THE TRIPLE IMPERATIVES OF ONLINE TEACHING: EQUITY, INCLUSION, AND EFFECTIVENESS

Junaid Qadir

Information Technology University (ITU), Lahore, Pakistan

Abstract: Due to the COVID-19 pandemic, with campuses closing the world over in a bid to contain the virus, online teaching has taken center stage. However, due to the hurried nature of the transition as well as its enormity, educators as well as students are struggling with the break in routine. In particular, educators are torn between different goals such as effectiveness (i.e., trying to emulate in-person classes online and cover the same material), inclusiveness (i.e., no student is excluded from the learning process) and equity (i.e., trying to ensure that no students are left behind). Matters are made more serious by the fact that we are in the midst of the worst pandemic in the last 100 years due to which the students are locked inside their homes with their siblings and family members in stressful situations (which makes paying attention and engaging in learning very difficult). In this paper, we highlight the importance of keeping a learner-centric focus in which there is an explicit effort on the triple imperatives of online learning—i.e., to develop online classrooms that are at the same time, equitable, inclusive, and effective.

Keywords: Online Learning, Online Education, COVID-19, Online Schooling, Digital Divides, Online Penalty, Distance Learning

1. Introduction

a. COVID-19 and The Great Transition to Online Teaching

COVID-19, the largest global pandemic in the last 100 years, has been a great disrupter for the education sector. With approximately 85% of the countries globally closing their educational institutes, almost 1.6 billion students have been rendered out of school (per statistics reported in a World Bank (2020), schools and universities the world over have unwittingly fallen back on an online schooling model. With remote teaching and online learning suddenly thrust on to the center stage and becoming the “*new normal*”, teachers were forced to scurry to online platforms to offer some form of continuing education without due deliberation on what changes are needed to traditional curricular, instructional, and assessment approaches.

b. The Triple Imperatives of Post-COVID-19 Online Teaching

In this paper, we propose that in the midst of this pandemic, to ensure that the online experience is beneficial for students and not harmful, it is critical that educators keep in mind the following triple imperatives of online learning.

- A. The **Equity** imperative seeks to mitigate inequality by ensuring that no one is left behind intentionally or unintentionally.
- B. The **Inclusion** imperative seeks to involve the students in the education process as co-owners and aims to develop a learner-centered environment.
- C. The **Effectiveness** imperative seeks to ensure that the quality and coverage of the learning is not affected by the shift to online learning (i.e., the students do not suffer a significant online penalty).

We elaborate upon these imperatives in the rest of the paper, which is organized as follows. We discuss how despite the great advances in information and communication technology (ICT) and artificial intelligence (AI), education remains essentially a human endeavor in Section 2. We discuss Imperative #1 (“*Being Equitable*”), Imperative #2 (“*Being Inclusive*”), and Imperative #3 (“*Being Effective*”) in Section 3, 4, and 5, respectively. The paper is finally concluded in Section 6.

2. Why Education Remains A Human Thing

a. Limits of Technology

The folly of relying too much on technology is made by Toyama (2015), who highlights that “technology highlights human intent and capacity and cannot be a substitute for it.” This means that despite the advances in technology and artificial intelligence, and the huge potential for using technology for social good, human beings will play pivotal roles particularly in educational endeavors. As reported in World Development Report 2016, sound “analog complements” (including policies, incentives, regulations, and institutions) are essential for ensuring ample digital dividends (World Bank, 2016).

We can learn from the fate of MOOCs that technology alone cannot fix education. The expectations of the MOOC movement, which was launched in 2011 with tall claims of reducing the cost of higher education while “*reaching the quality of individual tutoring*”, had come thudding down by 2014 at which time, Sebastian Thrun, chairman of the MOOC provider Udacity and a prominent MOOC pioneer, concluded that, “*The basic MOOC is a great thing for the top 5% of the student body, but not a great thing for the bottom 95%.*” Thrun’s diagnosis of the failure of integrating MOOCs into instruction at physical universities was similar when he remarked about the failed pilot at the public San Jose State University, “*These were students from difficult neighborhoods, without good access to computers, and with all kinds of challenges in their lives. It’s a group for which this medium is not a good fit.*” This highlights the paradoxical nature of MOOCs: free open flexibly available courses do not really democratize education.

b. The Paradoxical Nature of Learning

We live in strange times. Despite unprecedented economic abundance, especially at the time before COVID-19 took its toll, the world reeled from unprecedented debt. These paradoxes also play out in the field of education and online learning. Despite the availability of a plethora of free and open educational resources (including the so-called massive open online courses or MOOCs), learners rarely have the discipline and self-regulation to complete their courses. MOOC completion rates are dismally low: with single digit completion rates being typical. In the field of education and schooling, open does not automatically mean equitable; flexible does not automatically mean better. and same technology across schools can still result in unequal

schools. In fact, there is much evidence that free online learning materials disproportionately benefit the affluent and highly educated rather than the underprivileged. Even when resources and technologies are identical, privileged students benefit more than others through more progressive resource usage (Reich & Ito, 2017).

The paradoxical nature of learning and social systems can also influence, apart from the educators, the learners. Furthermore, students, like all human beings, have cognitive biases. For example, students expectedly prefer ease and facilitation, however, research has shown that some difficulties—certainly not all—are desirable (Bjork & Bjork, 2011). These “*desirable difficulties*” may result in unpleasant feelings of disfluency and the expenditure of more effort but will result in longer lasting learning overall (due to which these difficulties are dubbed as desirable). A lot of research in educational psychology has established that learners have poor intuition for optimal learning strategies and often prefer suboptimal learning techniques instead (Brown, Roediger & McDaniel, 2014).

In the classical book (Senge, 2006), Peter Senge defines a number of laws of systems thinking, which may at first sight look counterintuitive and paradoxical. The First law (“*today’s problems come from yesterday’s ‘solutions’*”) implies that our sudden shift to online learning may create new problems that will require solutions tomorrow. The Sixth law (“*faster is slower*”) refers to the fact that many quick fixes require much remedial work, which means that they are not so quick after all. In the context of COVID-19 online learning, this can imply the need to go at a considerate speed rather than hurrying both in terms of teaching speed as well as making changes to the learning infrastructure.

c. The Downside of “Social Distancing”: The Importance of Presence

In a bid to contain COVID-19, various bodies such as the World Health Organization (WHO) have been recommending physical distancing, also known as “*social distancing*.” While physical distancing is essential during COVID-19, the social distancing phenomenon has taken a toll on learning since face-to-face human contact and presence plays a big part in human learning. As online teaching expert Judith Boettcher notes, “*we learn as social beings in a social context.*” (Miller, 2019). Prior research has established that students are acutely sensitive to the presence (or absence) of their instructor and classmates in the online environment. While online learning can do a fantastic job of information transfer, they are less effective psychologically, especially when the online learning environment has limited face-to-face synchronous contact. In a physical classroom setting, instructors can get ready feedback about a learner’s status (in terms of the student’s motivation, disengagement, confusion) just by looking at the students’ faces. This is affected in online learning environments due to various reasons (readiness to share video from private spaces or simply insufficient bandwidth).

Online communication suffers from a time lag and when mediated by text can suffer from a well-known propensity to be emotionally tone-deaf. To compensate, online instructors are recommended to make regular inquiries to students about how the class is going and arrange check-ins with them in small groups. This is particularly important for the students who are lagging behind in any way (academically or socio-economically). With the facial feedback unavailable, the onus falls on the instructors to take the extra burden of keeping a close eye on data such as frequency of log-in, late assignments, missed classes, to form an accurate picture of how students are faring.

3. IMPERATIVE #1: *Being Equitable*

The *Equity imperative* seeks to ensure that learners are not left behind intentionally or unintentionally by our pedagogical choices. In this regard, the first thing is to develop an awareness of how despite it is possible that our technological interventions can cause unintended harms to segments of our society. In the case of online schooling, this is manifested by nuanced kinds of digital divides that can exist even when the same technology is being deployed. Finally, some students are more vulnerable to be alienated by the lack of social presence in online schooling and must be catered for.

a. Doing No Harm

“The Chief Source of Problems is Solutions”—Eric Sevareid

Often interventions touted as treatments cause more harm than benefits. In the field of medicine, this phenomenon has an old Greek name iatrogenics, which means “brought by the healer.” (Taleb, 2012) This effect is not limited merely to medical healers and is more generally applicable to anyone intervening in a complex system without anticipating and pre-empting unintended consequences. In the field of education, good-intentions alone are not sufficient and researchers (Reich & Ito, 2017) have documented various incidents in which good-intentioned interventions are neutralized and even transformed into interventions that are more harmful than beneficial.

In the field of medicine, the realization that the first imperative for healers is to “first, do no harm.” is often referred to as the Hippocratic Oath. In a similar fashion, educational experts and policy makers would do well to keep this dictum in mind and be wary of causing harm to some or all segments of the students. Relevant here is the realization that the shift to online education is harder on the less-privileged backgrounds, who could be left behind when students don’t have access to campuses and shared resources such as libraries and labs. The less-privileged students are also likely to have other debilitating issues such as lack of personal space in the home environment (e.g., *is there a quiet space where the learner can attend online classes without being disturbed?*); insufficient access to communication devices and resources (e.g., *a single mobile phone or tablet shared by multiple siblings*); or be expected to do household chores (e.g., *supervising siblings during the class*). This can result in a vicious cycle that takes the less-privileged even further behind (Reich and Ito, 2017) (Reich, 2020).

b. Digital Divides and Online Penalty

As we adjust to the new normal of online education to respond to the COVID-19 pandemic, we run the risk of accentuating and reinforcing the social divide. This social divide emerges from the digital divide (some people have access to advanced digital technologies, but others do not) due to which digital poverty also translates into an online penalty for some learners. Researchers have shown that this online penalty is more severe for struggling, underprivileged, and vulnerable students (e.g., younger students, ethnic and racial minorities, and students with low prior achievement) and negligible for high-achieving and affluent learners who will do well anywhere (Reich, 2020) (Reich, 2020). The COVID-19 crisis is likely to exacerbate the existing divides in resources, connectivity, and infrastructure, with the existing backwardness of the less prepared communities setting them further back as digital education becomes mainstream during the pandemic. Other factors such as the need to take care of siblings can also contribute to an increased online penalty for the less-privileged classes or particular denominations of the population.

c. Maslow Before We Can Bloom

The term “Maslow before Bloom”¹ is becoming popular in education circles in COVID-19 discussions and refers to the importance for basic human needs to be met before we can prioritize academic learning. The phrase refers to two prominent American psychologists, Abraham Maslow (d. 1970), who theorized a hierarchy of basic human needs, and Benjamin Bloom (d. 1999), whose taxonomy of learning objectives is used globally. In the wake of the COVID-19 crisis prioritizing Maslow before Bloom means emphasizing human safety as well as physical and mental health more than we stress desirable but less critical needs such as academic knowledge and skills. Following the “Maslow before Bloom” dictum is helpful for ensuring equitable classrooms especially during the pandemic since the underprivileged students face a bigger online penalty and their learning is more likely to be plagued by physiological and psychological needs. It is to be expected that stress related to COVID-19, which is expected to grow as the number of infected people increase, will negatively impact student’s academic performance and due to this there have been many calls for a reduced focus on grades since under stress student’s performance on assessments such as quizzes and tests will be compromised and will no longer accurately reflect their learning (Reich et al., 2020c).

4. IMPERATIVE #2: Being Inclusive

In the aftermath of COVID-19, it is unlikely that we will have a one size-fits-all solution that will work globally in all settings. The *Inclusion imperative* seeks to include all learners actively into the education process. This involves keeping in view the unique constraints that apply in the environment as well as a conscious effort to involve and empower students in the learning process.

a. Designing for The Constraints

To comply with the inclusion imperative, it is important to take extra steps towards ensuring that the pedagogical and educational strategy is tailored to the unique setting in which the instruction is made. This will typically entail a special consideration for the constraints (technical or otherwise) as instructional choices are made. These constraints vary and are more stringent in disadvantaged community already suffering from a prior digital divide (e.g., limited Internet access or access to digital devices). Even when a digital device is available in the home, a household may not have sufficient number of laptops/tablets (possibly due to multiple siblings sharing these devices). There is also a need to cater for low-bandwidth smartphone users since in many parts of the world smartphones are more common than laptops/ tablets.

This suggests a preference for asynchronous instructional models in which the students can access the learning material at their convenience. However, students do not always welcome digital education that lacks traditional face-to-face methods, and students are more likely to drop out of digital courses that lack personalization and human presence. The flexibility associated with asynchronous lectures is also known to engender procrastination and complacency. This suggests a hybrid asynchronous-synchronous pedagogical model, with the split customized for the target audience, may be more suitable. One viable strategy is to use lectures (preferably short ones) that have to be accessed within some time frame

¹ <https://www.exploringthecore.com/post/maslow-before-bloom>

asynchronously supplemented with short groups in which the instructors are present to mentor and tutor students.

A comprehensive list of guiding principles for effective remote learning during COVID-19 is issued in the World Bank Education Global Practice Guidance Note (World Bank, 2020b). The salient points of this note include: (i) a planning for both short- and long-term remote teaching; (ii) utilizing both online and printed material for students to learn at home; (iii) utilizing media fully (educational radio and TV) and not rely only on the Internet; (iv) make content available through a variety of devices (including mobile devices); (v) support the use of low-bandwidth (including offline) solutions; and (vi) train students and share information on best remote and online learning practices.

b. Motivating and Training the Students

To enable students to maximally benefit from online learning, there is an urgent need to train them on metacognition and on effective learning practices. Metacognition—or the ability to know one's thinking, to self-evaluate, and to know the limits of one's thinking—plays a fundamental role in human learning. Since our mindset, or our belief system, fundamentally affects our actions, goals, and perception, teaching metacognition is a low-cost high-impact educational intervention, whose value is established through extensive evidence.² Broadly speaking, students can acquire metacognitive skills in two ways: (1) *via negativa*—which focuses on avoiding common learning impediments and mistakes; and (2) *via positiva*—which focuses on leveraging essential yet-little-known learning facts that can vastly improve people's learning.

Taking the *via negativa* approach, the following common learning impediments were identified (with tips on how to surmount these impediments) in (Qadir, 2015):

- (1) having a fixed mindset;
- (2) the failure to engage oneself in learning;
- (3) the failure to manage time;
- (4) the failure to realize that paradoxically failing (i.e., making mistakes) is the key to learning;
- (5) the failure to realize that learning is a social activity;
- (6) being a learning monogamist (i.e., learning from only one source/viewpoint); and
- (7) not learning how to learn.

Alternatively, the *via positiva* approach can be adopted as in (Qadir and Imran, 2018). The paper highlighted the counterintuitive insights discovered in the learning science literature such as the fact that some difficulties are desirable in learning, and that not all learning fluencies are desirable, while also talking about scientifically established effective learning techniques (such as retrieval practice, spaced learning, and interleaving). Experts have also figured through advances in neuroscience how learning is affected by factors such as sleep and exercise.

The students, particularly those who are disadvantaged in any way, are recommended in such settings to adopt actions described in our paper (such as taking ownership of learning and reaching out for help and support). There is a need to train people in having better self-assessment skills as self-regulatory attributes (e.g., self-monitoring, self-evaluation, and self-teaching) have been shown to be associated with higher quality learning and performance. Interested readers are referred to the recent student primer (Qadir & Al-Fuqaha, 2020) that outlines 7 steps that students can take to survive and thrive in post-COVID-19 online learning.

² For example, British Education Endowment Foundation (EEF) lists teaching metacognition as “*high impact for very low cost, based on extensive evidence*”
<https://tinyurl.com/EEFTeachingLearningToolkit>

c. Getting Students Onboard

In the aftermath of COVID-19, there is a great need to have empathy and care for students and for prioritizing their emotional needs and mental health (Reich, 2020a). There is also a need to strive proactively and reach out to students to avoid the unfortunate situation where the students most in need of support are least likely to reach out for it (Dynarski, 2018) (Reich, 2020). It is recommended the teachers regularly check in with their students particularly for providing moral support, celebrating progress, offering guidance, and providing emotional support especially as the students, or their near ones and their acquaintances, suffer from illnesses. Such support can be provided by teachers for students in multiple ways: (1) whole class broadcasts; (2) individual check-ins and coaching; (3) synchronous in-person meetings; and (4) facilitating small group meetings. Reich (2020a) recommends that schools should provide teachers with training and support for implementing these four modes appropriately as per the local context.

Due to perceived anonymity of remote teaching, and the sense of distance between faculty and students, problems of plagiarism and cheating can crop up. Indeed, without specialized technological aids or in-person proctoring, it may be impossible to verify if a given assignment was indeed completed by a student or by someone else. Lang (2013) in his book *Cheating Lessons* makes the compelling argument that academic integrity is best preserved by creating classroom environments that engage students and by creating specific/personalized assignments rather than generic assignments reused over the years (which makes it easy and tempting for students to cheat.) McTighe & Martin-Kniep (2020) recommends the presence of an honor code to reinforce the importance of trust and to encourage the students to take ethical responsibility for completing their work honestly and with integrity.

5. IMPERATIVE #3: Being Effective

Research has shown that even in the best of circumstances (predating COVID-19), effective distance learning is difficult to accomplish especially since young people have less capacity and persistence with online schooling (Reich, 2020a). In the aftermath of the COVID-19 pandemic, the *Effectiveness imperative* emphasizes the need to minimize the impact to students' learning and to get remote learning right (ASCD, 2020).

a. Being Learner Centered

In the midst and the aftermath of COVID-19, it is more important than ever to put learners at center stage and to design educational interventions empathetically for facilitating and helping students develop. This calls for the adoption of learner-centric/ student-centric pedagogies instead of pedagogies centered around regulations and technology. This also means that learners are granted the status of an important stakeholder in all decisions related to online education and appropriate feedback mechanisms are in place. We need to establish classrooms that give importance to the students' voice and involve them in the "what" and the "how" of learning so that the students can assume ownership of their learning and become co-creators and partners in the learning process (Kallick & Zmuda, 2017).

Building a learner-centered approach also means empowering the learners with the meta-skills they need to thrive in the challenging times that we live in, particularly, during and in the aftermath of the pandemic. This also involves a focus on the affective dimension of their learning, psyching the students up and motivating them, and helping in developing their self-efficacy. When students acquire meta-skills such as learning how to learn, read, write, they

bring this skill to every course and reap its exponential benefits—this effect is sometimes called the “Matthew Effect” or the rich get richer and the poor get poorer effect. In this regard, special attention should be paid to formative assessment (Qadir et al., 2020b). In a landmark study, Black and Wiliam showed that formative assessments, in contrast to summative ones, return the more powerful effect on student learning.

b. Focusing on *Uncoverage* (Rather Than Coverage)

Due to the disruption, many educators are looking to achieve more with less—in other words, they are looking for economical ways of communicating the core insights to the students, which the students can then transfer and use in authentic real-world contexts. Wiggins & McTighe (2005) recommend that learners should instead of focusing on “*covering*” topics (which may leave students lost and alienated, when they are unable to see the relationship of the covered topics) should focus their attention on “*uncovering*” the core understandings that underpin the subject. A better approach would be, in the words of the English philosopher Alfred Whitehead, to “*let the main ideas which are introduced be few and important and let them be thrown into every combination possible*”. In this way, uncovering the big ideas returns impressive results with frugal investment since the ideas learned are few in number but broadly applicable. The conventional coverage of topics, according to the educator Jerome Bruner, is uneconomical since with coverage seeing the whole requires more and more effort as the topics begin to increase.

c. Compensate by Focusing on Authentic Skills and Projects

“When students become their own teachers, they exhibit the self-regulatory attributes that seem most desirable for learners (self-monitoring, self-evaluation, self-assessment, self-teaching)”—Albert Einstein.

Most people will agree that learning success should not be measured just in the ability to remember—more importantly, we should focus on what the student can do with the knowledge (Qadir et al., 2020a). The silver lining accompanying the COVID-19 pandemic can be that it catalyzes the development of alternative assessment strategies needed for 21st century learning. Learners should be able to demonstrate performance on authentic tasks (which simulate realistic environments and problems that the learner would face in the real-world). Due to the non-feasibility of in-person exams in many parts of the world during COVID-19, alternative assessment strategies for open-ended real-world authentic problems can be developed and tested. This is an ideal opportunity for educators to leave traditional deficient assessment strategies behind and to try to incorporate authentic assessment in their teaching. The focus on projects for enrichment and reinforcing previously taught skills and prioritizing it over introducing too much material is also emphasized by Reich (2020a).

6. Conclusions

In this paper, we present the triple imperative for educators as they plan and conduct their online teaching during the COVID-19. More specifically, we propose that educators should follow the: (1) *Equity imperative*, which seeks to mitigate actions that intentionally or unintentionally widens inequality; (2) *Inclusion imperative*, which seeks to include all learners actively into the education process; and finally (3) *Effectiveness imperative*, which seeks to ensure that the quality and coverage of learning is not compromised as much as is possible. We have also elaborated on the implications of these imperatives and have provided practical guidelines for realizing these imperatives.

REFERENCES:

- ASCD (2020). A New Reality: Getting Remote Learning Right. An Educational Leadership Special Report | Volume 77. <http://www.ascd.org/publications/educational-leadership/summer20/vol77/num10/toc.aspx>, Accessed on: 06-June-2020.
- Brown, P. C., Roediger III, H. L., & McDaniel, M. A. (2014). Make it stick. Harvard University Press.
- Bjork, E. L., & Bjork, R. A. (2011). Making things hard on yourself, but in a good way: Creating desirable difficulties to enhance learning. *Psychology and the real world: Essays illustrating fundamental contributions to society*, 2(59-68).
- Conrad, R. M., & Donaldson, J. A. (2011). *Engaging the online learner: Activities and resources for creative instruction* (Vol. 38). John Wiley & Sons.
- Dynarski, S. (2018). Online courses are harming the students who need the most help. *The New York Times*. <https://www.nytimes.com/2018/01/19/business/online-courses-are-harming-the-students-who-need-the-most-help.html>, Accessed on: 06-June-2020.
- Kallick, B., & Zmuda, A. (2017). Students at the center: Personalized learning with habits of mind. ASCD.
- Lang, J. M. (2013). Cheating lessons. Harvard University Press.
- Miller, M. D. (2014). Minds online. Harvard University Press.
- Feldman, J. (2020). To Grade or Not to Grade? *An Educational Leadership Special Report | Volume 77: A New Reality: Getting Remote Learning Right*, Pages 43-46, <http://www.ascd.org/publications/educational-leadership/summer20/vol77/num10/To-Grade-or-Not-to-Grade%C2%A2.aspx> Accessed on: 06-June-2020.
- McTighe, J. & Martin-Kniep, G. O. (2020). *Seven strategies for supporting student learning in a remote environment*. <https://inservice.ascd.org/seven-strategies-for-supporting-student-learning-in-a-remote-environment/>, Accessed on: 06-June-2020.
- Toyama, K. (2015). *Geek heresy: Rescuing social change from the cult of technology*. Public Affairs.
- Toyama, K. (2015). Why technology will never fix education. *The Chronicle of Higher Education*. <https://www.chronicle.com/article/Why-Technology-Will-Never-Fix/230185>, Accessed on: 06-June-2020.
- Qadir, J. (2015). What every student should know: Seven learning impediments and their remedies. *IEEE Potentials*, 34(3), 30-35.
- Qadir, J., & Imran, M. A. (2018). Learning 101: The Untaught Basics. *IEEE Potentials*, 37(3), 33-38.
- Qadir, J., & Al-Fuqaha, A. (2020). A Student Primer on How to Thrive in Post-COVID-19 Engineering Education. <https://doi.org/10.35542/osf.io/eupdm>

The Triple Imperatives of Online Teaching: Equity, Inclusion, and Effectiveness

Qadir, J., Yau, K. L. A., Imran, M. A., & Al-Fuqaha, A. (2020a). Engineering education, moving into 2020s: Essential competencies for effective 21st century electrical and computer engineers.

Qadir, J., Taha, A. E. M., Yau, K. L. A., Ponciano, J., Hussain, S., Al-Fuqaha, A., & Imran, M. A. (2020b). Leveraging the force of formative assessment & feedback for effective engineering education.

Reich, J., & Ito, M. (2017). From good intentions to real outcomes: Equity by design in learning technologies. *Digital Media and Learning Research Hub*.

Reich, J. (2020a). Keep It Simple, Schools. An Educational Leadership Special Report | Volume 77. URL: <http://www.ascd.org/publications/educational-leadership/summer20/vol77/num10/Keep-It-Simple-Schools.aspx>

Reich, J. Online Learning in the Age of COVID-19 [Online Webinar] (2020b), <https://jwel.mit.edu/assets/video/online-learning-age-covid-19>, Accessed on: 06-June-2020.

Reich, J., Buttimer, C. J., Fang, A., Hillaire, G., Hirsch, K., Larke, L. R., ..., Slama, R. (2020c). Remote Learning Guidance From State Education Agencies During the COVID-19 Pandemic: A First Look. <https://doi.org/10.35542/osf.io/437e2>

Senge, P. M. (2006). The fifth discipline: The art and practice of the learning organization. Broadway Business.

Taleb, N. N. (2012). *Antifragile: how to live in a world we don't understand* (Vol. 3). London: Allen Lane.

Wiggins, G. P., & McTighe, J. (2005). Understanding by design. ASCD.

World Bank (2016). World Development Report 2016: digital dividends. World Bank Publications.

World Bank (2020a). World Bank Education and COVID-19, <https://www.worldbank.org/en/data/interactive/2020/03/24/world-bank-education-and-covid-19>, Accessed on: 06-June-2020.

World Bank (2020b). WB Education Global Practice Guidance Note: Remote Learning & COVID-19. <http://documents.worldbank.org/curated/en/531681585957264427/pdf/Guidance-Note-on-Remote-Learning-and-COVID-19.pdf>, Accessed on: 06-June-2020.