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A Bane in the Boon: EdTech in Pandemic and Post-pandemic Context

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ARTICLE INFO	ABSTRACT
<p>Received date: Nov. 28, 2023 Accepted date: Dec. 12, 2023</p>	<p>Due to the pandemic situation, the utilization of Education Technology (EdTech) is undergoing an exponential growth. From different places around the globe, where this culture was rather unwelcomed hitherto, new beneficiaries and users are showing their incremental dependency on EdTech. Simultaneously, their usage of terms such as digital transformation, distance learning, blended learning, online education etc. is growing as well. Unfortunately, in some cases there is a tendency of confusing one term with another, using them in inappropriate contexts and interchangeably. Based on existing literature and recent reports from different parts of the world, this paper looks at this newly developed practice as detrimental since it will lead to misconceptions which in long-term, will impact sensitive areas like teacher belief and suggests collaboration of the participants on a scholarly ground where EdTech users will prioritize sharing their experiences and perceptions to curb the imminent damage. This unprecedented expansion of EdTech will fail to sustain and opportunities will fade away if already questioned practices involving technological integration come under fresh doubts. Among many, an immediately required initiative is connecting concerned people more strongly than ever to ensure the proper development of concepts around EdTech for us to become future-ready.</p>

Keywords: COVID 19, EdTech, Online Education, Pandemic, Post-pandemic

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1. INTRODUCTION

The second decade of 21 century started with a nightmare coming true as a deadly virus (COVID 19) attacked and tightened its grasp on the whole world. Usual human contact was a way for the virus to spread across the globe. Community after community was getting infected easily. Death toll started to go higher and, in a few months, reached a staggering figure. Nationwide lockdown was in place in majority of the countries as there was no effective vaccine to prevent or cure to heal. No exception could be made for the purpose of education. Students had to stay home for an unknown period of time. For the purpose of continuity of

study authorities turned to remote learning and mostly chose online medium to serve the need (Jordan et al., 2021).

However, in the pre-pandemic time online education was in discussions and practice only in a few facilities. A significant bulk of literature can be found that suggests that online education in various forms have been present for a long time (Singh & Thurman, 2019). However, there are gray areas as there is absence of clear definition for various designs and models for adopting online education. During the lockdown period institutions were forced to come up with ready solutions, there was no set standard for the adaptation of technology driven instruction delivery. When assumptions are made regarding the effectiveness of these

loosely constructed methods there is a high chance of forming faulty perceptions (Hodges et al., 2020).

The present work observes the happenings within the field of education during the pandemic led lockdown. Especially, draw attention to the formation of doubts and misconception among the stakeholders as a result of wide and uncontrolled use of terminology. Further, it explores the impact of these misuses of terms on the belief system of educators and learners indicate the possibility of an unwelcoming future for education technology in general.

As of January 2024, the number death from COVID-19 attack is 6,965,138 (Worldometers, 2024). After the initial emergence of the virus at the end of 2019 it took the whole world by surprise spread at an exponential rate. The patients at the beginning were suffering from mild flue and cough but at an advanced level the lung was getting damaged, consequently the death toll kept rising. Quickly a state of emergency was in place throughout the world. Having no other option, nationwide lockdowns were implemented (Coccia, 2021). Business place, public gathering, recreational spots, religious gathering were put under restriction in the attempt for slowing down the spread of the deadly virus (Singh & Singh, 2020). Social distancing was advised by World Health Organization (WHO). Conditioned by the dire urgency schools, colleges and universities were also shutdown though some reports claimed that school closure had very little impact on curbing the spreading of infection and reducing mortality rate compared to other different forms of social distancing initiatives (Viner et al., 2020). However, data indicates 186 countries had to go for nationwide closure of educational institutions resulting 74% of total registered students to compromise their steady academic activities (UNESCO, 2020). Apart from lesson loses, students had to face emotional damage as they were not getting other necessary standard school services such as the benefit of peer interaction and those who were dependent on meals provided by institutions suffered from nutritional deprivation (Viner et al., 2020).

In such a circumstance both governments and institutions emphasized and encouraged students and parents to ensure participation through digital modes (Almendingen et al., 2021). Schools that were already resourceful were able to shift to online delivery of lessons immediately. Less-equipped schools initially remained close but as a consequence of consecutive wave of virus spread the lockdown was extended and finally, they managed to start activities remotely with whatever was available. As for the institutions offering higher education largely depended on the open-source solutions for learning and in some cases Learning Management Software (LMS) (Tarkar, 2020).

Online education offers some advantages, it allows the continuation of academic activities irrespective of spatial constraints and provides the comfort of flexible scheduling (Smedley, 2010). The pandemic led upsurge of the use of online based technology brought the opportunity to a massive amount of people involved in academic engagements for experiencing those benefits of online based education. Together with the advantages came challenges in

abundance. In many cases both the teachers and students were not prepared with the devices required to square up the situation (Adedoyin & Soykan, 2023). And even where devices were available, poor to zero connectivity coupled with insufficient technological knowledge and skill hindered the process.

An interesting finding was revealed from a study conducted during COVID 19 outbreak in Norway, a country with the reputation of having cutting-edge digital infrastructure for educational purpose. 171 University teachers participated in the survey of whom three profiles were made. 36.7% formed 'Profile 1' showing the lowest amount of active engagement with modern methods of online teaching. 'Profile 2' consisted of 55.2% respondents who showed their interest in using technology driven alternative to in person interaction modes but they also exposed their lack of potential for effectivity with the new form of lesson delivery and assessment practice. Only 8% belonging from 'Profile 3' were found sufficiently transformative and future-reliable (Damşa et al., 2021). The increased dependency on online based technology also posed concerns for standard of evaluation and supervision, burdensome workload and compatibility (Adedoyin & Soykan, 2023).

What was necessary to tackle the lockdown scenario was some form of reliable and efficient distance learning. Now, the concept of distance learning is not nearly as novel as the novel variant or COVID that laid assault in 2019. The oldest form of distance learning is known as 'correspondence study'. During the 70's of twentieth century 48 institutions in the USA arranged doctoral degree by correspondence study. The process depended on trusted postal service (Portman, 1978). With the intention of making study possible alongside productive work and increase educational opportunities The Soviet Union resorted to correspondence-based study (Young et al., 1980). Also, during the World War I, armed forces requested correspondence courses to educated the soldiers (Holmberg, 1986). The next phase of distance education was based on the broadcast media, chiefly television and radio. Specially designed lesson and instructions were delivered via these medium (Sumner, 2000). The 21 century saw 'computer-mediated' form of distance education where compact disks and floppy, email, websites, interactive electronic models are being utilized. Gradual development in technology led to computer conference and multimedia sharing which furthered distance education and made it more accessible and acceptable (Garrison, 1997). This is the reason why online laden education became the more preferred form of distance education.

With a careful observation it can be noticed that at the time of fighting the pandemic lockdown crisis from the educational front, technology was somewhat overemphasized and that relates to some fundamental problems. In any scenario when technology is integrated into educational exercises, it should get immersed in a discreet way. The place of technological support is similar to any other tools used in an educational setting, like a whiteboard

marker or a book. Problems make their way the moment technology infused tools get attention separately (Bax, 2003). When technology is a misfit and stays visible in separation, for some it becomes intimidating and for others it starts to form unrealistic expectations.

From 2019 till the date of preparing this article, people associated with education efforts have been talking about various aspects that aroused from the disruption due to nationwide lockdowns. These talks range from very casual as found on social media to semiformal as found in mainstream media to formal as found in scholarly works. A significant part of this body of discourse is connected to the use of technology to arrange distance education. Quite naturally, plentiful names have been given to the processes including: distance education, remote learning, online education, e-school, cyber school, virtual classroom, blended learning, digital transformation, online class, cloud campus, virtual learning environment and the list can get longed if allowed. This practice of putting a name to the individual process is not very often done with much thought or clarity of concept. The landscape of e-learning was already troubled with confusing terminology and the recent happenings added massively to that. When a term is used to identify a certain practice and in reality, the practice does not adhere to the conditions of that particular term, it opens the gate for misjudgment as the attempt is highly likely to be failed completely or partially. This faulty judgment soon affects the teachers' and students' belief. Once the doubt is seeded into a teacher, they will hardly be interested in adopting education technology neither they can be expected to encourage others. A brief discussion on pandemic and post-pandemic time in the context of education technology is presented in the following points.

2. REACHING THE TIPPING POINT

It is arguable whether the first case of COVID-19 virus was found in November or December of 2019. However, as reported by the 'South China Morning Post' a 55-year-old male individual from Hubei, China was identified as the patient zero (Ma, 2020). It soon came into attention that a growing number of people were presenting the same symptoms which were quite similar to pneumonia (Secon, 2020). Not long after that doctors also came to realize that they were faced with a completely new type of virus. Little was known about the nature of the virus, how it transmits from one patient to another, what the incubation period might be, how it impacts different individuals etc. let alone the possibility of a reliable and tested vaccine or cure.

The sudden attack shook the authorities working at the policy level. A case on point may be the initial advice from the World Health Organization (WHO) regarding wearing masks only for the doctors on duty and professional health personnels. Afterwards it was announced that masks needed to be worn by everyone to curb the spread. In another case, with reference to the Chinese authority the same organization posted on their twitter handle, "Preliminary investigations conducted by the Chinese authorities have

found no clear evidence of human-to-human transmission of the novel #coronavirus (2019-nCoV)" WHO (2020) while on the same day it was mentioned on the organization's website, "WHO held a press briefing during which it stated that, based on experience with respiratory pathogens, the potential for human-to-human transmission in the 41 confirmed cases in the People's Republic of China existed" (WHO, 2020). To take the situation to a worse turn fear and rumors were spreading among public like wildfire (Li et al., 2020). As confusion and rumors were rising, so was the spread of the virus and soon this spread turned into worldwide outbreak. The emissary of death had reached 114 countries by March of 2020. To address this outbreak, the Director General of the World Health Organization used the phrase 'Global pandemic' for the first time on March 11, 2020. On that very day Italy was forced to initiate their nationwide lockdown (Singh et al., 2021). Before the month was over, Italy and the USA outnumbered China with the reported cases .

With a view to putting a check on the outbreak many countries according to respective policies, initiated lockdown. course of action pushed nations and individuals towards economic losses. Additionally, at a personal level it impacted people both physically and mentally (Niranjan, 2020). Disruption was obvious due to the closure of shops, entertainment spots, restaurant, transportation stations, religious places and hotels (Evans, 2020). As mobility was made limited, the educational institutions also fell victim to this crisis). The government of Bangladesh announced a nationwide shutdown of the educational institutions (The Daily Star, 2020). This As stated by UNESCO, 87% of the world's students (1.5 billion) were severely affected by this unexpected and indefinite closure (UNESCO, 2020b). Circumstances left no other option but to turn to remote/distance learning (UNESCO, 2020a). Considering the threat looming over education, the universities in Hong Kong decided to shift to online mode of classes for a short period of time only to later expanding that to the full length for the following semester (Moorhouse et al., 2020). Governments in many countries also took the initiative to deliver lessons through radio and television and encouraged students to continue their learning (Tadesse, 2020; Daniel, 2020).

3. THE UNEXPECTED OPPORTUNITY

On one hand the pandemic brought lockdown and educational institution closure laid the ground for panic, doubt and uncertainty for most of the victims. On the other hand, this setback is also seen as an 'unexpected business opportunity' for the education technology-based industry, especially the agencies that provide online based services (Selwyn & Jandrić, 2020). Alongside exclusive Edtech service providers, the company's selling digital devices also hooked an opportunity they did not prepare for.

There is no option to consider that the blessings of online education came into practice just as suddenly as the virus attack did. The concept and its implementation existed

long ago. Data shared by Pew Research Center (2011) presents that during the academic year, 2010-11, 89% higher educational institutions offered either fully online mode of courses or blended mode or in some form of distance learning facility (Parker et al., 2011). In the year 2013 of all the enrolled students in the United States 32% students took at least one online course (Allen & Seaman, 2013). The quick development of technology was growing roots in every sector and education was no exception. Of course, the integration of technology in education had many decades of history. The practices and theories have been developed, attempts were failed, contexts were reevaluated and gradually it came to maturation, though never free from questions and doubts. Along those steps, the imagination of online as a mode for distance learning came to reality. Through research by the National Center for Educational Statistics (NCES), in their chapter (Parsadet al., 2008) drew four major reasons for the existence and growing popularity of online based education: i) it makes education available to some students for whom academic study would not have been possible, ii) It offers solution to the growing demand for flexibility of class schedules, iii) It facilitates a greater number of courses with diversity to be offered which otherwise would have faced the limitation of space, iv) And last but not the least, it boosts the rate of student enrollment.

Promotion of online education can be traced back in the year 1984 as a program (TED-Ed), though non-profit, was formulated by Sapling Foundation. Another non-profit online learning initiative, Saylor was launched by MicroStrategy, through a collaboration between Harvard University and edX, in the year 2001 MITx came into existence, a hedge fund manager Salman Khan established Khan Academy around 2007 which turned out to be a widely popular platform and iTunesU project was launched by Apple Corporation in 2012 (Sun & Chen, 2016). The World Wide Web (WWW) revolutionized the way computers were connected by networks as it became accessible to the people in 1991. Since then, various modes of communication have been developed and soon after that in the USA and beyond, universities and equivalent authorities are not only offering courses through online but also entire degree programs (Wallace, 2003). Many other initiatives including the above-mentioned ones are suggestive of the fact that online education gained demand and it was in the process of perfecting itself ages before the pandemic made it a desperate recourse.

Developed regions of the world were taking the benefits of online education and a steady expansion was anticipated but the pandemic lockdown presented a unique situation where such educational institutions from remote corners were compelled to shift to online based lesson delivery procedure where the practice would have taken decades longer to reach. This was certainly a push forward for Edtech in general, though with insurmountable challenges. Even many institutions from the economically strong countries had the boon and bane. The condition in which the stakeholders were getting oriented with online education was not an ideal

one but as a base line, they had opportunity to experience the internet fascinated mode personally.

4. GROWING MISCONCEPTION AND DOUBTS

Any certain change in a system at some point, to some extent is faced with resistance (Ali, 2020). The education system worldwide had to deal with some changes, a sudden shift to online mode being a major one. Education systems in different places have their own variety of classroom culture and embracing distance learning for many was a culture shock. Among many different factors that pose as obstacle for the integration of technology in education, this cultural disruption is a significant and quite influential one (Ess, 2009).

The lockdown period was chaotic for the majority. Adopting online or blended learning became a political issue and the practices have been politicized on a larger scale during pandemic caused lockdown. The overall scenario made it possible to incite various political responses, some were unexpected and unforeseen. One of the dangerous responses was to spread fake news that presented online course delivery system as inferior to face-to-face classroom system (Ali, 2020; Czerniewicz et al., 2020). Zhang et al. (2020) Found conspiracy around implementing online education and claimed, “those with limited ICT knowledge have paddled unfounded lies about online and blended learning”. The vice president for academic affairs at Texas A&M University at San Antonio Mr. Michael J. O’Brien said that after the semester none of the participants are going to declare the process an easy one and no one will show interest in continuing (Gardner, 2020). Reports were also implying that even the learners were uncomfortable, the virtual environment had negative impact on their performance, the process was not smooth for them and they felt demotivated, they also felt overburdened with numerous assignments (Realyvásquez-Vargas, 2020; Imsa-ard, 2020).

To add more to these, there was a growing sense of ‘forced participation’ within the academic community. The undeniable aspects of the lockdown period had necessitated the teachers and students to ensure their virtual presence but a notable number felt that the abrupt move was forced upon them. Some had trouble going along with the system while some had issues with using certain application and platform while some felt vulnerable under the threat of cyber-crime due to the extended online presence (Burgess et al., 2020; Sun, 2021). Apart from academic tasks the virtual engagement affected the teachers and students at a personal level. Most of the facilities lacked proper management tools and the participants were found underequipped. Coping with these adversities eventually had them confront mental stress in form of anxiety (Christakis & Christakis, 2020). Before the ‘New normal’ teachers were already claiming their job getting exceedingly challenging as added administrative demand and research pressure were keeping them preoccupied (Littlejohn & Sclater, 1998). The recent changes added the increasing load of learning and managing online operations. Additionally, students were getting doubtful

about the assessment process. All these experiences are normal to lead to a level of distaste for using online mode of conducting the course related activities.

Moreover, the indefinity of this state paved the way for uncertainty and agitation. Being online became the easiest alternative for that period of time and concerned individuals on a large scale with wide diversity were getting involved. The majority did not have the scholarly concept woven by years of research regarding online education. Hence, they cannot be solely blamed for developing aversion for the system. To them, the online education was outlined by their firsthand experience. The online driven lesson delivery mode appeared during the period in present discussion as a rescue from the emergency but unfortunately, due to the rising misconception and mismatch between theory and practice, to many, it appeared to be hostile.

Ed Wingenbach was the president of Hampshire College, Massachusetts and he rightfully said that what the colleges were doing during the pandemic lockdown period was anything but online education. Online instruction is designed based on years of scientific study and experiments. To establish proper online based instruction model it takes a long time (Gardner, 2020). What was happening in most of the educational institution as a temporary shift could at best be called an 'Emergency Remote Teaching' (Hodges et al., 2020).

5. EMERGENCY REMOTE TEACHING IS NOT E-LEARNING

Emergency Remote Teaching (ERT) is advised in a scenario where, if possible, in person presence would be preferred but due to some crisis situation the agencies of education services depend on various methods and medium to ensure remote instruction delivery (Hodges et al., 2020). A case in point can be the situation in Afghanistan where as a result of conflict schools became target. The violent efforts were to keep girls from going to schools. The emergency situation required the children away from the streets. So, lessons were being delivered through radio stations and DVDs (Davies & Bentrovato, 2011). In that particular case going online was not a viable option, yet ERT was made possible. The intention in such circumstances is not to establish a theoretically solid and widely appreciated system, rather to provide a solution on a temporary basis with the fact in mind that activities would go back to traditionally formed ways as soon as the crisis is over (Hodges et al., 2020). It requires creative ways to solve the problem at hand in a make shift manner.

The disruption caused by the pandemic was also a similar case where the priority was to maintain social distancing. It is normal if the quality of the course delivery reduces because the participants are not expected to get all the required support. The promptness of the process does not allow the time to plan instruction design and assessment model that are necessary to uphold the desired standard (Hodges et al., 2020). However, the success of ERT mostly depends on the stakeholders' point of view.

Unlike ERT, E-learning, specially, online based education systems are result of rigorous effort and sophisticated procedure and building a dependable one takes months and years. The success of face-to-face education mode cannot be credited only to in-class lecture. Lecture delivery is just one aspect of the system. There is a number of other support and facilities, such as peer interaction, connection with the instructor, feedback flexibility, library etc. which make it effective (Hodges et al., 2020). Similarly, to design an online based instruction model various factors need to be considered and worked on. The field of education technology (EdTech) is flourishing with research and is always perfecting. Designing and planning of online instruction demands careful observation and systematic procedure (Branch & Dousay, 2015). In the book, 'Learning online: What research tells us about whether, when and how' Means et al. (2014) mentioned nine dimensions to be explored in order to design online course: "modality, pacing, student-instructor ratio, pedagogy, instructor role online, student role online, online communication synchrony, role of online assessments, and source of feedback".

This brief comparison should suffice to point out the difference between ERT and online education. In any case, if these are confused with each other, there can be a lasting negative effect on the teachers and learners as they will perceive online education weak or ineffective unjustly.

6. A BANE IN THE BOON

The global emergency because of pandemic of 2019 handed EdTech an unexpected opportunity to expand but along with it in the area of scholarly publications numerous research and review articles were also growing in number, most of which focused on the nature, opportunities and challenges of online based remote education solutions on both practical and policy level. In the process of all these enthusiastic efforts in form of a large body of rapidly growing literature the practices in different institution from different setting were named and defined for the sake of discussions and arguments. Inevitably a commotion was in place as E-learning related terminologies were being used, in many cases, inappropriately. In the existing literature 37 unique references were identified to define online learning (Singh & Thurman, 2019). Phipps & Merisotis (1999) Found that careless use of terminologies leads to difficulties for designing and evaluating identical learning environments and systems. Sometimes terminologies were used as synonyms, even when they were not and at times terms were used to refer to certain practices that do not match each other. Such confusion around closely related terms can fuel research gaps and promote misunderstanding (Guri-Rosenblit & Gros, 2011). 'Terms are often interchanged without meaningful definitions' (Moore et al., 2011) and that can have powerful impact on the teachers' and students' belief system.

Ertmer (1999) identified teachers' belief as a second order or internal barrier that makes the use of technology in places of education unwelcoming. Not only technology but also any novel tool or approach in an existing teaching-learning culture needs a favorable place in the belief of the teachers' and students' belief to succeed (Woodrow, 1991; Teo, 2009; Selwyn, 1999). What teachers do inside their classroom and how their thought process work is evidently associated with their own beliefs (Williams & Burden, 1997). Even what they will do with the technological facilities in the process of teaching is filtered through their beliefs (Chamorro & Rey, 2013). Beliefs are constructed and at times changed by teacher's own experience, acquired knowledge and observation (Huang et al., 2021). What teachers were doing during the lockdown in the name of online education was far from the accepted standard of the used term. With all the limitations and pressure most of them had a bitter experience and that experience will play an important in shaping their belief regarding the use of technology. Simple repulsion toward the trend will be sufficient to influence their belief. In the post-pandemic era, EdTech will keep growing and reaching more people but if this confusion and misleading use of terminologies are not sorted out, EdTech's presence will be marked more by failure than success. In terms of acceptance, tech-based services in the arena of education will get thrown decades back.

7. CONCLUSION

The heightened reliance on technology in education during the COVID-19 lockdown has accelerated the adoption of Educational Technology (EdTech) in regions where such practices were previously unfamiliar or resistant. This surge in EdTech usage has given rise to a proliferation of terms like digital transformation, distance learning, blended learning, and online education, often used interchangeably and inappropriately. This paper has underscored the potential harm of this emerging trend, as it could lead to misconceptions and misjudgments, particularly impacting critical aspects such as teacher beliefs. Neglecting to address this knowledge gap may result in enduring repercussions, casting doubt on teaching practices that incorporate technology. Collaborative efforts among educators globally to share experiences and perceptions, fostering a scholarly environment where EdTech users can collectively work towards bridging the knowledge gap. Despite the adversity presented by the pandemic, it has opened up opportunities for beneficial EdTech implementations. However, the failure to clearly identify and distinguish various modes, terms, and platforms in education technology may result in confusion, hindering the community from preparing for the future effectively. Therefore, proactive measures must be taken to enhance understanding, promote accurate usage of terminology, and

ensure that the integration of technology into education remains a positive force for the future.

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