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Online Learning in the COVID-19 Pandemic: Catastrophe or Opportunity?

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ABSTRACT

Now the global pandemic has forced most of higher education institutions in the world to adopt online teaching. This paper uses the dual perspectives of teachers and students and uses qualitative research methods to investigate the online learning situation of higher education institutions in Hungary under the pandemic. Research questions are mainly focused on challenges, to what extent online courses can circumvent the weaknesses of traditional classroom teaching and opportunities in paradigm shift. The result depends on the opinions collected, to know the changes that can be expected in the future.

Keywords: *Online learning, Students' behavior, Challenges, Future trends.*

Introduction

Background

The COVID-19 pandemic has brought huge challenges to the entire education system. Before the pandemic, study in the classroom was the most mainstream education in the world, and it was also the most important way for students to learn and acquire knowledge. During the pandemic, the mode of teaching and learning changed from offline to online. On the one hand, mastering the skills of online platform become necessary. On the other hand, face-to-face teaching and learning should be replaced by only online activities. For this huge change, not only teachers but also students have undergone quite a long process of adaptation[14][18]. However, the challenge is both promising and tragical. On the short term, the transition from offline teaching to online teaching is rapid and unexpected. Although online, distance learning and teaching are not new, the parties involved seem to be completely unprepared. On the long run, it opens interesting prospects for the educational sector.

Research questions

This paper mainly studies the following issues:

- Explore the challenges faced by current online learning models from the dual perspectives of teachers and students.
- To what extent online courses can circumvent the weaknesses of traditional classroom teaching?
- Whether there is an opportunity to move towards a paradigm shift due to the pandemic?

In order to study these issues, the author first reviewed the corresponding literature about online education to give a sound basis and framework of the research and analysis. Then, questionnaire and interview surveys were conducted with teachers and students of Hungarian higher education institutions under the current Covid-19 pandemic to understand the overall online teaching & learning situation. Finally, a qualitative analysis is carried out according to the results of the surveys.

Janus faced pandemic

It must be said that the current transformation of classroom education to network and cloud-based classroom one seems to be an emergency and necessary move. Considering the two-sidedness of the current situation, online learning meets the special needs of the current pandemic situation.

Considering the current unique situation, which is different from the normal digital learning situation, it is more accurately crisis learning [13]. On the other hand, education and teaching management activities that rely on the Internet are also in line with the development trend of education. Therefore, we can say that the pandemic has become a driving force for developing online education to some extent, prompting educational institutions to carry out the world's largest educational experiment. From this point of view, it also reflects to the desired social resilience.

To be realistic, from this large-scale online learning adventure, we can find many challenges and difficulties. However, it is important that we try to seek future development trends and opportunities.

Literature review

Online learning

Online learning can be defined as a teaching mode in which courses are delivered through electronic media including some electronic devices, intranet, Internet, etc. Online learning not only focuses on the online environment, but also includes a variety of computer-based learning platforms and delivery methods, genres, formats, and media, such as fixed use of new media and mobile platforms in all disciplines[19]. This online distance teaching method has been widely affected in all aspects since the last century, such as public and private education institutions, small companies and enterprises, training sectors, etc [7]. Although there have always been some controversies in online learning.

The advantages can be comfort (choose a comfortable environment independently), accessibility [12], also online learning can be interesting, for instance, students can easily access multiple related media platforms, like Zoom, Skype, Jitsi Meet, Cisco Webex, Starleaf, Whereby, Hangouts, etc. Many tedious classes become interesting, and technology is used to help learn and acquire useful knowledge [4]. The disadvantages are low efficiency, lack of proper synchronous interaction with lecturers, asynchronous email communication problems lead a certain lead time. The optimistic attitude is that despite the huge pressure, it also creates opportunities for teachers and students to experience online learning [6].

Challenges of online learning under pandemic

Meanwhile, the current online learning method is unprecedented and unplanned. Both educators and students are forced to use this teaching method to continue learning [17]. Since none of the parties are prepared, online learning faces many challenges, and scholars also are working hard to find the best solution for online education. The author mainly focuses on the following online learning challenges through literature reading:

First, social aspects of online learning are not properly reflected. We have always maintained the traditional classroom curriculum. When the teaching model changes, the most significant change is that compared with face-to-face courses, online learning is less social, an obvious explanation is the students hardly can see each other. In the digital world, there are few opportunities to share information and knowledge in real time [2]. Teachers need to find teaching methods that are helpful to students both academically and socially. Due to the indispensability of interpersonal relationships in learning, some schools use associated teaching to help teachers keep in touch with students during online learning [10][15].

Second, there is still a lack of mastery of technology and additional Internet quota should be provided [15]. Some schools conduct workshops or training facilities for online classroom management, participate online collaboration platforms, learn some tools for designing online learning content, etc [8]. Help teachers and students improve their digital literacy skill in the online learning process[17]. From the perspective of influencing factors, internet quotas are the main obstacle to online learning, because Internet quotas will affect the smooth progress of online learning. Some families cannot provide students

with online learning conditions, in less developed countries many students cannot access the Internet due to economic reasons[2]. This is a challenge and a limitation of online learning.

A practical experience in this regard is the measurements taken by some African governments to avoid the lack of appropriate technical equipment and the Internet connection ensuring the continuity of teaching. Morocco, Senegal, Rwanda, Kenya and Ivory Coast have established national online learning platforms, portals, and provide different learning modules for students at different levels on the Internet to ensure that academic work is not interrupted [5].

The third challenge is online interaction. This affects students' satisfaction with the course. Online interactions reduce students' feelings of isolation, and it also helps students address the learning breakdowns in time during the learning process. Therefore, it is necessary to work hard in this regard and find a suitable interactive method [1][6]. Faced with these challenges, some researchers are investigating the stakeholders of online learning, and as a conclusion it is recommended to focus on students and listen to their voices, so that the challenges can be clarified, and the teaching goals can be redefined [12]. Some other scholars believe that teachers are important participants and controllers of online courses, and teachers can reduce the disadvantages of online courses to a certain extent [2][10].

Comparing online learning with traditional classroom teaching, most scholars stick to the traditional face-to-face classroom teaching. Taking into account technical and economic reasons, they believe that traditional courses are better than online courses [2]. After all, there are still many problems to be solved when facing online learning. To put it another way, we are already on the way solving some of the problems.

Groupwork

Various promotion strategies exist in the online environment, groupwork is an effective way to promote learning. It can not only support students to help each other, build a sense of connection and enhancing the awareness of virtual communities [3], but also help teachers follow up the learning process of students [11]. Teachers can effectively improve the interactive efficiency of groupwork by supporting collaborating objects, specifying interaction rules, and standardizing interaction methods [9]. Although there are many studies on social collaboration among different groups, there are still few studies on online virtual groups [16].

Assumption

Based on the literature survey, we know that online learning is a huge challenge in practice under the sudden situation. When focusing on online learning in Hungarian higher education institutions, we mainly make the following assumptions:

Assumption 1: Online learning is less social than face-to-face traditional courses.

Assumption 2: Teachers and students in higher education institutions lack the technological mastery of online learning.

Assumption 3: Online learning makes interpersonal communication rather difficult.

Research method

Sampling

The main purpose of this research is to study how teachers and students in Hungarian higher education institutions conduct digital online distance learning under pandemic. The sample of the study included 57 respondents, of whom 17 were teachers and 40 were students (of which 50% were undergraduates, 32.5% were masters, and 17.5% were PhD students).

The student part of questionnaire was filled out by author invited students from 29 higher education institutions in Hungary, hence this has a certain degree of representativeness from the perspective of students. All the respondents have been conducting online teaching or online learning since last year.

Questionnaires and interviews

The questionnaire survey is used as the main tool to study the experiences of teachers and students regarding online learning. In addition, the author conducted two video interviews with professors from two higher education institutions through Microsoft Teams platform.

A. Questionnaire design from the perspective of students

The design of this part of the questionnaire is mainly designed from basic information & motivation, technical issues, study before online class, study during online class, groupwork, about after-school learning and online interaction part vs traditional lectures. Main viewpoints and detailed questions, as shown in the Table 1 below. The design of the question is based on multiple choice questions of different level of agreement and essay questions.

Table 1 Questionnaire design from the perspective of students

Viewpoints	Questions
Basic information and motivations	Basic information
	Motivation
Technical issues	Learning devices
	Learning platform
	Network connection
	Quality of network connection status
	Audio quality
	Video quality
	Place of attending online course
Study before online class	Learning materials
	Purpose of logging in to the learning content system
Study during online class	Whether to turn on the camera
	The way of interaction
	Online quizzes
	Interactive objects
	Course performance
	Frequency of visit the learning content system
	Feel about lack of interpersonal dimension
	Feel about lack of direct communication
	Ask questions
	Answer questions
	Q&A part

Table 1 Questionnaire design from the perspective of students

Viewpoints	Questions
Study during online class	Multiple tabs or only course video
	Whether to concentrate
	Interruption during the class
Groupwork	Attitude towards group work
	Group members
	Communication methods with group members
About after school learning	Length of study
	Homework
	Question after class
Online interaction part VS Traditional lectures	Which one is more valuable ?

B. Questionnaire design from the perspectives of teachers

The design of this part of the questionnaire is mainly designed from organizing a course, preparation, control, education / learning in the online space, use of software, student activity. Main viewpoints and detailed questions, as shown in the Table 2 below, the questions are mainly collected in the form of essay questions and agree/disagree.

Table 2 Questionnaire design from the perspectives of teachers

Viewpoint	Questions
Organizing a course	Structure of the course
	Course details
	Examination and evaluation according to the blocks
Preparation	According to the official academic calendar
	To prepare the presentation and illustrative materials for each occasion
	To prepare the materials of the lectures /classes in advance and make them available to the students in advance
Control	Each time, to check to see if students have been prepared from the preliminary material of the session
	Checking to see if students have been prepared from the preliminary material of the session
Education /learning in the online space	Student-instructor connection in cyberspace
	The usual 90-minute lessons in the online space
Use of software	My subject builds on active software use
	How does this process work

Table 2 Questionnaire design from the perspectives of teachers

Viewpoint	Questions
Student activity	About how to organize students' learning activities
	I like students to solve tasks in groups
	What type of you are (students to solve tasks in groups)

C. Video interview design

Talking with interviewees the questions mainly focused to the course design, the changes and challenges they face. Furthermore, how do they cope to the current challenges they are facing, and whether there are opportunities in this pandemic situation to move towards a paradigm shift concerning teaching and learning.

Discussion

Discussion structure

First, the author sorted out the data obtained from the questionnaire surveys and interviews. Second, the author summarizes what information has been obtained from the survey. Third, comparative analysis will be made with the statement of the literature survey. Finally, conclusion will be drawn in the context of research questions – what comes out from the survey.

Data collection

The data collected in the questionnaire survey will be expressed as a percentage based on the frequency of answers.

Survey and interview discussions

Technical readiness

Students who filled out the questionnaire are not only distributed in various higher education institutions, but also most of them have followed business information systems course or related courses during the pandemic period. 22.5% of students specialized in business information systems. Selecting business information system course is mainly motivated by collecting credits to meet the requirements.

According to the survey results, students are well-equipped, and they can even choose more than one device; in addition to Teams, Zoom, other platforms such as Skype, Messenger, Google Class, Canvas and WhatsApp serve as an auxiliary platform. The internet access does not seem an obstacle, 37.5% use mobile networks, 35% use cable network, and 27.5% use other network connections, no one reported lack of Internet connection. Also found that the network connection is in good condition (80%), however they were not satisfied with the quality of service in that high extent, 57.5% of the students said they were satisfied with the quality of audio service and only 45% thought the quality of video service was ‘satisfactory’ or above, 50% thought it was only ‘fair’. Big majority followed the online courses from home (92.5%). In summary, we can conclude that students can access the right technology.

Learning behavior

We investigated the learning behavior in three aspects: what do (or don’t do) students before the session, during the session and after the session. Our survey shows 62.5% of the students think ‘learning in class’ is the ‘main thing’, 42.5% sign in the learning content management system with the purpose only to check course schedule. However, 58.8% of the teachers prepare learning materials in advance for preliminary learning purpose, and 52.9% intend to check, evaluate in various form whether the students are prepared for the class or not.

What is the typical behavior during the online class? We selected a group of variables that describe the specifics of the online teaching and learning. From the presence of interpersonal relations, the camera usage seemed to be a characteristic variable. While the teachers univocally requested the video connection, only 20% of the students switched 'always' or 'often' on the camera, the rest 'sometimes' 'rarely' or 'never'. The same is true for the interaction between student and teacher, 27,5% conversation with camera, 40 % without camera and 27.5% only through text messages. We suspect two direct or indirect reasons behind of the inappropriate use of technology and platforms. One reason can be the general assumption, that video connection use much of the bandwidth and it harms the quality of service. It is partly true, although we do not know satisfactory empirical investigation and evidence, in what extent is the video connection "harmful". The other reason may stem from a more general behavioral attitude, some people are stronger in oral communication, some prefer the written communication, and the preferences are changing whether the communication is in the virtual space or face-to-face. Therefore, it can be a great help for the instructor if he/she would know the student which group belongs to.

Orchestrating online class

Most of the teachers still prefer the traditional course design (64.7%), structure and only one third is willing to adapt, or at least think about the new platforms and other external conditions need a new approach. This a classical change management problem, and we cannot draw final conclusions about the teachers' lack of unconditional enthusiasm. On the other hand, grouping into bigger blocks the learning material univocally popular, this momentum can be a good starting point for further modernization. The online courses raise another problem, the preparation of teaching sessions. The traditional education last for a whole semester, the preparation for the classes does not concentrate in time. The online courses which still stick to the traditional curriculum need a very concentrated preparation, what is even worse, the modification is very difficult. Teachers prepare professional videorecording in video studio, and changes later are very difficult. Balancing between the top-heavy and continuous learning material development most teachers (94,1%) showed willingness to prepare the presentation and illustrative materials for each occasion, while the pre-course material development was supported only 58.8%.

Control on teaching & learning

Various evaluation strategies exist, roughly half of the respondents prefer to check students' preparation session by session. There are several ways of evaluation: asking questions (44%), short MCQ (22%), a few open-ended question (11%), quiz (11%). Students have another order of preferences, 47.5% prefer quiz. The duration of the class is another critical factor. The face-to-face meetings usually last 90 minutes, sitting in front of a screen this length of time is too long. The time range of acceptable length deviate between 20-60 minutes. The evaluation is always a crucial issue between students and teachers, in the virtual space it is very difficult to organize classical exams. Moodle and other LCMS (Learning Content Management System) offer some opportunities to ensure privacy and strictly individual work, is still a matter of honesty. Therefore, teachers agree that evaluation must be based on the continuous evaluation (including check of attendance), but this very difficult if the number of students enrolled is high.

Groupwork in the virtual space

Making the online class interactive is another vital question, one third of the responding teachers gives assignment for every session, one third breaks down a larger assignment into smaller tasks, one third prefers assigning tasks to smaller groups. Group creation practice varies according leaving the decision to the students or influencing a bit the group formation according to mix talent and less talent people. However, students already are working in groups based on previous experiences (62.5%), but they still do not know very well each other. Covid-19 is not responsible for this contradiction, it is the malfunction of the pre-pandemic teaching & learning culture. It is interesting, the students prefer text messages (47.5%) rather than video meeting (27.5%) or audio meeting (25%). Before the pandemic, 90% of students liked group work. After the pandemic, it seems that only 10% of students chose to give up group work, and 80% of students still said they liked group work. But this phenomenon may mean that students

are just following their previous habits, because in fact only 20% of students "always" participate in online group work, and the rest sometimes participate in accordance with the situation. The reason is like what they said, "Sometimes your group members don't respond as quickly as possible, sometimes they're not online at all, it's not easy to communicate directly with others, it's not efficient, it's difficult to communicate, etc.". Many of them think groupwork is more efficient than the individual learning, but still 72.5% think the face-to-face group discussions are more useful than the one in the cyberspace. This opinion fits to the general attitude, what we learnt from the literature, however many of the students realized that groups composed with students who have different professional (educational) background are more interesting, challenging, and their organization is much easier in the virtual space.

Results

Based on the above discussion and combined with the research questions at the beginning, the author can conclude that both teachers and students in online learning in Hungarian higher education institutions are in a process of transformation and adaptation. The main problems facing online feedback and interactive solutions are mainly based on the form of groupwork. Teachers' mastery of online learning technology, curriculum design, and methods of responding to feedback gradually matured. Obviously, online learning cannot make up for the shortcomings of traditional courses, at least in short term. Students need the face-to-face communication, interpersonal communication, and direct communication, so they believe that traditional form of teaching is more valuable for their learning performance. Teachers also believe that in a traditional way they can get more direct interaction, while online learning means more adjustments and changes, more preparation and time.

Therefore, we can see the 3 assumptions at the beginning of this paper, assumption 1 and assumption 3 are acceptable and assumption 2 is rejected.

Besides, we can see from the survey that the main expectations of teachers and students are basically similar, on one hand is more feedback and on the other hand is more interaction. This is an interesting finding that the importance of the basic social attributes of both perspectives in the process of online learning, and it is also particularly important to actively explore the way of social interaction between teachers and students in the online environment.

Also, the survey and interviews highlighted the need for some fundamental changes, as the weight of online lexical knowledge transfer is low efficient, students are more than willing to read/learn the related material individually, but they are open for solving problems, working is groups. The organization of classes needs to be converted into thematic blocks the online meetings need to be broken down into 20-40 minutes units to maintain the attention. This emphasized the importance of structure, such as how time is arranged, the design of course modules, the different class modes of different curriculum, etc., which are recommended to be included in the consideration of improving the efficiency of online learning.

The survey was designed to collect opinions based on courses, in the future it would interesting to enlarge the scope to program level, to know better what new types of collaboration among different courses can be expected. With the continuous advancement of information and communication technology, online learning and teaching are able to technical, economical and operational more feasible, online learning and teaching may be globalized if it can compensate for different languages, cultures, standard curricula and assessment procedures[20].Furthermore, traditional education is supported by powerful resources and facilities, and many good lectures are designed to exist for it, while online learning does not have a complete ecosystem, such as libraries,computer classrooms, multimedia classrooms, services, consultation and more. These all take time to build, and an interesting suggestion is to further explore and build a complete online teaching and learning ecosystem.

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