Emergency Remote Teaching in Higher Education

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The COVID-19 crisis has considerably changed the educational landscape and resulted in a scientific debate on the efficacy and prospects of online education. Ongoing research is focused on analyzing the psychological and instructional difficulties faced by both educators and learners during emergency remote teaching (ERT).

emergency remote teaching | COVID-19 outbreak | online learning | instructional design | instructional framework | higher education

1. Introduction

The COVID-19 outbreak significantly modified the educational and social environment around the globe. It appeared to be a litmus test for the viability of educational systems and instructional frameworks as well as for learners' and educators' adaptability to uncontrollable and unpredictable changes. During the pandemic, traditional instructional frameworks were substituted by emergency remote teaching (ERT), which posed a challenge for both educators and learners [1][2][3]. Recent research on ERT reveals that faculties and students encountered problems adhered not only to adjusting teaching and learning strategies, but also to their social and emotional well-being [4][5]. Researchers report that educators lacked ICT knowledge, did not receive enough guidance and support from the administrative board, as well as being emotionally unprepared to conduct all classes online [6][7]. Additionally, due to an abrupt change in the instructional mode, educators experienced an increase in workload, which reportedly affected the quality of the instruction that was hastily adjusted to the digital learning environment.

The studies also highlight the difficulties encountered by learners during emergency remote teaching and learning, such as a lack of access to technological devices, an absence of previous experience in online learning, and an inability to control their learning pace. It is also suggested that social distancing had a negative impact on students' mental state, and their abilities to identify and regulate emotions. Additionally, it is reported that ERT affected the quality of education and well established norms of digital interaction [8][9][10][11].

Although the COVID-19 crisis completely transformed educational landscapes, it brought about new instructional practices and a new vision for the role of contemporary online education [12][13]. This promotes further research on instructional frameworks for online learning and ERT, which should be primarily based on pedagogical theories and psychology of learning and requires critical analysis and reflections on ongoing changes in educational systems, educational policies, and digital learning as a global approach to designing effective instructional systems of equal opportunities for all learners.

2. The Pedagogical Stance on ERT as a Type of Online Learning

The rapid spread of the new coronavirus led to the immediate closure of educational institutions all over the world and the introduction of "new norms" of social and educational behaviors. Universities, colleges, and schools attempted to briskly digitalize existing instructional content, the forms of its delivery, and ways of collaborating with students. This urgence in the switch of the teaching mode and learning modality set the stage for conceptual discussion of new educational phenomena—"emergency remote teaching" and "pandemic pedagogy". The concept of emergency remote teaching (ERT) is now used to describe the process of online learning temporarily adopted in response to a crisis situation, where no other learning modalities are feasible [14][15]. Researchers argue that this specific term should be used to address the differences between an enforced decision to shift to online learning and thoughtful and careful design of online instructional systems. This heated debate resulted in the necessity to rethink the ways of online instructional strategies design and define a clear boundary between online and "quasi-online" education. This also promotes the conceptual design of an instructional framework, serving as a universal and adaptable solution for an effective transition to online education in situations of social uncertainty.

Indeed, the concept of online education has a long-standing history. A great number of studies focus on models of online education, syllabus design, assessment standards and evaluation criteria, instructional strategies, and materials development [16][17][18]. In this regard, an effective online course requires careful planning of instructional content, thorough design of tasks, learning activities, and collaboration of learners assisted by media and technologies. Additionally, the ultimate goal of online learning is to create a digital learning environment where learners are able to construct their own knowledge and gain target skills while acquiring valuable context-bound experiences. The high-quality online instruction is aligned with desired learning goals and relies on pedagogical theories; the critical considerations which govern each step and area of instructional design.

Recent research suggests that the design of instructional systems within online education mostly derives from cognitivism, objectivism, and social constructivism as major educational theories [19][20]. The ideas of cognitivism are reflected, for instance, in information processing learning theory which attempts to describe and explain changes in the mental processes, strategies that lead to the cognitive development of learners, as well as how students acquire, encode, store, and retrieve information, how they form their learning styles with respect to their personalities and propensities. The theory of social constructivism considers teaching and learning as a complex interactive social phenomenon occurring between teachers and students. It was posited that learning is based on problem solving, so the social construction of solutions to problems underlies the learning process. The core ideas of social constructivism were reflected in subsequent theories, for instance, in the theory of Wenger and Lave who promoted the concepts of "community of practice" and "situated learning" [21]. These ideas manifest themselves in theories for online education, such as community of inquiry (CoI), connectivism, online collaborative learning

(OCL), and online education theory [22][23][24]. These theories are developed to describe the essence of online education, its collaborative context, pedagogical principles, and instructional models.

Online instruction modelling is supported by pedagogical principles, defined as fundamental prepositions about teaching methods and learning practices [25]. These principles create a solid foundation for the effective use of teaching strategies, the design of learning materials, and the careful choice of communication and collaboration modes. Summarizing varied theoretical assumptions, online instruction design should be governed by the following considerations: (1) address individual differences and preferences; (2) evoke learners' motivation; (3) avoid cognitive and information overload; (4) stimulate social interaction among learners; (5) design real-life contexts; (6) provide practical application; (7) encourage learner reflection; (8) ensure online classroom dynamics and motion; (9) create an accessible learning environment; and (10) arrange regular feedback and assessment.

Individual differences and preferences in terms of learning engagement among students can be identified in their attitudes, level of mastery, abilities to transfer skills and knowledge, and speed of information processing. Additionally, the learners might prefer different ways of content presentation and different ways of dealing with it. These learners' abilities and preferences eventually affect the learning outcomes. This means that it is critically important to identify these differences and recognize them while designing an online instruction. It can be carried out by considering multiple formats of content delivery (animation, charts, presentations, webinars, etc.), allowing an individual pace of learning, encouraging collaborative work and peer teaching, and assessment.

It has been widely discussed that learners' motivation is at the heart of effective educational process [26][27]. Learners' motivation is tied to several aspects such as academic expectations, the level of satisfaction with the learning experience, the complexity and relevance of instructional content, and confidence in one's own learning abilities. From a teaching perspective, this stipulates the design of a learning environment that enhances and fosters learners' interest, confidence, and emotional engagement by introducing varied game-based teaching techniques, simulations, meaning-driven discussions, and problem-oriented activities. Additionally, these activities support the attention span and help learners avoid cognitive and information overload. For these purposes, it is necessary to create a "balanced blend" of activities that "chunk" instructional content and are supported by visuals or animation.

The educational process, whether online or in-class, is based on the interaction between all participants. Educational interaction involves communication between instructor and learners as well as between learners and learners, which might be modelled by different communication technologies (forums, emails, chats, social media, etc.) [28][29]. Since the sense of belonging to a "knowledge community" is proved to be enriching for learners, online interaction should provide learners with opportunities to establish connections with educators and other learners within the learning environment. From a pedagogical stance, this assumes the design of synchronized online tutorials, mentoring or coaching sessions, and interactive lectures. Learners should be placed in the online social community, where, by interacting with others, they are able to construct their knowledge and polish their communication skills.

Educational interaction—interaction organized for teaching and learning purposes—should be inscribed in real-life contexts. The relation to real-world situations is a driving force for further practical application of gained knowledge and skills. Real-world situations allow learners to transfer theoretical knowledge into practice, connect new information with existing knowledge, and elaborate on potential problems and their solutions. Additionally, introducing learners to real-life situations encourages their active involvement and, from a teaching perspective, stimulates the use of active learning strategies (problem-solving activities, case-based learning, project-based learning, etc.). Active learning strategies also support classroom dynamics [30]. They help create an interactive classroom where learners are engaged in collaborative and individual work during synchronized online sessions. Classroom dynamics are particularly important in online teaching and learning as the attention span of online learners is reported to be shorter than during face-to-face educational interaction [31][32]. This means that the online learning process should be well-supported by a balanced mix of team, paired, and individual work, discussion sessions, questioning, and animated (in motion) visuals that help learners stay focused.

The learning process is an iterative process of revising, interpreting, and reconceptualizing meanings that guide learners in their actions. This process is based on reflection. Reflection in classrooms allows learners to look back at their experiences and align them with practice, construct new knowledge, and identify the ways of personal improvement [33]. The development of reflective skills in learners is ensured by timely assessment and ongoing feedback. Within online education, planned assessment and detailed feedback become crucially important due to the lack of real communication, and the opportunities to give 'spontaneous' feedback by means of verbal and non-verbal communication.

The accessibility of online education is another crucial factor in delivering digital training. All the content developed by educators and the technologies used to support the learning process must be accessible to all learners. Additionally, these technologies and content should be adjustable to meet the special educational needs of some learners.

The course design within ERT, as a type of online learning, should be governed by similar principles. However, it has been pointed out that some of these principles were partly followed or even ignored [1][2][3][4][5]. This influenced the quality of courses delivered within ERT and, to a certain extent, strengthened the myth that online learning is less effective than traditional in-class training. In this regard, the quality of online education (ERT or not) depends on the abilities of educators to develop an instructional framework that meets the learning objectives and fits in with the educational context.

3. The Psychological Stance on ERT as a Type of Online Learning

Apart from the pedagogical underpinnings of ERT, current studies focus on the psychological aspects of online learning during the COVID-19 crisis. A growing body of literature primarily focuses on the reasons that underlie psychological imbalance among students during ERT [9][34][35][36][37]. Researchers have analyzed the changes in organizational routines of students, such as the study load with ERT, study–life balance, learning behaviors, attitudes, and habits as well as the influence of the “new norm” on the emotional state of students.

Studies suggest that there is a strong correlation between an inappropriate learning environment and the academic achievements of students [38]. During ERT, students living on-campus experienced difficulties in arranging a quiet and isolated place for studies, as well as several problems with unstable Internet connection and the use of electronic devices for learning. Additionally, students had limited access to some technical equipment, such as printers and copy machines, that they had been accustomed to using before the pandemic. In general, the vast majority of students reported concerns regarding their organizational routines, which they had to adjust to the new learning environment [39]. This significantly increased the level of students’ anxiety and impacted their overall satisfaction with studies as well as their assessment scores, which reportedly became lower.

The necessity to study remotely revealed the inability of some students to schedule their day and studies in order to meet the deadlines without any extra reminders or support from the faculty [40]. Poor self-discipline skills and a lack of well-developed learning strategies resulted in an increased study load, which, in turn, provoked excessive anxiety among students and lowered their learning efficacy.

Another factor, supposedly triggering the emotional well-being of students, was attributed to social distancing measures established by universities. The absence of habitual face-to-face contact with fellow students evoked negative emotions such as anxiety and frustration [35][41]. It also caused the fear of missing out (FOMO) among young adults, which cultivated a state of anxiety and a thirst for social approval as a way of positive psychological reinforcement [42].

Additionally, the restrictions on physical presence at work affected the financial situation of students working part-time. This also generated concerns about the studies prospects, the opportunity to maintain work–life–study balance, and necessity to change career choices, which, in some cases, might have caused a persistent feeling of sadness and apathy [38][41].

The psychological state of students during ERT was also influenced by fatigue from videoconferencing and intensive synchronous online learning [43]. Researchers identified several types of fatigue, namely, physical, physiologic, mental, and eye fatigue. Physiologic fatigue is defined as an improper balance of lifestyle activities such as physical exercise, sleeping patterns, and diet. Physical fatigue is perceived as a temporarily halted muscle’s ability to perform at an optimal level. Mental fatigue is associated with difficulties staying focused and paying attention, a decreasing level of motivation, and a lack of interest. Eye fatigue is defined by symptoms such as dry eyes, blurred vision, difficulties maintaining visual focus, and eye pain. The studies suggest that fatigue during online sessions was mostly felt physically and visually [43]. It has also been identified that during synchronous online classes, students are exposed to videoconferencing fatigue as a combination of all fatigue types. This fatigue might also escalate due to an increasing cognitive load during online encounters, which occurs as a result of limited possibilities to identify non-verbal clues while interacting with others.

Therefore, the designers of online courses should take psychological aspects of learning into consideration and preferably provide learners with opportunities to accommodate themselves to course content and instructional modes. However, in the situation of ERT, neither educators nor students had time to adapt to a rapidly changing learning environment, which resulted in a massive criticism of online education and digitalization as a global trend.

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