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Opinion

To the Issue of Viability of Pandemic-Prompted Emergency Distance Education Model

Eugene Borokhovski[1]*, David Pickup[1] and Rana Tamim[1]

[1]Concordia University, Montreal, Canada

***Corresponding author:** Eugene Borokhovski, Concordia University, Montreal, Canada

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Opinion

This is an opinion piece, intended to contribute to the timely discussion about the future of Distance Education (DE), which recently has collected quite a number of well-informed and rather speculative projections alike. Emergency response to the Covid-19 pandemic in education around the world included a dramatic increase in the use of various forms of DE. Emergency is the operative word here as it not only emphasizes the expediency of the measures taken but also reflects their forced nature that inevitably could affect the quality/efficiency of the response in a short, but more importantly, in a long run. All over the mass media the term 'new normal' persists reflecting either fears or hopes that the world after the pandemic will never be the same. Indeed, there is very little unity in people's reaction to this projected new reality, overall, and in the field of public education, in particular.

Professional educators, school and university administrators at various levels, educational researchers, as well as the students themselves and their parents subscribe to a variety of opinions–from complete acceptance and enthusiasm for the future prospects of learning in a remote mode to restrained (and not so much) skepticism about it. The latter is largely based on understanding of the numerous problems and undesirable side-effects of such a radical change in the reality of education–spreading far beyond concerns about academic achievement into domains of economics, social life, and psychological well-being. Below we briefly discuss the arguments of both sides, that is, the pros and cons of extensive proliferation of DE, based on a conceptual understanding of the problem, a balanced consideration of its applied aspects, as well as on the research data from empirical studies (accumulated by a number meta-analyses) on the effectiveness of various models of DE. Specifically, we argue in favour of more careful approach to DE design and implementation over the 'one size fits all' solution.

By now, we have marked two years since the initial announcement of a two-week shut-down, and all accompanied extraordinary measures aimed to mitigate the deadly effects of the virus and to slow down and eventually stop its spread. Today, we know much better a lot of things about the virus itself, reliability of testing, promising therapeutics for treating the disease, relative success/failure of mask wearing, lockdowns and travel restrictions, social distancing, etc., as well as about the legitimate concerns regarding detrimental side effects of these preventive measures on economy, mental health and other aspects of well-being, including elevated risk of drug abuse [1] and domestic violence [2,3], increased suicidal behaviors [4,5], delayed or cancelled treatments of other illnesses with no exception for non-elective surgeries and chemotherapy for cancer patients [6]. All these issues warrant serious reflection and balanced non-politicized discussion. Our major concern, however, is with public education: how its various emergency models, forced on us by the pandemic, could be transformed into what many among policy-makers, educational practitioners and the general public often refer to and even welcome as a 'new normal'.

Arguments put forward by the proponents of a wider DE spread could by summarized into two major categories: (1) necessity, and (2) feasibility. Both are briefly addressed in turn. We would like to clearly distinguish the necessity as it has been originated and gradually accumulated in response to various pressing educational needs and necessity understood as a generic health-care preventive measure, just convenient for some of the stakeholders. Calls applying DE practices were coming out long before this pandemic arrived, instigated in other areas of public education, such as refugee education [7] and home schooling [8]. What unites these and like cases of DE is their specific, even unique needs, that require careful research and subsequent evidence-based educational interventions designed and implemented to meet these needs, as well as targeted investment and reliable infrastructure in support of selected pedagogical frameworks and professional development for teachers. What else do they have in common? Unlike the 'pandemic-inspired' emergency DE, policy makers, administrators, researchers, and ed-

ucational practitioners have not had to rush to address them with 'one size fits all' blanket solutions. In other words, omnibus DE is not a solution, only carefully designed and implemented DE can be. More careful assessment of the actual necessity for DE that originated from the current pandemic is yet to come. However, there is a concern that maintaining any targeted approach (i.e., specific infrastructure, instructional design, and pedagogical implementation for specific educational goals) beyond the period of the most damaging onset of the pandemic, presumably, would require resources simply unavailable to most of the educational systems in the world. This consideration puts in serious question the second argument of feasibility. Unlike those who would like to see in the current situation an opportunity not to be wasted and a proof that the transition to DE is both viable and beneficial, we think that the challenge of the meaningful (that is, first of all effective for learning) DE proliferation is far greater to be that easily met. In support to this last argument, below we briefly present what is known from the research evidence about DE learning outcomes as summarizes in a number of relevant meta-analyses.

These are the key observations:

a) students' academic achievement in DE is strongly associated with the interactivity factor, which is also instrumental in preventing excessive drop-out;

b) the flexibility factor that largely predetermined the initial rise of DE should be maintained to avoid negative side-effects, including dissatisfaction and drop-out;

c) pedagogical factors, imbedded in instructional design, outweigh technological affordances, especially since the latter require properly organized and managed infrastructure, adequate training for teachers and students, and sufficient time to be efficiently adopted in formal education;

d) vast variability in meta-analytical findings (even with the most favourable to DE average point estimates), does not only present educational system with pleasing promises, but also calls for caution as the negative effect sizes are almost as prevalent as the positive ones. The meta-analyses that allowed us to formulate the above are as follows.

Bernard, et al. [9] suggest that when flexibility factor is taken away the distance factor becomes disruptive. This meta-analysis found that the overall weighted average effect size of g^+ = 0.013 (k = 318, N = 54,775), for achievement outcomes, was statistically non-significant (virtually indistinguishable from zero). What this suggests is that DE in general can be as effective (or no less effective) than traditional in-class instruction. However, when the collection was split into Synchronous (e.g., a live stream course and/or chat that require students' presence at particular place and time) and Asynchronous (e.g., an online hub with posted content and/or discussion forum, i.e., with flexible in terms of time and place access) modes of DE, the picture that emerged was dramatically different. Both respective effects were still small in magnitude, but pointed in different directions, each achieving the level of statistical significance: Asynchronous g^+ = 0.053 (k = 174, N = 36,531, p < .05) and Synchronous g^+ = –0.102 (k = 92, N = 8,677, p < .05).

Bernard, et al. [10] and Borokhovski, et al. [11] examined the role of so-called interaction treatments in DE. The first of these two meta-analyses largely confirmed the hypotheses formulated by Anderson [12] combined effect of at least two types of interactions in DE [13]. Not only did more interactive DE instructional interventions produce positive effects on learning, DE conditions that combined higher levels of interactivity of two out of three types, identified by Moore, outperformed other (less interactive) forms of DE. Especially strong were effects of DE interventions that combined Student-Content interactions with either Student-Student or Student-Teacher interactions: g^+=0.48 (k = 29) and g^+ = 0.49 (k = 38), respectively. Considering that DE in general offers some degree of flexibility, the added value could only come from the higher degree of interactivity that in regular classrooms exists nearly by default but presents a serious challenge to be achieved at a distance. A follow-up meta-analysis clearly showed that designed interaction treatments (i.e., those instructional interventions that were preplanned and implemented to enable, facilitate and promote interactions among learners) significantly outperformed contextual interaction treatments (i.e., instructional interventions, still quite high in interactivity, but only because the technology involved in delivering DE allowed for it, and not due to any particular pedagogical choice): g^+ = 0.50 (k = 14) vs. g^+ = 0.22 (k = 22). The difference was statistically significant (Q Between = 6.37, p = .01).

A large-scale meta-analysis of effectiveness of classroom technology integration in postsecondary education [14] that resulted in an overall weighted average effect size of g^+ = 0.27 (k = 879, p < .05), also observed a nearly flat regression line (effect sizes regressed against the corresponding years of publication): bY = 0.004, p =.27, $Q_{Regression}$ = 1.22 [33]. An almost identical picture was observed in its follow-up – a meta-analysis of blended learning: bY = 0.00 (p = .41, $Q_{Regression}$ = 1.0) and in a meta-analysis of use of tablet-like devices for educational purposes [15]: bY = 0.024 (p = .20, $Q_{Regression}$ = 1.67) -for the 'tablet use vs. no tablet' comparison type and bY =–0.001 (p = .99, $Q_{Regression}$ = 0.00)–for the 'pedagogically enhanced tablet use vs. tablet use alone' comparison type. Basically, this means that, though there are positive effects of educational technology, they do not change over time, despite the most impressive advancements in technology itself. There is always a lag, presumably needed for teachers and institutional infrastructure to pick up speed to achieve some reasonable level of effectiveness, and by the time it is attained, new technological wonders appear, catch everybody's attention, and the whole applied circle repeats itself.

In nearly every single meta-analysis conducted by educational researchers during the past three to four decades, the distribution of individual independent effect sizes (at least, with respect to academic achievements) is always significantly heterogeneous. In other words, alongside with positive, there are always considerable negative effects indicating that the control condition (whether it is a face-to-face alternative to DE or technology-free as the opposite

to technology-saturated instruction) substantially outperforms the experimental one. A typical meta-analysis strives to sort out such cases (understand, explain, and suggest an applied remedy), by exploring moderator variables to determine under what conditions (e.g., a specific academic level, subject matter, treatment duration, etc.) the experimental treatment may not only be ineffective, but hurtful to learners. The key point here is that a 'one-size-fits-all' approach never works–there are striking exceptions from even the most successful educational practices. In conclusion, we would like to remind educational researchers, practitioners, and policy makers: what comes to life out of necessity does not necessarily present viable solutions in the long run-the current emergency DE model is not an exception.

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