

Chapter 22

Conclusions: What Innovations Resulted from University–School Collaborations During the COVID-19 Pandemic?



Fernando M. Reimers and Francisco Marmolejo

Abstract Based on a cross-case analysis of the studies presented in this book, this study concludes that during the COVID-19 pandemic, universities engaged with school systems and school networks to sustain educational opportunity. They did so through entrepreneurial educational innovation in ways which helped integrate their research, teaching, and outreach functions. This finding speaks to the nature of universities as learning organizations, open to their external environment, not just to respond to changes in it, but to shape it.

This chapter identifies seven innovations that universities advanced in their collaborations with schools:

1. Research and analysis to support decision-makers in formulating strategies of educational continuity (outreach and research).
2. Advancing knowledge based on research in schools in the context of the pandemic (research).
3. Instructional and technological resources and online platforms for students and teachers, including efforts to support connectivity (outreach and teaching).
4. Professional development for teachers, education administrators, and parents (outreach).
5. Highlighting the importance of attention to socio-emotional support for students (outreach).
6. Organizational learning and innovation (synergies among research, teaching, and outreach).
7. Innovations in teaching: Engaging university students in these collaborations with schools (teaching).

F. M. Reimers (✉)

Harvard Graduate School of Education, Cambridge, MA, USA

e-mail: Fernando_Reimers@harvard.edu

F. Marmolejo

Qatar Foundation, Doha, Qatar

e-mail: fmarmolejo@qf.org.qa

© The Author(s) 2022

F. M. Reimers, F. J. Marmolejo (eds.), *University and School Collaborations during a Pandemic*, Knowledge Studies in Higher Education 8, https://doi.org/10.1007/978-3-030-82159-3_22

333

These seven innovations include products, solutions, processes, and managerial improvements, and for the most part they are evolutionary innovations and, in some cases, revolutionary.

These collaborations were facilitated by and, in turn, reinforced three institutional processes supportive of outreach:

1. University mission and strategy
2. Collaboration and institutional integration
3. Structures and preexisting collaborations with schools

22.1 What Does University Engagement with Schools During the Pandemic Say About Universities?

What does this study tell us about the role of universities in helping to sustain educational opportunities during the most serious global educational crisis of the century? How did universities step up to fill an evident void in capacity in the larger educational ecosystem, and just as importantly, what did this social engagement do for schools and for universities?

This study shows that, amidst the significant challenges caused by the COVID-19 pandemic, universities around the world found ways to support schools in sustaining educational opportunities. To do so they innovated, and such innovation reinforced the integration of the research and outreach functions of the university. These innovations created value for schools by helping them meet the need to educate students in the new context created by the crisis, especially the challenges stemming from social distancing requirements. Universities created these innovations largely by mobilizing existing staff and resources, rather than by obtaining new resources or diverting resources assigned to address other needs to serve the emergent needs of schools. In other words, the university responses identified in this study were the result of entrepreneurial innovations, rather than the result of sharing existing capacity or resources with schools.

Given that the uncertainties created by the pandemic included also uncertainties about financial resources, judicious use of existing resources was an implicit, and sometimes also explicit, element of the context in which universities had to innovate to support schools. In addition to having to create value while using existing resources prudently, the entrepreneurial responses that produced such innovation had to create value based on existing capacity and resources, in a context of multiple demands on them and amidst great uncertainty about how the pandemic would evolve, including how long it would last. Speaking metaphorically, such process of innovation took place not while navigating a ship in stable waters, but in a storm without a clear view of the horizon and without a clear sense of how long the storm would last. It is arguably more challenging to see the opportunities in a stormy context of that sort and, perhaps for that reason, the case studies in this book offer only some evidence of integration between the functions of outreach and teaching in these collaborations between universities and schools.

Since we relied on a sample of convenience for the survey we administered to 101 universities, as well as for the twenty case studies examined in this book, we cannot ascertain what percentage of the more than 28,000 universities around the world supported schools and school systems during the pandemic. We also do not know how sustainable the collaborations we observed will be in the long term or what their long-term effects will be for institutions or individuals, since the focus of this study was on responses in the immediate months after the outbreak of the pandemic. Furthermore, it is still too early to know how effective these innovations will be in preventing or mitigating learning loss, school dropout, or mental health challenges to school-age students.

However, it is conceivable that just as the experience of living through this pandemic will have a lasting impact in the lives of the survivors, not least in how the experience changed their aspirations and sense of purpose, it is also possible that students, faculty, and staff whose experience of the pandemic was mediated by the university responses to it, including the collaborations we studied in this book, will be changed in lasting ways. Maybe students who engaged with schools during the pandemic will become more interested in inequality and in education in the future. Maybe their solidarity with others will be augmented as a result of these experiences. Maybe they and their professors will become more adept at dealing with “super wicked problems” as a result of the experiences gained during the pandemic. Perhaps the faculty who participated in various outreach efforts will develop different professional priorities for their teaching or their research. Maybe those who participated in broad outreach efforts to the larger public will come to expect such levels of outreach for their future work. And it is possible that university leaders themselves develop a new sense of urgency around deepening the engagement of the university with the larger education ecosystem as a result of what they learned from the engagements described in this book. We cannot answer these questions at this point given the limitations we have acknowledged, especially the limitation of conducting this study while the pandemic was still unfolding.

These limitations notwithstanding, it is, nonetheless, remarkable that in a context challenging all education institutions to themselves figure out how to carry out their core activities in the new context created by the pandemic, the universities studied in this book would give outreach to schools such importance. While it could be argued that they did so out of self-interest in the case of preexisting partnerships with schools, for instance in the schools that provided placements for student teachers from teacher education programs in the universities, or for the schools which were part of the same university systems that collaborated with them, it would have been entirely justifiable that in a context of uncertainty universities hunkered down and focused only on activities defined as essential or core, a criterion that most activities of outreach examined in this book would hardly meet. It is precisely because universities had a choice to *NOT* engage with schools that the fact that they chose to engage is indeed remarkable. Furthermore, a good many of the activities described here reached out to constituencies and schools that were not part of the university system or with whom universities had preexisting relationships.

It speaks to the high importance universities assign to their social responsibility that they rapidly innovated in teaching and learning to sustain educational opportunity in schools when their own ability to deliver in person instruction was severely challenged by the measures to contain the spread of the virus requiring them to adjust and look for novel ways to teach their own students.

The efforts studied in this book illustrate that universities are indeed institutions open to their external environment; in fact, a number of the collaborations examined in this study were possible because of preexisting partnerships between universities and school networks. This study shows that universities have embraced the third mission of reaching out to their communities to meet their needs, arguably taking it as seriously as the research and teaching missions, even amidst, or perhaps especially, during a global crisis, a time when many activities deemed “nonessential” were understandably interrupted. Just as important, they embraced that mission entrepreneurially, not just sharing existing capacity and resources but creating new products or services in a context of financial constraints and depending largely on the creative use of existing resources.

The evidence examined in this study suggests that universities are indeed open systems, in interaction with their environment, able to discover changes that can influence them and to change in response to those changes. While discovering the crisis caused by COVID-19 did not require especially fine-tuned perceptive capacities, understanding that the consequences of the crisis for schools were important enough for universities to consider addressing them a “core” activity did evidence well developed foresight and social sensibilities.

In choosing to collaborate with schools during the crisis, universities demonstrated that they are also able, to the extent that such efforts are successful, to create better futures, as the result of the innovations they can generate. This evidence challenges the view of universities as “ivory towers” isolated from the surrounding environment and detached from local immediate problems.

As a result of collaborating with schools, universities not only generated clear and valuable innovations to sustain educational opportunity and to improve it, but this process also contributed to transforming internal university processes in ways that enhanced their own ability to deliver on the third mission of outreach. In this concluding chapter, we identify seven innovations resulting from these collaborations, analyze them, and discuss the three ways in which those collaborations began to transform the universities we studied.

The collaborations that the case studies describe, and those reported in the survey administered to 101 universities, resulted in the following seven innovations pertaining primarily to outreach, but extending to research and teaching as well, and creating synergies among these three functions of the university:

1. Research and analysis to support decision-makers in formulating strategies of educational continuity (outreach and research)

2. Advancing knowledge based on research in schools in the context of the pandemic (research)
3. Instructional and technological resources and online platforms for students and teachers, including efforts to support connectivity (outreach and teaching).
4. Professional development for teachers, education administrators, and parents (outreach)
5. Highlighting the importance of attention to socio-emotional support for students (outreach)
6. Organizational learning and innovation (synergies among research, teaching, and outreach)
7. Innovations in teaching: Engaging university students in these collaborations with schools (teaching)

These seven innovations include products, solutions, processes, and managerial improvements, and for the most part they are evolutionary innovations and, in some cases, revolutionary.

Products

- Research and analysis to support decision-makers in formulating strategies of educational continuity
- Advancing knowledge based on research in schools in the context of the pandemic
- Highlighting the importance of attention to socio-emotional support for students

Solutions

- Instructional and technological resources and online platforms for students and teachers, including efforts to support connectivity

Processes

- Professional development for teachers, education administrators, and parents
- Innovations in teaching: Engaging university students in these collaborations with schools

Managerial improvement

- Organizational learning and innovation

These collaborations were facilitated by and, in turn, reinforced three institutional processes supportive of outreach:

1. University mission and strategy
2. Collaboration and institutional integration
3. Structures and preexisting collaborations with schools

22.2 Which Innovations Resulted from Collaborations Between Universities and Schools?

1. Translating existing research-based knowledge and carrying out research and analysis to support decision-makers in formulating strategies of educational continuity

A form of collaboration involved translation and dissemination of existing research-based knowledge in service of supporting education leaders, teachers, parents, and students in schools during the pandemic. To provide guidance in a short time frame, this form of collaboration involved a combination of synthesizing existing knowledge in ways relevant to the circumstances created by the social distancing requirements imposed by public health authorities, organizing and facilitating convenings, and accessing and translating research from other contexts, as well as carrying out analysis of empirical evidence collected during the crisis. In some cases, this form of collaboration involved engaging in activities to extract knowledge from the practice of those who were leading in response to the pandemic and facilitating exchange of ongoing practices in various convenings. Often efforts of dissemination evolved from one-way sharing of knowledge from university faculty and staff to schoolteachers and staff into two-way forms of exchange. As these dialogues evolved, this caused university staff involved in these dissemination efforts to learn from the schools and from the challenges they faced, which influenced their own research interests and agendas.

The Getulio Vargas Foundation in Brazil, for instance, organized a series of convenings of education decision-makers in various states and municipalities and carried out research and analysis to support them in formulating strategies for educational continuity. The Higher School of Economics (HSE) in Russia carried out similar tasks, informing policies of education continuity at various levels of government. HSE also created various platforms to disseminate the research it was conducting on the readiness of various systems for strategies of educational continuity.

The Pontifical Catholic University of Chile (PUC) relied on the expertise of the faculty to offer guidance to the Ministry of Education on how to prioritize the curriculum to sustain education in the context of diminished capacity for delivery created by the suspension of face-to-face instruction. They also provided guidance on how to prioritize socio-emotional attention to students in response to the anxiety and stress created by the pandemic.

In Japan, Keio University offered the research expertise of the faculty to the local government and to the Ministry of Education, which led to a significant regulatory change in the kind of internet connections schools were allowed to use. This change led schools to implement distance education in ways which are socially acceptable and economically feasible, reducing the initial investment and operation cost.

The Qatar Foundation (QF), a multi-institution education platform, convened multiple global seminars to take stock of the needs created by the pandemic and to

facilitate the rapid exchange of knowledge that would support educational continuity not only in Qatar but also in other participating countries.

Bahçeşehir University in Turkey disseminated knowledge and resources during the pandemic to support emotional well-being, mitigating stress and anxiety of students and parents in the schools affiliated with the network of which Bahçeşehir is a part.

While these activities are best characterized as outreach, they also reinforced other functions such as research or teaching as a result of bringing faculty into closer connection with schools and school systems, educating them on their emerging needs, and likely opening up opportunities for new research agendas.

2. Advancing knowledge based on research in schools in the context of the pandemic.

In addition to the rapid research and analysis done to support education decision-making as described above, universities developed more elaborate research projects, either as extensions of work that began as they engaged with schools and education authorities to support sustaining educational opportunity during the pandemic or as they modified preexisting research projects so they could be adjusted to the context of distance education caused by the pandemic.

In some cases, engagement of the universities in research as avenues to support collaborations with schools influenced the research agenda of the universities in ways that are likely to continue beyond the pandemic. For instance, the collaborations established by the Higher School of Economics in Russia influenced major research agendas of the institute, especially on educational inequality and digital transformation.

The Institute of Education at the University of Lisbon pivoted two research projects with school networks—which focused on building teacher capacities in the use of digital technologies and in teaching STEM subjects—to an online environment. In this way, an action research project, developed prior to the pandemic, was transformed to offer just-in-time support to teachers in developing competencies relevant in the context of the need to teach remotely arising out of the pandemic.

Also, at Massey University in New Zealand, researchers modified a preexisting research project on learning mathematics to explore how family members engaged in students' learning of mathematics while they were confined at home by the social distancing requirements.

Because the educational effects of the pandemic will likely continue after the health crisis subsides, the engagement of universities in research responsive to these emerging needs created by the pandemic will position them well to continue to do work very relevant to the new educational challenges created by the pandemic.

3. Provision of instructional and technological resources and online platforms for students and teachers, including efforts to improve connectivity

Another form of collaboration involved universities distributing instructional resources or platforms to schools that could support educational continuity through remote instruction. In some cases, these were resources that existed prior to the

pandemic; in other cases, these were developed during the pandemic or modified to fit the context of remote learning created by the school closures.

For example, the Getulio Vargas Foundation in Brazil shared online education resources developed for its virtual school with other schools in the country. Similarly, the University of Chile provided internet connectivity and resources to marginalized Chilean regions.

In China, Tsinghua University provided access to online courses for elementary and secondary students.

In Colombia, EAFIT assisted in the development of the national multimedia platform used to support educational continuity by the Ministry of Education in Colombia, and they also reached out to 96 secretaries of education to assist them in developing a strategy for educational continuity and providing professional development to principals and teachers.

In Mexico, the Autonomous University of Puebla (BUAP) rapidly pivoted a residential entrepreneurship education program into an online program that was offered to students at the high school and college level who were in institutions that were part of the university.

The Higher School of Economics in Russia offered online instruction to students in using online tools and preparing for exams.

In the United States, Arizona State University offered online instruction to students in the schools it operates—face-to-face and online—while offering online college courses to high school students over the summer and online instruction for teachers to help them develop skills to teach online. In addition, they developed resources for students, families, and schools.

Additionally, the Massachusetts Institute of Technology's extensive engagement with precollegiate students pivoted to an online format. The institute also designed new online project-based learning programs.

The Camilo Jose Cela University in Spain offered digital resources to support students and parents during the pandemic. It also supported various marginalized groups, including refugees.

In Morocco, Al Akhawayn University developed online resources to teach middle school math and science; the platform was migrated to Ministry of Education servers for open online access, and it was used to offer online and offline solutions during the pandemic. Nonformal primary education classes in the University's Community Development Center were maintained and supported with university resources.

The Qatar Foundation developed several tools to assist remote instruction during the pandemic that were used by schools in Qatar.

Vietnam Education University developed digital resources to develop teacher capacity to support students' mental health.

These various forms of engagement in which universities shared resources, either technologies or digital assets, with the larger education ecosystem illustrate how the pandemic accelerated opportunities for democratizing access to assets developed in universities to the wider community. It also underscores the potential benefits resulting from the increased scale of engagement created when schools become part of

school networks that include universities and that allow considerable efficiency in creating and deploying technologies or instructional resources.

4. Professional development for teachers, education administrators, and parents

The collaborations designed by the universities to support precollegiate education during the pandemic augmented the capacities of education administrators, teachers, and parents in a variety of ways, relying on open-access webinars to disseminate information as well as on targeted efforts to assist particular schools over a sustained period of time. Just as importantly, such engagements also augmented the capacities of universities and their knowledge of online instruction and of a variety of ways to support lifelong learning.

Most of the universities engaged in some form of dissemination of information with the public, as was done, for instance, by PUC in Chile or Tsinghua University in China.

There were also more intensive efforts to support the development of capacity in targeted schools. In most cases, those efforts built on preexisting partnerships with those schools, often extending them. As it was mentioned earlier, some of these actions took place in the context of preexisting research projects that involved collaborations with schools as those pivoted to adjust to the context of remote learning, as was the case in the University of Chile, in the Institute of Education of Lisbon, and in Massey University in New Zealand. Other efforts did not grow from research projects but from preexisting collaborations focused on institutional strengthening.

For example, in Chile, PUC built partnerships with education authorities serving low-income communities, in which context they provided professional development to teachers.

In Colombia, EAFIT provided professional development to teachers and principals to teach remotely in 96 municipalities.

Symbiosis International University in India provided professional development for teaching online to teachers in the schools that are part of the network, and it also provided infrastructure to a number of rural schools that it ‘adopted.’

In Mexico, BUAP provided professional development to faculty in order to convert a residential entrepreneurship education program into an online program and to scale its reach.

Also in Mexico, the University of Guadalajara offered professional development to faculty in the university and in the high schools that are part of the university.

Furthermore, the Instituto Tecnológico de Monterrey developed a Flexible Digital Model for instruction, which was quickly and effectively transferred to the high schools that are part of the institution, supporting know-how to convert courses into an online format.

The Qatar Foundation offered professional development for teachers from all schools in the country, at the request of the Ministry of Education and Higher Education, so they could teach remotely.

In Russia, the HSE offered professional development to teachers and parents.

Bahçeşehir University in Turkey provided professional development on the effective use of technology to school principals in the schools affiliated with the network of which the university is a part.

This engagement between universities and schools around the professional development of teachers and administrators is significant because it brought attention to what is an emerging area of opportunity for universities: supporting lifelong learning and ongoing professional development in multiple fields, not just education. From the point of view of schools and education systems, access to university-based professional development made visible the many ways and domains in which partnerships with universities can augment their capacity. Such engagement also made more visible within the university the value of a wider range of formative vehicles—such as short courses, skill-based training, and programs to prepare teams in organizations rather than individuals—compared with the traditional degrees on which universities have conventionally depended as the main educational mechanisms to deliver education. It is likely that, as universities pursue the opportunities of lifelong learning, they will need a greater variety of mechanisms and that exclusive reliance on degree programs would be very limiting to meet the flexibility learners will need to access programming and the variety of needs they will have throughout their careers. Additionally, because these professional development activities took place in a context of physical distancing requirements, many of them were carried out remotely, in this way augmenting faculty capacity to teach online.

5. Highlight the importance of attention to socio-emotional support for students

As they developed collaborations with schools and education systems, universities did more than provide resources and supports for teaching remotely; they helped educators reprioritize the curriculum and, in particular, give greater attention to educational needs that the pandemic made more salient. One of those needs was emotional support for students, a need not consistently addressed by schools previously, but made more relevant by the stress and anxiety the pandemic caused among students and their families.

This area was prioritized by the Pontifical Catholic University of Chile as it assisted the Ministry of Education in rebalancing the curriculum.

In Tsinghua University, China, emotional support was also the focus of online learning camps delivered by the university.

Similarly, in Spain, the Camilo José Cela University developed and disseminated digital learning assets to support socio-emotional well-being. In Turkey, Bahçeşehir University did the same thing, focusing on supporting resilience and the mitigation of stress and anxiety for students and parents through digital learning resources and webinars.

In Vietnam, the Education University also supported the mental health needs of students through digital resources developed specifically during the pandemic.

The contribution of universities to reprioritizing curriculums and attending to the socio-emotional well-being and development of students is important in three ways: First, it reframes the conversation about the purposes of schools, underscoring the

importance of socio-emotional well-being in educating the whole child. Second, it inserts the university in the conversation of the precollegiate curriculum, a potentially important game-changer for education systems, if it is sustained beyond the pandemic. Third, this interest in the education of the whole child at the precollegiate level may extend into an interest in the education of the whole person at the university level which might in turn translate into efforts to make the education of university students more relevant to the world they will inhabit.

6. Organizational learning and innovation

The engagement of the university in collaborations with schools for the purpose of sustaining educational opportunities represented an opportunity for rapid innovation. In all featured cases, as discussed at the outset of this concluding chapter, the contributions of the university reflected some form of educational innovation. In addition, in some cases, these innovations seem to have generated distinct opportunities for organizational learning within the university, helping it reframe preexisting work or the relationships between work carried out in distinct units in the university. For example, at PUC Chile, the engagements of its school of education with schools strengthened a conversation on the relationship of faculty research with practice. This conversation spotlighted the importance for the school of education to be deeply connected to practice and the importance of developing an intentional focus on low-income students. In his remarks in one of the webinars arranged by the university, the president emphasized the value of understanding the dialogue between universities and schools as a two-way dialogue that could build durable ties, which would contribute to the improvement of education.

At the Universidad de Chile, the use of online modalities to sustain an improvement network to prevent student dropout led to a significant redesign of the theory of action of this activity within the university as a result of using online tools, with greater emphasis on the collaborative nature of the relationship and on the importance of creating participatory processes to design the improvement efforts, relying on technological tools.

At the Tecnológico de Monterrey, a Mexican university with extensive experience in online learning, the pandemic provided the opportunity to rapidly deploy a model of flexible and digital learning, which was adopted at the university and secondary school level. The university is monitoring and evaluating the model and conceptualizing the lessons learned, for the purpose of advancing institutional knowledge about digital instruction. This is one of the clearest examples of institutional learning resulting from collaboration.

In New Zealand, Massey University's modification of a research project on mathematics education with indigenous communities—investigating how to adapt an asset-based and culturally affirming approach to mathematics education as students learned from home—generated valuable conceptual knowledge in addition to that which resulted from an ongoing research project.

At Arizona State University, an innovation to help teacher candidates develop online lessons during the pandemic enhanced interest at the school of education in preparing teacher candidates effectively for online instruction. The pandemic also

accelerated the university's work on the Next Education Workforce Initiative, an effort to redesign the teaching profession to be more collaborative, integrating individuals in various roles. The university has accelerated the development of micro-courses which can support various adults who are not certified teachers but can support student learning.

MIT's collaboration with schools and students at the precollegiate level during the pandemic resulted in the development and evaluation of an online project-based set of modules that reflected MIT's educational philosophy of learning from action.

In addition to these documented learnings resulting from these collaborations, other learnings are likely to have resulted, including learning to carry out most of this work and to teach using online platforms and technology, learning new ways to democratize access to knowledge for the larger community, and learning to collaborate across silos in the university for the purpose of addressing social challenges. Most significantly, these engagements provided many in the university community with an opportunity to learn to collaborate in order to tackle "super wicked problems."

These examples demonstrate how engagement in outreach to schools during the pandemic helped the university refine its approaches to research and teaching in ways that will likely have durable effects beyond the pandemic. They underscore how service to schools during the pandemic provided the university the benefit of synergies across activities in the areas of outreach, research, and teaching.

7. Innovations in teaching: Engaging university students in these collaborations with schools

Some of the universities saw in their collaborations with schools an opportunity to educate their own students. As the pandemic will remain a significant memory for students throughout their lives, providing them opportunities to engage in efforts to mitigate the losses it has caused is in itself a valuable lesson in civic engagement and leadership. In stepping up to be of service to schools, university students have likely also gained a range of important competencies that will serve them well as they participate civically and economically in a world in flux.

For example, Tsinghua University in China created a blended learning community, engaging precollegiate and college students in programs of online learning that foster intergenerational learning.

As part of the efforts supported by the Qatar Foundation, Georgetown University's campus in Education City, in Qatar, created several programs, which were implemented by Georgetown students, to support precollegiate students.

In Spain, the Camilo Jose Cela University engaged students in the university as teaching assistants for students in the school network part of SEK.

In Turkey, Bahçeşehir University engaged graduate students in supporting schools that are part of the Bahçeşehir network in providing support for the emotional well-being of students.

Arizona State University engaged teacher candidates in a program where they developed and delivered online instruction in local schools.

MIT engaged undergraduates as facilitators of a new online project-based course for precollegiate students.

These examples illustrate also the synergies that the pandemic enabled between outreach and teaching. In opening their doors to the world and in building bridges to schools, universities provided their own students with opportunities to learn problem-solving, adaptation, service, leadership, resiliency, and above all the capacity and disposition to be upstanders rather than passive spectators in the face of human suffering and social need.

22.3 What Type of Innovation Did These Collaborations Motivate?

Innovation requires new ideas, but it is more than ideation. It involves the creation of value for the purpose of solving problems or meeting unmet needs. It has been defined as “the successful implementation of creative ideas within an organization” (Amabile et al., 1996). Innovations can vary by degree: incremental, evolutionary, and revolutionary (Brown, 2009, 162–164). An incremental innovation involves the gradual improvement of a process or product, for example, as a result of improving efficiency. Evolutionary innovation involves extending offerings for existing customers as well as finding new customers for existing offerings. Revolutionary innovations create new offerings for new customers (Matthews & Brueggeman, 2015, 31–33).

Innovations can also vary by type: products, experience, solutions, systems, process, business model, and managerial (Ibid, 35).

The innovations created by the universities to support schools that were examined in this book consisted of products (knowledge briefs for policy makers or for the public), solutions (technological platforms to deliver content or to teach), processes (programs of professional development for teachers or experiences of service learning for students), and managerial (collaboration between two preexisting programs or administrative units).

In terms of degree, some are incremental innovations (improvement in existing products or processes for existing customers), evolutionary (extending existing products to new customers or creating new products for existing customers), or revolutionary (serving new customers with new products). We will examine the innovation matrix (innovation type by degree) for each of the seven innovations generated by these collaborations and described in the previous section.

22.3.1 Research-Based Knowledge and Conducting Research and Analysis to Support Decision-Makers in Formulating Strategies of Educational Continuity

22.3.1.1 Evolutionary Product Innovation (New Product, Same Customer)

The dissemination of knowledge and resources to support emotional well-being during the pandemic to students in the schools affiliated with the network of Bahçeşehir University in Turkey is an example of creating a new product for an existing customer and as such of evolutionary product innovation.

22.3.1.2 Revolutionary Product Innovation (New Product, New Customer)

Many of the collaborations examined in the book involve the creation of a new product (knowledge briefs) for new customers and as such of revolutionary product innovation. For instance, the convenings to share knowledge with decision-makers organized by the Getulio Vargas Foundation in Brazil—since the foundation also supported them in analysis as well as knowledge-sharing—that activity blends into a solution, illustrating that the collaborations can span several categories in the innovation matrix.

A similar activity was performed by the Higher School of Economics in Russia as they disseminated research to inform policies of education continuity at various levels of government.

The Qatar Foundation's global convenings to take stock of the needs created by the pandemic and to facilitate the rapid exchange of knowledge that would support educational continuity is another example of a new product, new customer; hence, revolutionary product innovation.

22.3.1.3 Revolutionary Solution Innovation (New Solution, New Customer)

The guidance offered to the Ministry of Education to reprioritize the curriculum by the Pontifical Catholic University of Chile (PUC) is an example of a solution innovation; since the solution is new as well as the customer, this is an example of revolutionary solution innovation.

A similar example was Keio University's assistance to the local government and to the Ministry of Education to guide regulations regarding internet connections allowed in schools.

22.3.2 Advancing Knowledge Based on Research in Schools in the Context of the Pandemic

22.3.2.1 Incremental Process (Same Process, Same Customer)

The pivot of the two research projects at the Institute of Education at the University of Lisbon to an online environment and a similar pivot at Massey University in New Zealand illustrate an incremental improvement in a process to serve the same customers.

22.3.2.2 Revolutionary Process Improvement (New Process, New Customer)

The development of new research agendas on educational inequality and digital transformation by the Higher School of Economics in Russia is an example of a new process and new customer resulting from the collaboration.

22.3.3 Provision of Instructional and Technological Resources and Online Platforms for Students and Teachers, Including Efforts to Improve Connectivity

22.3.3.1 Evolutionary Solution (Same Solution, New Customer)

Dissemination of online education resources developed by Getulio Vargas Foundation in Brazil for its virtual school illustrates finding new customers for an existing solution.

A similar type of incremental solution innovation is the provision of internet connectivity and resources by the University of Chile to marginalized Chilean regions.

A similar incremental solution was provided by Tsinghua University in extending access to existing online courses for elementary and secondary students.

22.3.3.2 Revolutionary Solutions (New Solution, New Customer)

EAFIT's assistance to the Ministry of Education in Colombia and to 96 secretaries of education in developing a strategy for educational continuity and providing professional development to principals and teachers illustrates new solutions for new customers.

22.3.3.3 Incremental Process Innovation (Same Process, Same Customer)

Several universities created online versions of existing programs to serve their own students, illustrating incremental process innovation. These incremental process innovations include the Autonomous University of Puebla (BUAP) pivot of their residential entrepreneurship education program to an online modality to serve their own high school and college students. Also, Arizona State University's offered online instruction for students in the schools it operates—face-to-face and online, another example of incremental process innovation. Similarly, the Massachusetts Institute of Technology pivoted to an online format to deliver its programs for pre-collegiate students.

In Spain, Camilo Jose Cela University's reliance on digital resources to support students and parents of the institution during the pandemic, as well as to support various marginalized groups, including refugees, is also an example of incremental process innovation.

22.3.3.4 Revolutionary Process Innovation (New Process, New Customer)

When the new process involves reaching new customers, this defines revolutionary process innovation. Examples include Arizona State University offering online college courses to high school students over the summer and online instruction for teachers to help them develop skills in teaching online, as well as developing new resources for students, families, and schools.

Similarly, the online instructions developed by The Higher School of Economics in Russia for high school students, including to help them prepare for exams, illustrate new processes for new customers.

22.3.3.5 Revolutionary Product Innovation (New Product, New Customer)

A prototypical example is Al Akhawayn University's development of online resources for teaching middle school math and science which were eventually transferred to the Ministry of Education servers, hence reaching impact at scale. Another example of new product and new customer innovation is the tools to assist remote instruction developed by the Qatar Foundation for schools in Qatar.

In the same category are Vietnam Education University's digital resources to develop teacher capacity to support students' mental health.

22.3.4 Professional Development to Teachers, Education Administrators, and Parents

22.3.4.1 Revolutionary Product Innovation (New Product, New Customer)

Most of the universities engaged in some form of dissemination of information to educate the public, such as the case of the Pontifical Universidad Católica in Chile or Tsinghua University in China.

22.3.4.2 Incremental Process (Same Process, Same Customer)

A number of existing processes of professional development pivoted to an online format, creating incremental improvements to existing processes to serve the same customers of the universities, usually schools with preexisting partnerships with the universities, such as the action-research projects at the University of Chile, in the Institute of Education of Lisbon, or in Massey University in New Zealand.

22.3.4.3 Evolutionary Process Innovation (New Process, Same Customer)

These include the efforts to offer a new process to existing customers. For instance, the novel professional development provided by Symbiosis University in India to the teachers in the network. Or the professional development BUAP in Mexico provided to faculty to migrate a residential entrepreneurship education program to an online environment; since one of the goals was to also scale the reach of the program, this is also an example of revolutionary process innovation in that it seeks to serve new customers.

Similar examples include the University of Guadalajara's provision of professional development to faculty in the university and in the high schools that are part of the university, as well as the Flexible Digital Model for Instruction that was developed by the Instituto Tecnológico de Monterrey and is used to help high schools that are part of the institution pivot online.

Similarly, professional development on the use of technology offered by Bahçeşehir University to school principals in the schools affiliated with the network is an example of evolutionary process innovation.

22.3.4.4 Revolutionary Process Innovation (New process, New Customer)

Beyond the dissemination of knowledge, universities engaged directly in ongoing efforts to develop capacities; for instance, the PUC in Chile supported teachers in low-income communities. In Colombia, EAFIT provided professional development to teachers and principals to teach remotely in 96 municipalities. Other examples

include the Qatar Foundation's professional development for teachers from all schools in the country and the professional development offered to teachers and parents by the HSE in Russia.

22.3.5 Highlight the Importance of Attention to Socio-emotional support for students

22.3.5.1 Revolutionary Solution Innovation (New Solution, New Customer)

All examples of this type of innovation involved creating new solutions to reach new customers. Among them are the assistance the Pontifical Catholic University of Chile provided the Ministry of Education in rebalancing the curriculum, the online learning camps delivered by Tsinghua University, the digital learning assets developed and disseminated by the Camilo José Cela University, and the resources and webinars developed by Bahçeşehir University and by the Education University in Vietnam.

22.3.6 Organizational Learning and Innovation

22.3.6.1 Revolutionary Managerial Improvement (New Managerial Practice, New Customer)

In Chile at PUC, the engagement of the school of education catalyzed a reexamination of the relationship of faculty research with practice. At the Universidad de Chile, the theory of action of an action research project to prevent school dropout was significantly revamped once online modalities were used to engage with the school improvement network.

22.3.6.2 Evolutionary Process (New Process, Same Customer)

The rapid deployment of the model of flexible and digital learning to secondary schools at the Instituto Tecnológico de Monterrey provided opportunities to advance institutional knowledge about digital instruction, creating a new process of instruction.

The pivot to online research on mathematics education among indigenous communities in Massey University generated significant conceptual knowledge on how to teach mathematics drawing on the knowledge funds of those communities, the foundation of new processes to serve those students.

At Arizona State University, an innovation to help teacher candidates develop online lessons during the pandemic enhanced interest in the school of education in

preparing teacher candidates effectively for online instruction, in effect creating a new process of teacher preparation.

MIT’s collaboration with schools and students at the precollegiate level during the pandemic allowed them to develop and evaluate an online project-based set of modules, a new format to advance a preexisting pedagogy.

22.3.7 Innovations in Teaching: Engaging University Students in These Collaborations with Schools

22.3.7.1 Evolutionary Process (New Process, Same Customer)

A few universities constructed opportunities to engage their own students in their collaborations with schools during the pandemic, in this way improving the instructional process for their students; for instance, in Georgetown University’s campus in Education City in Qatar, Camilo Jose Cela University in Spain, and Bahçeşehir University in Turkey, university students participated in the activities to support schools. Arizona State University did the same with teacher candidates. Tsinghua University in China created a blended learning community engaging precollegiate and college students in programs of online learning, and MIT engaged undergraduates as facilitators of a new online project-based course for precollegiate students.

It is worth noting that universities engineered the design and delivery of these innovations in a context of augmented constraints, not just financial but also the constraints resulting from physical distancing requirements. That meant that new delivery systems had to be used to deliver value to schools and communities. For example, to share knowledge with educators, parents, or decision-makers, universities depended largely on technology platforms rather than on more conventional means of communication that requires gathering in a conference hall or meeting room. Such innovation in the means of delivery has the potential to eventually lead to disruptive innovation; for example, in learning to use online platforms to share knowledge, universities realized the wider reach and inclusivity of such platforms. Such learning has considerable potential to influence future university knowledge dissemination activities, not just those focused on outreach to schools.

22.4 Which Processes Supported These Innovations?

The following three processes supported these collaborations and were in turn reinforced by them:

1. University Mission and Strategy

In most cases, the collaborations with schools were aligned with the university’s mission or strategy, which valued engagement with and impact with the community. This could be a key factor contributing to the most visible engagement shown by the universities sharing their experiences on this book.

For instance, in Brazil, the Getulio Vargas Foundation had established two centers focused on basic education as a result of seeing itself as an engine of innovation in Brazilian society.

In Chile, the participation of the University of Chile and of the Pontifical Catholic University in the social roundtable which the government established to provide policy guidance for the pandemic provided the framework to support the engagement of the schools of education in various collaborations with schools and also the collaboration between both universities.

In addition, the mission of the Pontifical Catholic University includes contributing to the improvement in the quality of life of those in the communities of which it is a part. This mission had led the school of education to develop a strong interest in their own impact on practice.

In Colombia, EAFIT's mission explicitly supports activities that contribute to national development.

In Mexico, the strategy of the Autonomous University of Puebla emphasizes social impact.

The mission of the Institute of Education at the University of Lisbon includes expanding and deepening collaborations with the education system and contributing to the improvement of education and to supporting public policies through research, education, and outreach.

Russia's Higher School of Economics' overall strategy to support evidence-based decision-making supported the university's involvement in research on education during the pandemic.

Bahçeşehir University's mission includes contributing to addressing the needs of the community in Turkey.

Arizona State University's vision includes taking responsibility for the economic, social, cultural, and overall health of the communities it serves and embracing delivery of instruction in many modalities, which provided the strategic support to extend already deep collaborations with schools during the pandemic.

In Vietnam, the Education University has a mission that includes enhancing general education through training and research, which provided the institutional backbone to the national initiative to support the mental health and socio-emotional development of students during the pandemic.

As these examples illustrate, university engagement with schools did not happen in a vacuum—it was enabled and supported by clear institutional priorities that valued such engagement and by leadership that provided the necessary supports for that engagement. In that sense, the pandemic was not a disruptor of the mission of the university, but rather an occasion to enact values and aspirations already reflected in the mission, perhaps making the significance of those values more visible to internal and external stakeholders of the university.

2. Collaboration and Institutional Integration

The engagement of the university with schools and school systems both depended upon and stimulated collaboration across various units within the university and between the university and other entities. This was very clearly the case for the

schools that were part of the same institution as a university, such as the Universidad de Guadalajara, Monterrey Tec in Mexico, Camilo Jose Cela University in Spain, or Bahçeşehir University in Turkey, in which the pandemic created the occasion for further integration of entities that were already part of the same institution.

At the Universidad de Guadalajara, the strategy to develop faculty capacity for online learning jointly for university and high school faculty supported greater integration across these two levels, a preexisting structural challenge which had proven difficult to tackle. Similar effects took place at the Universidad Camilo Jose Cela, in which engagement of university students with the schools that were part of the same educational institution as the university furthered collaboration across teachers in the network and university faculty members.

These collaborations were not just intra-institutional but inter-institutional as well. In Chile, the pandemic created the occasion for the University of Chile and the Pontifical Catholic University to strengthen collaborations both with education authorities and among themselves.

Similar institutional integration in response to the pandemic and as a way to more effectively collaborate with schools was observed in other cases. For example, in the Getulio Vargas Foundation, the various units that engaged with schools began to collaborate more intentionally in the context of the pandemic.

In Morocco, Al Akhawayn University's collaborations with foundations and other nongovernmental organizations allowed it to distribute laptops to students during the pandemic to support their education remotely.

The survey administered to 101 universities confirms that most respondents saw collaborations during the pandemic as opportunities to integrate and create synergies among preexisting collaborations involving various units in the university. In this way, the response to the pandemic created an opportunity for greater intra-institutional integration.

3. Structures and Preexisting Collaborations with Schools

These collaborations were enabled by and further developed the structures that facilitated them. Several of the universities developed networks with schools for collaboration, such as was the case in the University of Chile, the Pontifical Catholic University of Chile, Massey University, and the University of Lisbon. In other cases, the university was already part of an institution that included a network of schools or a network of schools was a part of the university. Preexisting collaborations with schools proved very valuable because they had already developed the structures that made possible the kind of rapid collaboration that the cases illustrate.

The Qatar Foundation had built partnerships with schools prior to the pandemic, all partner universities had outreach programs to schools prior to the pandemic, and the foundation signed an MoU with the Ministry of Education in 2019 for collaboration in a number of areas including teacher professional development. Once the pandemic broke out, the foundation was able to leverage this network to offer support during the pandemic and offer support to over 1,000 teachers.

A number of the private universities we studied, such as Al Akhawayn University in Morocco, drew from their private status the structural flexibility to establish partnerships that funded the outreach activities.

Most of these collaborations built on preexisting partnerships but often extended them to include other schools and scale their reach. In Brazil, the Getulio Vargas Foundation had a number of partnerships with municipal secretaries of education, on which the work to advise them in the development of education continuity strategies during the pandemic was built.

In Chile, the University of Chile had a prior public-private partnership with a foundation and an education authority serving low-income students to improve high school completion for those students and to prevent dropout, and it was this collaboration with the district that was transformed to provide such support during the pandemic.

The Institute of Education at the University of Lisbon also had preexisting partnerships with school networks that were adapted to continue to research during the pandemic.

Tsinghua University in China had a number of programs engaging precollegiate students, and their efforts during the pandemic first took those programs online and in some cases opened participation to other students.

In the Higher School of Economics in Russia, the collaboration with schools also built and expanded on preexisting partnerships.

EAFIT in Colombia had a long-standing preexisting relationship with the Ministry of Education, dating back to the creation of the Ministry's education portal, which included some education resources. The Ministry's strategy consisted first of repurposing that portal to serve as the platform to support teachers, students, and parents in teaching and learning remotely, and EAFIT was a lead partner in this effort.

A number of these collaborations involved universities with schools that were part of the same institution as the university or with schools which were part of the same university. In those cases, preexisting collaborations and institutionalized structures facilitated the collaborations. This was the case for Tsinghua University, Arizona State University, Symbiosis International University, Bahçeşehir University, and Camilo Jose Cela University.

The survey administered to 101 universities confirms that most of them see collaborations with schools as part of their mission and already had a number of collaborations with schools prior to the pandemic, administered—most of them—by an institute or a school of education. About two-thirds of the survey respondents reported that their senior leaders had sought out schools and school systems to offer support, and most of them had developed collaborations with schools during the pandemic. The majority of those collaborations built on preexisting relationships with those schools.

22.5 Conclusion

This cross-national research effort shows that, for the universities included in our study, the high impact disruptions in the external environment caused by the pandemic provided an opportunity to generate educational innovation which contributed to sustaining educational opportunity in schools and school systems. The study also shows that the innovations, generated in this disruptive context, speak to the nature of the university as an entrepreneurial and socially embedded learning organization. The case studies provide some evidence that the processes which supported these innovations, all of them crucial to sustaining a learning organization (a strategy oriented to the external environment, collaboration and internal integration and structures and preexisting collaborations), were enhanced as a result of participating in these collaborations.

These collaborations fed back in particular into the research function of the university, redirecting existing or novel research efforts towards themes made salient by the pandemic: the importance of learning a breadth of skills, the importance of attending to school inequality, or the role of digital learning. There was some feedback from this community outreach into the teaching function of the university, but this appears to have been more modest. Only a few of the universities examined in this book, such as Arizona State University and the Camilo Jose Cela University, translated their collaborations into new teaching opportunities for their students or into knowledge that transformed the way in which they approached teaching for their own students.

The collaborations universities developed with schools during the pandemic did influence views on what students should learn in schools, emphasizing in particular the importance of emotional well-being, but did not seem to have had broader impact in influencing the agenda of what competencies and skills students should learn in school, a timely topic on the agenda of a number of governments. In most cases, these collaborations also appear to not have influenced views on what university students should learn.

The collaborations created multiple learning opportunities for the faculty and staff directly involved in them, causing some faculty to reorient their research interests or develop novel interests as a result of the strengthened communications with schools.

The collaborations depended on and reinforced collaboration, team learning, a culture of experimentation and innovation, and new forms of rapid exchange of information resulting from intra- and inter-institutional collaboration.

The survey administered to 101 universities indicates that the strategy guiding these efforts is incipient, as only a third of the respondents indicated that these collaborations were guided by a clear theory of action, while an additional third of respondents indicates that such theory of action is “emerging.”

This study provided a snapshot of how a group of universities around the world responded to a major global disruption. Our study examines such response narrowly, looking at how universities collaborated with precollegiate educational

institutions in the immediate aftermath of the pandemic. The results confirm that universities are learning organizations that consider outreach to society to be an important aspect to their mission. In so doing, they also change themselves, in ways that deepen their capacity to not just respond to emerging social needs but to imagine and build a better future.

It is clearly too early to tell whether the disruptions caused by the pandemic will result in an enduring transformation of education systems, or of the universities, and whether these emerging collaborations will be sustained and deepened as the effects of the pandemic unfold. If the innovations created to sustain educational opportunity during the pandemic end up anticipating a reimagined education system, sustained by more robust networks where schools and universities collaborate, and if the engagement of universities in the enterprise is sustained and deepened, the responses of universities to the pandemic will have reshaped the larger teaching and learning ecosystem and will have indeed contributed to “building back better.”

Perhaps the efforts documented in these case studies are the incipient signs of such commitment of the university to transforming educational opportunity broadly. Should these efforts evolve into robust partnerships with schools and other learning institutions to supporting learning in many ways and throughout the lifespan, making greater commitments to contributing to “build back better,” this might be good not just for universities and for schools but, even more importantly, for human flourishing in the communities in which the universities are located at a time when the looming challenges and fractures caused by the pandemic make such leadership indispensable.

References

- Amabile, T., Conti, R., Coon, H., Lazenby, J., & Herron, M. (1996). Assessing the work environment for creativity. *Academy of Management Journal*, 39(5), 1154–1184.
- Brown, T. (2009). *Change by design*. Harper Business.
- Matthews, C., & Brueggemann, R. (2015). *Innovation and entrepreneurship*. Routledge.

Fernando M. Reimers is the Ford Foundation Professor of the Practice of International Education and Director of the [Global Education Innovation Initiative](#) and of the International Education Policy Masters Program at the Harvard Graduate School of Education. An expert in the field of global education, his research and teaching focus on understanding how to educate children and youth so they can thrive in the twenty-first century. He is a member of UNESCO’s high-level commission on the Futures of Education.

He has written or edited forty academic books and, since the onset of the COVID-19 pandemic steered the Global Education Innovation Initiative to carry out research that can sustain educational opportunity or contribute to building back better. With his graduate students, he has developed three curriculum resources aligned with the UN Sustainable Development Goals, which are translated into multiple languages and widely used by schools and school systems around the world.

Francisco Marmolejo is Higher Education President at Qatar Foundation (QF), where he leads QF's support and coordination activities to the unique ecosystem of eight prestigious universities offering in Education City in Doha, Qatar, more than 70 undergraduate and graduate programs to students from 60 countries. Previously (2012–2020), he worked at the World Bank, where he served as the Global Higher Education Coordinator, based in Washington, DC, and more recently as Lead Higher Education Specialist for India and South Asia, based in New Delhi. From 1995 to 2012, he served as founding Executive Director of the Consortium for North American Higher Education Collaboration, a network of more than 160 universities mainly from Canada, USA, and Mexico, based at the University of Arizona, where he also worked as Assistant Vice President, Affiliated Researcher at the Center for the Study of Higher Education, and Affiliate Faculty at the Center for Latin American Studies. Previously, he has been American Council on Education [Fellow](#) at the University of Massachusetts, Academic Vice-President of the University of the Americas in Mexico, and International Consultant at OECD in Paris. He has received honorary doctorate degrees from his alma mater, the University of San Luis Potosi, and the University of Guadalajara in Mexico.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

