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