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Tofu Is Not Cheese: Rethinking Education Amid the COVID-19 Pandemic

Yong Zhao
University of Kansas

> *Judge a man by his questions rather than by his answers.*
>
> **— Voltaire**

> *The scientist is not a person who gives the right answers, he's one who asks the right questions.*
>
> **— Claude Levi-Strauss**

The COVID-19 pandemic has forced the closure of millions of schools around the world. As a result, teachers and education leaders must find new ways to provide education to over one billion students. This is a crisis, but within which is the opportunity to rethink education. In this article, I discuss productive ways to take advantage of the opportunity brought about by the disastrous crisis.

Tofu is not cheese. We should not expect it to smell or taste like cheese nor should we need to pretend it is or make it taste and smell like cheese. The message this commentary is trying to convey is that we should accept the fact that schools are closed and we do not need to pretend we can make online education the same as face-to-face (f2f) schools. Instead, we should make the best out of the new situation. Online education cannot replace all functions schools play in our society, but it can do a lot more than being a lesser version of f2f schooling.

Corresponding author:
Yong Zhao, School of Education, University of Kansas, 419 Joseph J. Pearson Hall, Lawrence, KS 66049, USA.
Email: yongzhao@ku.edu; yongzhaoeducation@gmail.com

Don't ask the meaningless question of whether online education works

One of the most frequently and persistently asked questions about online education is "does it work" or "is it effective." It is a legitimate question for it is only natural and reasonable for anyone faced with the decision to undertake online education to want to know if it works. But this seemingly reasonable question is not only meaningless but also dangerous.

The question is meaningless because there cannot be any definitive answer for a number of reasons. First, online education (and its variants such as online instruction, online teaching, distance education, and distance learning) is a big umbrella that covers a wide array of different practices, which vary a great deal in terms of quality. Comparing the effectiveness of online education with f2f education has been the most common research approach to examine the effectiveness of online education. And the answer has been, for a long time, that there is no significant difference between the two. This answer, however, does not mean online is effective or not; it simply means there are plenty of effective and ineffective programs in both online and f2f education. In other words, the within variation is larger than the between variation (Zhao et al., 2005). This is why after tens of thousands of research studies the best answer one can get about whether online education works is that there is no significant difference from f2f education. Is "no difference" the same as effective? Does it mean it works or not?

Second, another reason that there cannot be a definitive answer to this question is the diversity of stakeholders in online education. While the typically assumed stakeholder is the student, hence most studies are about educational outcomes for students, but there are many other stakeholders. Teachers, online education providers, technology suppliers, families of students, tech support personnel, facility managers, and real estate owners all have an interest in this question because the answer affects their welfare as well. And unfortunately what works for one stakeholder may not work for the others. For example, what works for technology suppliers simply means their revenue has increased because of online education, which can come at a cost of the real estate owners at a college town because with online education, students do not come to campus anymore. Thus, online education has its own losers and winners. It works for some while causing harm to some others. If online education brings tremendous profits to businesses, it certainly works for the business, but does it work for students?

Third, even within the same program and with only students as the stakeholder, there cannot be a definitive answer because no program can possibly have the same effects on all students equally. Students have differences in multiple domains such as personality, academic preparedness, experiences with technology, attitude toward online education, access to technology, and physical location and settings. Their different characteristics create a different experience with the same course and thus result in different outcomes (Zhao, 2018). This is why there is no study that has

shown that online education benefits all students and why there are so many studies about what kind of students are more suitable for online education. If a program works for 60% of the students, but has no benefit for the rest 40%, is it effective?

Fourth, yet another reason that the question cannot have a definitive answer is the multiplicity of outcomes. Education outcomes include more than what has been typically measured by grades or tests. Acquiring knowledge and skills is only part of the reasons for people to go to school or take a course. Other reasons can include making friends and learning to get along with others, living in a community, developing important personal qualities, and even having free meals, which is the case for poor children in public schools (Zhao et al., 2019). So it is far from sufficient to rely on test scores or grades to prove whether online education works. As has been discovered, while there is no significant difference between online and f2f education in terms of knowledge acquisition, there is significant difference in student satisfaction (Zhao et al., 2005). If online education works in one domain but causes harm in others, for example, motivation to learn or social–emotional development, does it work?

Fifth, the rapid changes in technology that can be used to deliver online education add to the elusiveness of a definitive answer to the question. While pedagogy, design, and human actors certainly play a significant role in the experiences of online education, so does technology. Experiencing online education via text-only e-mails is definitely different from experiencing it via video conferencing and immersive Virtual Reality and Augmented Reality environments. Technology changes fast, so research done about online education 5 years ago may or may not be relevant today.

Thus, not surprisingly, decades of research about online or distance education are unable to give a definitive answer to the question: Does it work? The best answer one can get is "it depends." It depends on how the program is delivered; it depends on what outcomes are measured; it depends on whose interests are considered; it depends on the content, the context, the design, the delivery, the technology, the instructor, the student, and many other factors.

The lack of a definitive answer not only makes the question meaningless but also dangerous. It has sent and will continue to send researchers, policy makers, and others down the rabbit hole of effectiveness, perpetuating the futile mission to hunt for more evidence of effectiveness or lack thereof. This is a waste of precious time and resources, to say the least.

Worse, one can always find evidence to show both positive and negative effects (a treatment can be effective in bringing about desirable and undesirable effects) out of the mountains of evidence. But the battle over online education is rarely settled with empirical evidence of educational benefits but rather political and business interests. Thus, the evidence is often selectively picked to support whatever decision one favors, leading to reckless decisions that could harm students and others.

A further danger is missing the opportunity to pursue answers to the right questions that can actually help improve online education. There is much complaint about how education as a field has not progressed as fast as other fields such as medicine and agriculture. One of the reasons for the lack of progress are the numerous wars such as the Math Wars and the Reading Wars that have been fought throughout education history, which contributed to the phenomenon of perpetual pendulum swings in educational practices and policies. The wars and the pendulum swings are at least partially caused by the obsession with collecting evidence of what works, without thinking that there is no definitive answer to that question (Zhao, 2017, 2018).

Online education could suffer the same fate without abandoning the question for more meaningful ones that can provide insights and guide efforts to make online education better for all children. After all, it is COVID-19, rather than overwhelming evidence of effectiveness, that converted f2f education to online for hundreds of millions of students around the world, virtually overnight!

Ask more meaningful questions

There are many meaningful and productive questions to ask about online education depending on the circumstance. Given that education systems and schools around the world are at the moment in the middle of either offering or deciding to offer education online due to the COVID pandemic, there are meaningful questions to ask in this particular context.

Why online?

This seemingly obvious question deserves a lot more consideration than it has typically been given because the answer appears to be simple, clear, and unequivocal: We have to since schools are closed as if online education is a natural and only alternative to schools. But there are a number of problems associated with this answer.

Online education cannot replace all functions schools play in our society. If the purpose to offer online education when schools are closed is to create a sense of normalcy or a sense that schooling is still happening, we need to be mindful of the other functions that schools serve but are not served by online education such as childcare, health care, free meals, physical setting for friendship and socializing, collection of trained education professionals, and other social services.

Online education can do a lot more than being a lesser version of f2f schooling. While online education cannot deliver free meals to students in need, it holds great potentials that f2f schools have been encouraged to take advantage of for a long time. It can help make learning more authentic, more relevant to the real world, and more learner-centered. It provides access to resources and expertise beyond the immediate classroom or school. Students can collaborate with peers from around the

globe and can learn from, with, and for anyone in the world at any time. If the purpose of moving online is simply to make online education fill in the void created by school closures, it is a tremendous waste of the potentials.

There may be other options besides/in addition to online to educate students than converting f2f schools into online. Such options could be not offering online instruction but rather giving students large projects to complete on their own or developing system-wide offerings instead of converting each and every school into online mode or sending students to existing online education providers.

Thus, when schools are closed, we should not simply accept the default answer of going online. Instead, we need to consider what we want to achieve through converting schooling into online, that is, why do we want to move online?

What works for what?

Online education can take a wide variety of shapes and forms due to the numerous ways to combine the basic ingredients such as technology platforms (learning management systems, broadcasting platforms, social media platforms etc.), media modality (texts, animations, videos, audios, etc.), temporal arrangements (synchronous and asynchronous), instructional approaches (direct instruction, inquiry-based, product-oriented, flipped classroom, etc.), student arrangement (small groups to massive groups), teacher roles, and more such as frequency of interactions among students and instructor. Different combinations result in different online education. Thus, there is no one online education.

Online education (or education) can have many different outcomes: political, financial, societal, and educational. Different online education models have different effects on different outcomes and thus suit different purposes.

Broadcasting live or recorded lectures, for example, can be very effective for the purpose of simulating traditional teacher-centered schooling for students: attending class at specific times, receiving uniform information from the same teacher at the same time as their peers, and carrying out the same tasks as their peers at the same time. But it is not effective for attending to individual differences, accommodating different learners, or addressing students' social–emotional needs.

Having students work on projects individually with teachers providing feedback and support to individual students or small groups asynchronously can be effective in engaging students in more authentic work, have more autonomy and more personalized experiences, and receive more individualized attention. But it may not be effective in uniform knowledge transmission and thus would be a poor choice for the purpose of ensuring coverage of the planned curriculum.

Hence, when making decisions about what forms of online education to use, it is advisable to examine the evidence of effectiveness of specific configurations of each program and the measured

outcomes rather than accepting or rejecting a program or model simply because it is online. Moreover, in order to improve online education, it is essential for designers and researchers to carefully look at the specific variables or combination thereof and the specific outcomes they are intended to affect.

What works for whom?

The same program can have different effects on different stakeholders in online education. Some programs may work very well for political leaders but may not work well for teachers. Some may work for teachers but not students. Some may work for some students but not others. No one program can work equally well for all students.

It is well-known that students vary a great deal as learners in many aspects: academic abilities, personalities, interests, motivations, and experiences. These differences can affect the effects and effectiveness of educational programs, online or f2f. When students are physically in front of us, these differences may be more obvious than when they are out of sight. Thus, we need to be mindful all the time that these differences remain in online education and keep asking how online offerings affect different students.

More important, online education has the potential to amplify the impact of student differences, in particular factors associated with student background. We have already known that home environment plays a significant role on student learning. Schools are supposed to be an equalizer by mediating the differences in family backgrounds. When schools are closed, home environments play a much more significant role than when they come to school. Thus, when examining the effects of online education, it is even more important to ask the question what online programs for what kind of students.

What and who get hurt by what works?

In the pursuit of what works, we must keep in mind *what works can hurt*. My book *What Works May Hurt: Side Effects in Education* discusses why and how what works for some students can do harm to other students. As well, what works to improve some outcomes can hurt other outcomes. The book challenges the simplistic view of improving education through evidence collected using scientific methods such as randomized controlled trials.

The same idea applies to online education. When seeking effective online education, we should always ask who gets hurt and what gets sacrificed.

Teach what is important: Reimagine curriculum

Not to return to the same education after we return to the same school seems to be a widely shared desire among the innovative. But unfortunately the dominant desire outside the small group of

innovative educators is to return to the same school and the same education. The majority of governments and education leaders are managing the crisis instead of taking advantage of the opportunities within the crisis. I plan to write a series of blog posts to discuss the opportunities and suggest some possibilities for taking advantage of the opportunities. I start with rethinking the curriculum, the what of education.

Stop and rethink what's worth teaching and learning

We have a rare opportunity to examine what we have always been teaching (or trying to) for a number of reasons. First, COVID-19 has forced the cancellation of many high-stakes examinations students have been subject to, at least temporarily removing the pressure to teach to the test. Second, university admissions will have to rely on other evidence other than test scores, and many universities have announced their decision not to use standardized test scores for making admission decisions. This may be temporary for some but could be permanent for others as COVID-19 accelerates the rate of universities dropping requirements of test scores. Third, governments and accrediting bodies cannot reasonably expect schools to comply with their prescribed curriculum during the crisis. Fourth, online education is not conducive to deliver high-quality instruction of some traditionally valued subjects. Fifth, it is unethical and unjust to hold students accountable for learning the same things at the same rate and assessed by the same exams because their learning environments are so unequal as a result of their home background. Sixth, during this crisis, parents and the public are more concerned about the physical safety as well as social and emotional well-being than academic content, so should educators.

It is thus possible and necessary for policy makers, school leaders, teachers, and parents to seriously rethink: Do we need to simulate school and teach everything that is supposed to be taught in school? Is it reasonable to demand that each and every student, despite his/her individual circumstances, learn the same thing at the same time as before? Is it in the best interest of students and teachers to require them to follow the same curriculum as if they were still in school?

"No" is my suggested answer.

New possibilities: Global and digital competencies

This is, however, a great opportunity to teach something different, something that we wish we could have taught but never had the space and time in the curriculum to teach. Global and digital competencies are two examples.

Global and digital competencies have long been advocated as important capabilities for the 21st century. I made an argument for the emergence of two new worlds human beings would live in—the global world and the virtual (digital) world—in addition to the local and physical one, in my 2009 book *Catching Up or Leading the Way: American Education in the Age of Globalization.*

I believe the two worlds have become a reality in terms of economic activities, political influences, social life, and friendship, as well as education. The ability to live successfully in these two worlds is as important as ever before, particularly in light of the changes COVID-19 has brought about to the world. But schools have rarely seriously devoted much effort to these two competencies, despite the wide acceptance of their importance in theory.

My definition of global competency. When I went back to my writing about global competency, I was surprised that I wrote these words in 2009 in my article published in ASCD's *Educational Leadership* magazine.

As I write these words, the world is battling an unprecedented economic crisis and the potentially deadly H1N1 virus. Both battles serve as a jolting reminder that the human race has entered a new era in which geographical and political boundaries no longer serve to isolate its six billion members scattered around the globe.

There are many different definitions of global competency. My definition focuses on the nature of interconnectedness and interdependence of humanity in the global world. Thus, my definition emphasizes the ability and knowledge required to understand *global interdependence, global economics, global problems, and global conflicts* as well as the desire and ability to take actions to bring positive changes to the world for all human beings to live in peace and share prosperity.

Increasing importance of global competency. Global competency has gained more urgency amid the COVID-19 pandemic. Recent years have seen the rise of xenophobia, racism, nationalism, and isolationism in the world. The pandemic has only exacerbated the situation. The interconnected and interdependent human society faces the danger of increasing conflicts and violence, social instability, probability of an economic downturn, erosion of trust, damage to the common good such as our shared environment, and inequality and injustice. While we can blame the stupidity, ignorance, evil spirit, and greed of some politicians and big corporates for all these problems that threaten human future, it is education that can hopefully lead to positive changes. I hope that through education, today's students, who are tomorrow's political and business leaders, social activists, and citizens, will have a better understanding of human interconnectedness and interdependency so that they will be smart enough not to engage in shortsighted actions that are disastrous in the long term.

A rare opportunity to teach global competency. In the past few years, interest in global competency in education dwindled as global politics became more nationalistic and protectionist. Now is the time to make development of global competency a central aspect of education not only because it has become more urgent and important but also because the pandemic has created a perfect context for doing so. First, the pandemic provides a universally applicable, extremely rich, and

personally relevant context and topic to examine human interconnectedness and interdependency. Second, the reality that students are isolated at home (so they desire social connections) and need to learn online makes learning programs about global competency very attractive and feasible. Third, the format of online learning is much more conducive to creating authentic learning experiences through collaborative learning with peer learners around the globe than traditional academic learning.

Digital competency: Learn to live, learn, and work in the virtual world. Digital competency is much more than the ability to use information technology, which children can and do learn on their own. It is a whole set of knowledge, skills, social–emotional capabilities, and wisdom necessary for living, learning, and working in the virtual world. This is because, as I wrote more than 10 years ago in my book *Catching Up or Leading the Way: American Education in the Age of Globalization*:

> . . . the virtual world is as real as the physical world, psychologically, economically, politically, and socially. What happens in the virtual world has a significant effect on the physical world. It is not an overstatement to say that many of us now live in both the physical and the virtual world. It would be a mistake to think virtual world is unreal or imaginary. (p. 128)

I compared the virtual world to a foreign culture. If one wishes to live successfully in a foreign culture, one needs to have the relevant capabilities. But schools, although charged with the responsibility for preparing children to be digitally competent, have by and large not been able to devote much effort to preparing children to live, learn, work, and socialize in the virtual world because of the demand and pressure of the traditional curriculum, which focuses too much on academic subjects. Schools do offer digital literacy or technology courses, but quite often the time devoted to these courses is quite limited. Instead of teaching students to live well in the virtual world, schools and parents often resort to banning the use of digital devices because of the widespread concern that children are incapable of using the devices responsibly and safely. But banning devices is only counterproductive and moving education online makes banning impossible.

This is a great opportunity to help children enter the virtual world with competency and wisdom. When schools are forced to offer education online, students must use technology. They are forced to learn in the virtual world all the time. To help them become productive learners and responsible citizens in the virtual world, schools should intentionally consider how to make good use of this opportunity to teach digital competency.

Speak education: Reimagine the "grammar" of schooling

The COVID-19 pandemic has indeed stimulated much talk about reimagining education. But the imagination has not escaped from the spell of the "grammar" of schooling: "the regular structures

and rules that organize the work of instruction" (Tyack & Tobin, 1994, p. 454). Over a quarter of a century ago, education historians David Tyack and William Tobin made the very insightful observation that schools have a set of grammatical rules and structures just like natural languages and:

> Neither the grammar of schooling nor the grammar of speech needs to be consciously understood to operate smoothly. Indeed, much of the grammar of schooling has become so well established that it is typically taken for granted as just the way schools are. It is the departure from customary practice in schooling or speaking that attracts attention. (p. 454)

The grammar of schooling, such as standardized organizational practices in dividing time and space, classifying students and allocating them to classrooms, and splintering knowledge into "subjects," is so powerful that it has persisted despite many repeated challenges by very courageous, intelligent, and powerful innovators. It has persisted despite mounting evidence and widespread acknowledgement that it is obsolete and does not serve our children well. It persists even during the COVID-19 crisis when students are not attending the physical school. Today, when children learning online at home, the mental image of school still rules our thinking.

Perhaps the basic "grammar" of schooling cannot be changed just like the basic grammar of English cannot be changed. In fact, if the grammar of English were changed, it would not be English anymore. Likewise, perhaps if the grammar of schooling were changed, it would not be school anymore. And that is very worrisome to people who want a "real school" and that worry of not having a real school is responsible for defeating attempts to reform schools because "so powerful is the hold of the cultural construction of what constitutes a real school" (Tyack & Tobin, 1994, p. 478).

Instead of changing its grammar, let's use a different language. Instead of speaking schooling, let's speak education. What the public wants, and the society needs is not schooling; it is education. The school happens to be the institutions we built at a certain point of time to deliver education. The design was inevitably constrained by the understanding of learning and the learner, teacher and teaching, and operating of organizations as well as the resources and technology available at that moment.

COVID-19 has forced us out of schools and given us the opportunity to adopt a different language, the language of education. While there may not be much time before we are back to school, it is at least a chance to start practicing the new language. We can begin with some of the most basic grammatical rules.

Timetables/Class schedules. Schooling sometimes works against education. How it structures time is a good example: A year is divided into different segments, some of which (terms/semesters) are designated for learning while others (summer/winter vacations) are not; terms/semesters are divided into different chunks marked by exams (mid-term and end of term); days are divided into class periods.

There is ample evidence of "summer learning loss" (for people in the southern hemisphere, this may be "winter learning loss"). A Brookings Institution review (Quinn & Polikoff, 2017) of research shows: (1) on average, students' achievement scores declined over summer vacation by 1 month's worth of school-year learning, (2) declines were sharper for math than for reading, and (3) the extent of loss was larger at higher grade levels.

We also know that quite often deep, authentic, product/project/problem-based learning projects can last much longer than one semester, but the project must end when a semester ends because the teacher needs to give the students a grade and/or the course is not continued the next semester. We also know that meaningful learning requires much more than 35 or 45 min, but the learning must stop because students have to go to another class.

Timetables have also been one of the most challenging problems when trying to introduce new ideas. Even when school leaders and teachers recognize the importance of teaching something new, they often run into the problem of lacking openings in the timetable.

To speak the language of education, we should not be constrained by the existing rules about how to structure time in schools. We should rethink how time can be best used to support learning. Thus, it is a great mistake to simply replicate school scheduling in online education when schools are closed.

Subjects. Another example of schooling working against education is the practice of "splintering knowledge into subjects," which goes hand in hand with splitting learning time into class periods. While there are some subjects that may be better taught as individual subjects for some students, the habit of splintering everything into subjects and then translate into courses is detrimental to the development of the whole child. It forces the development of essential competencies such as creativity, entrepreneurial thinking, and global competency into isolated boxes as if these competencies could be developed without deep knowledge and skills in certain domains or as if math or science could be divorced from these competencies. Even social and emotional well-being has to be taught as a separate class as if social and emotional well-being could not be developed in other subjects.

There has been increasing recognition of the educational benefits of multidisciplinary, cross-disciplinary, and competency-based learning as well as collaborative team teaching. This would be a great moment to practice casting away the grammar of schooling and start trying some of these innovative ways of education.

Student grouping. Grouping students by age is another feature of the "grammar of schooling" that runs contrary to education. We know that children's abilities vary a great deal and are not neatly aligned with their chronological age, but they are often stuck in the grade level corresponding to their age. Some children may be above and others may be below what is taught. The result is that

both groups are frustrated and disengaged. While the topic of ability grouping is controversial (partly because the term has many different meanings), we cannot ignore the fact that grouping students according to their ages does lead to poor educational experiences for a large proportion of children.

Students must be put into groups in schools because a group of students must be taught or supervised by an adult. The image of a class without a teacher in front of a blackboard violates the "grammar" of schooling. There has been growing call for personalized learning (I prefer personalizable education). There is ample evidence of benefits of peer mentoring, social learning, and collaborative learning online and f2f.

Given that the students are now at home and online, can we not try different ways to create better learning communities?

Let's Hope This Time Can Be Different

Tyack and Tobin's essay in 1994 has a depressing and discouraging message for innovators. The history of education is not filled with success stories of innovations that challenge the "grammar" of schooling:

. . . they [innovators] have tried:

to create ungraded, not graded, schools,

to use time, space, and numbers of students as flexible resources and to diversify uniform periods, same-sized rooms, and standard class size,

to merge specialized subjects into core courses in junior and high schools or, alternatively, to introduce departmental specialization into the elementary school,

to group teachers in teams, rather than having them work as isolated individuals in self-contained classrooms.

Typically, these innovations have not lasted for long. (p. 455)

The COVID-19 pandemic has caused so much damage and disruption in every aspect of human society that its impact will last a long time into the future. It will alter many industries forever. It has given us the opportunity to abandon schooling for education.

Let's not try to improve schooling. Instead, let's try to reimagine education.

From "Yes, but" to "Yes, and . . .": Reimagine possibilities and obstacles in educational change

Almost everyone thinks education should change and everyone seems to agree with the general directions of change. (While the specifics of the desired change vary, the fundamentals are very

similar—personalization, student agency/voice/self-determination, less testing, more authentic learning experiences, and attention to the whole child and cultivating different sets of skills and competencies.) Moreover, there are many wonderfully successful examples of the education we aspire to have. Numerous teachers, school leaders, and even students have taken actions to translate their aspirations into realities. Although the totality of the traditional education establishment seems to be intact, there is abundant evidence to show that changes can happen. However, I still meet with many people with the "yes, but" mindset.

The "yes" is an endorsement of the merit and need of the proposed change, a nod to the possibility of change. The "but" lays out reasons for why the change cannot or should not be enacted in their own contexts. It is a list of factors that make their contexts different from others. The specific reasons can be expressed in different ways but generally reflect a concern over potential failure and negative consequences of the change, a lack of conditions that enable the change, and possible oppositions to the change. The reasons can be perceived or actual. Either way, they can be very convincing since no change, especially the more radical changes, can be guaranteed to be successful, positive, and easy to implement. Otherwise, the change would perhaps not be needed. As a result, the "buts" become powerful arguments and convenient rationalization for inaction.

To make the changes we desire, we need to replace the "yes, but" mindset with the "yes, and" mindset. The latter treats the "buts" as challenges to address rather than insurmountable obstacles. When we take actions to confront the "buts," a few things could happen.

Some of the problems that overwhelm us may just disappear. A common "but" is the genuine concern that we are so overwhelmed with current problems, such as coping with the COVID pandemic, that we do not have time, energy, or resources to think about innovations. But innovation may just make the problems go away. When automobiles replaced horse wagons, the public health hazard posed by horses went away, so did all the problems associated with keeping cities clean from dead horses and horse waste. Of course, new problems will appear but you are then solving problems of a new paradigm.

The standards are not as restrictive as we thought. Another common "but" is the belief that government curriculum standards, accountability standardized testing, and college admission requirements pose a tight control of what schools and teachers can do. Indeed they are, but there are work-arounds and actually room (albeit limited) for innovations, as many educators and schools have found.

There is less resistance than we thought. One often cited "but" that stops innovation is the perceived enormity or active resistance from others—parents, students, colleagues, leaders, and so on—and it does indeed exist, but the scale and power of such resistance can be exaggerated in our mind. I have found a quite interesting phenomenon throughout the years: mutual perception of

resistance or anti-change. That is, one group often points to others as the source of resistance or unwillingness to change. School leaders ask what to do to get teachers to innovate, and teachers ask about how to make leaders to be open to change. Teachers and school leaders worry that parents want to perpetuate the tradition and fight against changes, and parents complain schools are too traditional. The same happens between students and educators as well as policy makers and education practitioners. I am sure that given the large numbers of teachers, school leaders, parents, students, and policy makers as well as the variations of contexts, variation in attitude toward changes (and what kind of changes) is large. But there are always people in every group who desire change. They may not be vocal advocates for change, but they can be sympathetic and supportive.

Change may not require more effort or resources. Change can be hard but does not necessarily require more effort and extra resources. Teachers work very hard. But for some, their hard work does not pay off in terms of student learning and job satisfaction. Changes that bring better student learning and make teaching more satisfying do not require them to put in more time or energy. At the school level, smart changes not only do not require extra resources, they could save costs.

To collect evidence that we do not have to be constrained by the "yes, but" mindset, I worked with a group of colleagues to collect stories of students, teachers, and school leaders who have made radical changes. We report these stories in the book *An Education Crisis is a Terrible Thing to Waste: How Radical Changes Can Spark Student Excitement and Success* (Teachers College Press, 2019). Below is a slightly edited excerpt from the introduction of the book:

> This book is a collection of stories of educators who have responded to the need for change with "yes" without being immobilized by the "buts." Like everyone in education, these ordinary educators have faced the same "buts" but decided to take action anyway. It is not so much that they did not consider the potential for failure or repercussions, nor were they freed from constraints, oppositions, or resistance. Rather, they confronted the unfavorable conditions and directed efforts to address them. The "buts" become problems to be solved rather than excuses for inaction. How they confronted and addressed their unfavorable conditions and pushed their practices forward provides great insights for moving beyond the "yes, but" mindset.

> The stories here have been carefully selected and thoughtfully examined. To begin with, the educators we examined in this book have all embarked on a specific line of innovation—efforts to break away from the traditional one-size-fits-all education that overemphasizes standardization, standardized testing, and acquisition of knowledge. The innovative efforts these educators have engaged in all aim to make education more child-centered (vs. curriculum-centered), more authentic and product-oriented (vs. standards and test-oriented), and more globally connected (vs. confined to a classroom). These efforts are the needed changes in education in order to prepare children for a world that needs more innovative, creative, entrepreneurial, and globally competent individuals. Thus, as one can imagine,

their efforts are in direct opposition with the heavy tradition of Industrial Age education and recent government policies for standardization, standardized testing, and knowledge acquisition.

The cases of education innovations included in this book were also selected to represent the various "buts" commonly used to reject innovations. Each story illustrates how educators confronted and addressed a largely unfavorable condition or perceived impossibility. The fear of losing existing success is a common reason cited by many already successful schools for not engaging in changes, but we have found schools that have been traditionally successful engage in radical changes. The lack of resources has also been a common reason used for not engaging in innovations, but we have found "broken" schools to take bold actions. Similarly, traditional constraints such as standardized curriculum, standardized testing, and college admissions have often been listed as reasons for limiting autonomy needed for innovations, but we have discovered educators who have done amazing things regardless of these constraints.

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