

Qangaroo: Education Continuity on an Ethical and Inclusive Technological Platform

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Introduction

In the midst of the current Covid-19 pandemic, societies have been altered and forced into an unprecedented way of living. It tore apart traditional beliefs and conceptions and forced millions to rethink the way they work and live their lives.

This disruption has not spared governments, industries, religious entities and even schools. In fact, in educational institutions around the world, instruction delivery abruptly shifted from face to face instruction to an online mode in practically one week. There was all around confusion as teachers and students rapidly adjusted to an untested educational platform.

In the world of education, this disruption has made a deep impact that can linger for years. The U.N. Secretary-General Antonio Guterres in his statement during the opening of the High-Level Segment of the 43rd session of the Human Rights Council, at the European headquarters of the United Nations in Geneva, Switzerland, on Monday, Feb. 24, 2020 stated that “progress lost takes years to regain,” citing as an example teenage girls who are out of school and may never return (Lederer and Press 2020). Education has been forever transformed in a span of a few short weeks. Many troubling issues remain unanswered – are students who are suddenly forced into online education prepared for it? Do all have access to high-speed internet connection? Do all possess suitable computers to allow them to succeed? Do students belonging to wealthier families have an unfair advantage over the poorer families since they have more tech equipment? Are we experiencing a digital divide in education, which can be even beyond the traditional societal dimensions?

Winds of change

As we process these hard questions and try to understand the situation, it might make sense to assess the current environment in which we live in. Like a “storm”, five changes are simultaneously taking place alongside the global pandemic:

Psychological distress. We are living in almost a cyclical pattern of tough times. As a humanity, we experienced terrorist attacks, economic crisis, and now a pandemic. Then Covid-19 pandemic has stoked a deep fear in homes around the world as daily media accounts of infections and deaths blared through the television and the web. It has an

adverse psychological impact on everyone. It affects our ability to focus on work and study. ADD SENTENCE AROUND BLM AND GEORGE FLOYD.

Social consequences. As we experience lockdown for the first time in our lives, there are obvious social consequences. Many have become more withdrawn and have relied on loads of technological tools and gadgets to make it through. Students were separated from peers and friends who typically have provided friendship and support. It is complicated to gather data on this issue, but some earlier studies highlight that academic performance of students from the bottom half of the income distribution was more strongly correlated with time spent in school compared to their higher-income counterparts: they performed 7% lower in reading and 5.3% lower in science compared respectively to 3.9% and 1.9% for students from the higher-income households. It is even amplified for boys compared to girls with a lower performance of 7.3% for boys compared to a lower performance for girls of 4.7% in mathematics tests when they had one year less of schooling (Frenette 2008).

Technological reliance. The birth of the Information age in the 1970s and the AI age of the 2010s help us in many sectors, mostly service sectors. The technologies we have access to, supported by the global Internet infrastructure, ease our burden in many ways. Life would be better without lockdowns, but in a Bayesian way of thinking, considering we are going through the biggest pandemic of our time, things could also be worse without these technologies. Moreover, these technologies provide a lot of benefits and will likely impact education while raising new questions (Govindarajan 2020). In the classroom, technological breakthroughs such as digital databases, augmented reality and even robots have enhanced learning experiences.

Digital division. In many ways, we are on a “marche forcée” towards digital transformation. As a result, we are starting to observe some emerging issues. A recent article from Marco Lansiti and Greg Richards (2020) explains that the “stakes for digital transformation have increased dramatically”, “creating a new digital divide that will deepen fractures in our society.” In the advent of online education and the disparity of technological equipment available to the wealthy as compared to the poor students, instruction delivery will be inconsistent and unfair. In Canada, although the vast majority of households with children under 18 years-old had access to the Internet in 2018 (98.8%) with a slight difference for the lowest income quartile (95.8%) (Frenette, Frank, and Deng 2020), other factors may affect the time that pupils can spend in their

online (synchronous and asynchronous) educational activities at home. One of these, for instance, is access to Internet-enabled devices. Income levels may play a role here. Again in Canada, 56.2% of households in the highest income quartile had access to the Internet at home with less than one device per household member and 43.9% with at least one device per household member. In the lowest quartile, 63% of households have less than one device per household member and 37% have at least one device per household member (Government of Canada 2018). Lower income households are thus more likely to have to share devices with other household members (Rideout and Katz 2016). Another fact that can affect the time a student spends on online education activities is the type of devices used to access the Internet. About 24.1% of households in the lowest income quartile use mobile devices only, and 75.9% use a personal computer (with or without mobile devices) compared respectively to 8% and 86.2% in the highest income quartile (Government of Canada 2018).

Speed of absorption. The digital divide is not a new phenomenon. Resistance to process changes in companies is due to the barriers to entry to the use of a new technology being a real barrier or often a perceived barrier. During this Covid-19 pandemic, this resistance has lowered in the face of necessity being real or perceived as a necessity. In many organizations around the world, including educational institutions, technological changes are quickly absorbed and implemented. This scenario forces educators and students to quickly adapt as fast as they can. Students living in a household with higher levels of education may be better supported. Their parents with higher levels of education are more likely to work from home (Turcotte 2010), which is amplified for higher income households due to the strong correlation between postsecondary education and income (Frenette 2019; Frenette, Frank, and Deng 2020). Parent involvement is positively correlated with students' parental outcomes (Smith 2006) and it is amplified in the context of online learning where students may face organizational or motivational issues (Waters, Menchaca, and Borup 2014; Liu et al. 2010). Lower-income households tend to be less involved because of being more likely to work long hours or having less flexible schedules (Smith 2006), though this may not play a role in our lockdown situation.

These five “winds of change” can alter the course of education and if unchecked can pave the way to a “perfect storm” for educational decline.

Vision

- Myclassroomonline.org is a free, easy-to-use, all-in-one teaching and learning platform designed by educators for educators in public school systems around the entire globe.
- myclassroomonline.org ensures an easy transition between physical and virtual classrooms. Pedagogical content and interactions are on the same platform, be it used in a physical classroom or in a virtual classroom.
- Our MVP eases the transition between the physical and the virtual classroom environments.
- In doing so, it ensures education continuity. Moreover, in doing so with a very accessible technology, it participates to reduce the digital divide for children.

Background

Problem

- The problem is twofold: (1) education continuity and (2) technological gap.
- COVID 19 abruptly pushed education online.
- After COVID 19, there will be a need for a new pedagogy that adopts more online learning tools. We can't expect things to go back to exactly the way they were. Education, like everything, will have evolved.
- The most useful online teaching tools available to educators are from for-profit companies such as Google, Microsoft, Zoom, Adobe, etc.
- Many of these products require coordination between platforms instead of housing everything in one secure place.
- Parents in many geographies object to having a for-profit corporation as the base architecture for their child's school.
- Teachers and principals may also object to using a platform offered by a for-profit entity.
- There's no simple-to-use platform, specifically-gearred for and trusted by educators, available globally.
- The gap in global online education is (potentially) larger than in the U.S. There is a need for simpler software solutions for teachers and students on a global scale.
- Data privacy is an issue, especially with children under 18. The watchdogs in charge of the security of that data shouldn't be working for a for-profit corporation.
- There is no trusted source, geared specifically for educators, that actually TRAINS educators to use an online learning platform.
- Beyond the pure questions of education continuity and technological gap at a micro level - classrooms and schools, there is a broader impact at the macro level, countries.
- Education's changing climate

Motivation

« if you solve all the problems but one, education, then the next generation will create all the problems. If you solve only one problem, education, then the next generation will solve all the problems. »

Thomas Jefferson

- Because while successful companies are great at their business, good at building profitable models, they may not be the best judge of what educators need from a system. And how motivated are they to really find out?
- There's no simple-to-use platform, specifically/geared for and trusted by educators, available globally.
- The gap in global online education is (potentially) larger than in the U.S. There is a need for simpler software solutions for teachers and students on a global scale.
- Data privacy is an issue, especially with children under 18. The watchdogs in charge of the security of that data shouldn't be working for a for-profit corporation.
- There is no trusted source, geared specifically for educators, that trains educators to use an online learning platform.
- Real educators should have a system that operates globally, at a large scale. People need an option not backed by a corporation where educators can feel free to do their jobs.
- There is no option actually created by (not just advised by) educators. Money is always in the conversation for corporations. We need to remove that temptation from the system.
- People think technology is complicated. It is less complicated than people think. This is an example of that, used for doing good.
- There is an opportunity to create pedagogical continuity in schools around the world.
- Helps prevent both educators and kids from being left behind.
- There are opportunities to connect to kids in ways that the traditional classroom can't facilitate.

Target Audience

- Students
- Teachers
- Education facilitators
- Parents
- Governments (national, state, and/or city)

Existing Solutions

- Again, the most useful online teaching tools available to educators are from for-profit companies such as Google, Microsoft, Zoom, Adobe, etc.
- Many of these products require coordination between platforms instead of housing everything in one secure place.
- There's no simple-to-use platform, specifically geared for and trusted by educators, available globally.
- Some platforms operate at their best in paid form. Zoom Pro, for example. Microsoft Teams is free but only through Microsoft 365, which is subscription-based.
- Google classroom is free, and created for educators, but still requires everyone on the platform to have an account with the largest data mining company on the planet. If parents, educators, and students are uncomfortable with that, then things can get complicated on other platforms, and most of the other options are not at their best when free.
- There are hundreds of online tools for teachers. Some of them free (at least during COVID). But the majority of them don't have all the tools educators need in one easy-to-use platform. And the ones that do are corporations who make a lot of money from people's data.

Market Research

Competitor Landscape

- Google Classroom is a free, easy-to-use (arguably), all-in-one platform, built (obviously) with the advice of educators. But Google is a huge and extremely profitable organization that uses data for profit at its core. This is uncomfortable for true educators in so many ways.
- Zoom is just video. It needs other platforms to aid true education. It's also best in paid form.
- Adobe Connect for Education is subscription-based.
- There is a free version of Microsoft Teams (video), but you have to buy Office 365 for Educators to get it. And both those products are at their best and most secure in paid form. Also, they're different platforms, requiring teachers to be experts in both Teams and Office.
- Cisco Webex is free for educators, but it's only a video service.
- Classmaster is free until the end of this academic year only. And it has no live video component.
- McGraw Hill Connect is free during Covid, but that also won't last long.
- OpenStax (Through Rice University) is for textbooks only.
- Talent LMS sounds good, but is very limited in the free version,
- iTunes U has a free system for teaching, but it is also limited when free, and is only supported through Apple products. Also doesn't seem to support live class video.
- Thinkific is limited in functionality, especially in the free version.
- Schoology is limited in functionality, especially in the free version.
- Again, there are hundreds of tools for educators, but the choices for an all-in-one platform made for educators are slim. (Only Google Classroom at the moment, I believe. Still looking.) And they are offered by for-profit organizations.

Market Opportunity

- The opportunity is to create a free, easy-to-use, all-in-one teaching and learning platform designed by educators for educators in public school systems around the entire globe.
- Revenue would likely have to come from trusted sources of funding. Maybe through some coordination of national education systems. Maybe from efforts through the UN(?). Maybe very carefully through donors. (No corporations, though. No entities that could potentially benefit from the way kids are educated.)
- Revenue will likely be tricky. Evolving the interface shouldn't be expensive. Maintaining it would be a little expensive. Having a large enough and totally secure, protected network will be very expensive.

Strategic Considerations

- Has to solve the current tension between online learning systems offered by large corporations and the overall goals of a healthy public education system.
- Has to be incredibly secure.
- Has to be very easy to use wherever you are on the globe.
- Has to have everything in one place, under one login.
- Has to have training capabilities for teachers. (And students?)
- Has to somehow get and STAY funded.

Why Now?

- COVID 19 abruptly pushed education online.
- After COVID 19, there will be a need for a new pedagogy that adopts more online learning tools. We can't expect things to go back to exactly the way they were. Education, like everything, will have evolved.
- There is going to be an academic gap every time in-person, school-based education gets interrupted unless a system like this is put in place.
- The gap between online learning for private school and public school is immense. Public school kids are going to be far behind their private counterparts. Without this system, every time education gets pushed online, that gap will grow.
- Education will have evolved when we emerge from COVID-19. There will be more demand for online education. The world, in general, has been training for less in-person interaction. Now's the time. The world is more ready than ever to embrace and learn a new system for education.
- The economy is going through a downturn. Public schools are going to lose funding all over the world. Kids from economically-challenged parts of the world are only going to get further behind.
- It's a great time to gather data on how to create an online education system. There is no shortage of opinion on how online education is working right now. Coming off the heels of the world's first time ever having to teach children online en masse is the perfect occasion to gather accurate, helpful data and evolve to an ideal online education platform.

Differentiation

« Like a massive number of teachers, we have switched rapidly to online teaching. The infrastructure and the tools proposed by tech giants have been helpful. Educational institutions need to think strategically as they change and innovate. »

- This is a free, easy-to-use, all-in-one teaching and learning platform designed by educators for educators in public school systems around the entire globe.
- Free is the only version. There is no freemium structure at work to limit educators.
- It's easy-to-use. It's in one platform. Has just the tools you need. No temptation to show-off tech capabilities. And even provides training.
- Instead of being designed by corporate giants under the advice of educators, it's actually designed by educators for educators.
- It focuses on the needs of public schools around the globe.
- Its only goal is to give educators, even in the most-compromised situations, a way to provide education to children, also often in the most-compromised situations, easily.

Ideas

- Evolve design to reflect goals of overall business model.
- Training interface should be simple.
- Schools global map.
- Super secure network that can handle large scale.
- Seek advice from people involved in public education at a high level around the world.
- Should we let students represent themselves digitally somehow? Avatars? (Animal Crossing popularity.)
- Simplicity, however, is key. Data processing speed is an issue in many places.

NEW IDEAS:

- Educational Continuity
- Technological
- It is about education continuity and helping bridge the technological gap, but it is also about pedagogy in the current Covid-19 crisis and after.

User

Personas

Depending on the business model, we may have multiple consumers:

- Schools – superintendents
- Teachers
- Parents
- Students
- Governments

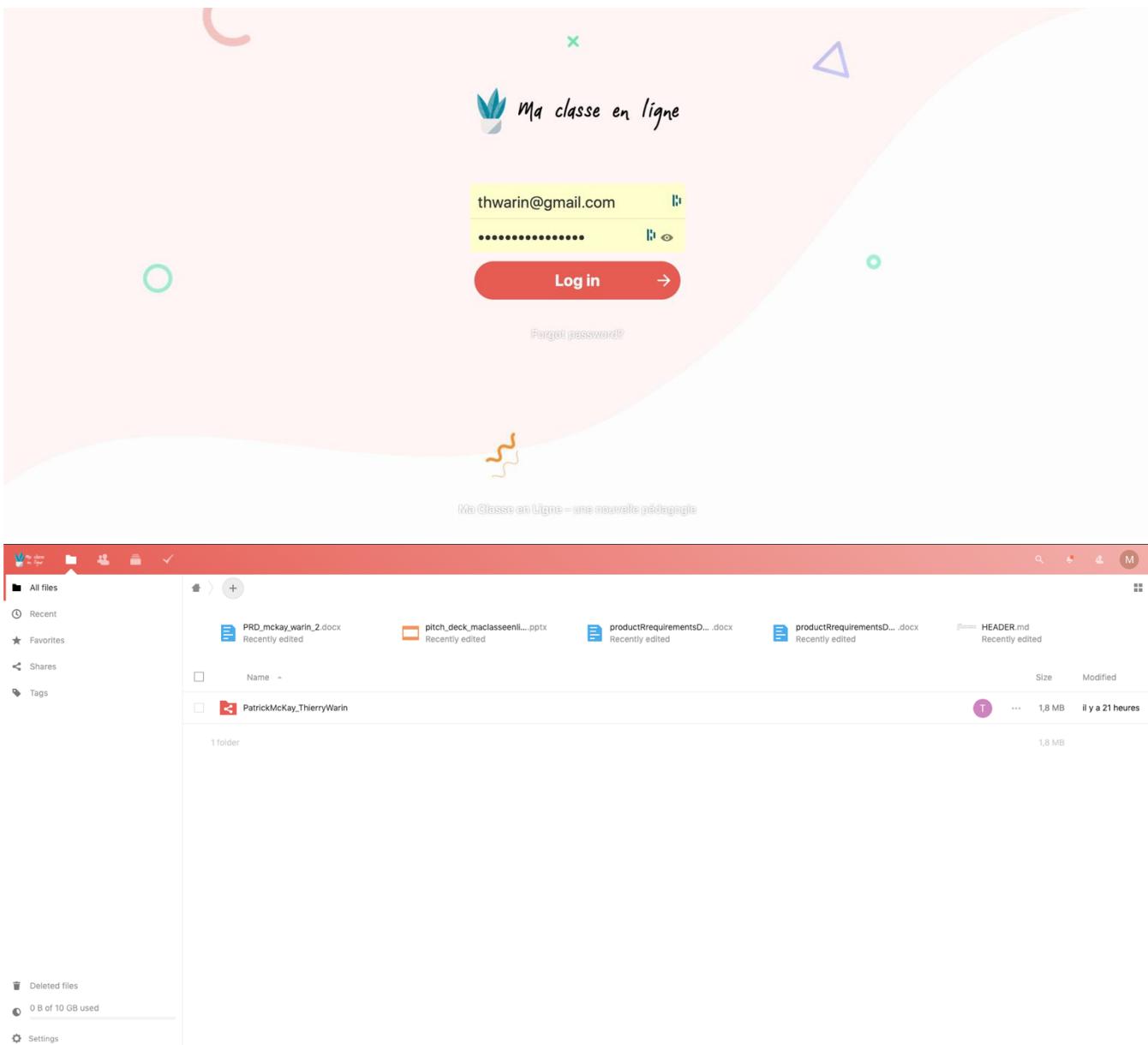
Pain Points

- In higher-education institutions, the digital divide is intensified. Some students are more comfortable talking to a human being in an office, not through a screen.
- They may face difficulties understanding the learning material when the professor is not physically present (Waters, Menchaca, and Borup 2014).
- Some other students do not have a powerful enough laptop to do all the work required by the professor, or even a good enough bandwidth to connect to the Internet.
- We also need to consider all the spectrum of human conditions.
- Moreover, in Data Science for instance, we need indeed powerful devices.
- In a field that is male dominated, this could aggravate the differences mentioned by Mr. Antonio Guterres.
- Furthermore, there is a large technological divide between developed and developing economies resulting to a diversity in the level of preparation of immigrant students.

Needs

- Educational institutions need to be cognizant of these challenges and be sensitive and compassionate.
- This divide has always existed and is accelerated because the “agile” population is now equipped and has made the switch. People who are less agile or are not in agile positions may be stuck where they are.
- The same is true for students when one looks at the whole education system. K-12 schools or higher-education institutions are of all shapes and forms across the world.
- Beyond these various shapes and forms, students themselves have different levels of equipment and also different attitudes towards the use of technologies.
- Students with the right tools have the agility to learn and perform better.
- Educational institutions need to provide resources and formalize policy frameworks to help students be more agile.

User Flows



Solutions

Feature Description

Chat Tool

Office Suite

Video Conference System

File Storage

Virtual Campus

One ID/Password

Qangaroo

Feature Prioritization

File storage and network security will be incredibly important as we scale.

Architecture

- Qangaroo is a technological platform. It allows each user to connect with other participants according to what is relevant considering her/his profile. A parent will connect with other parents, teachers and school administrators. A teacher will connect with teachers and pupils.
- Our MVP runs on a server equipped with open source software. this suite of software has been integrated so that a user needs only one login and password and have access in a very easy way to the strict minimum of options that her/his profile requires.

Implementation

- Our solution needs some engineering work such as creating the integration and installation of the open source technologies.
- This can be largely automated to benefit from scaling.

Stakeholders

The stakeholders are our personas. This solution - being a platform - address the needs of every single stakeholder: students, parents, teachers, superintendents and governments.

- Many challenges will linger. The risk is that the digital divide is widened, complicating existing inequalities while creating new ones. These inequalities will appear in multiple ways and at different levels. The divide is not only geographical, it is also STEM related and motivation-related.
- So, the paradox is that on the one hand, there are excellent tools that propel knowledge and mobilize talent to address pressing human issues (i.e., coronavirus, economic crisis) and on the other hand some parts of the population will not rise to the next level, hence widening the digital divide in a future digital society.
- In the education context, schools worldwide have to carefully assess the “learner’s digital agency”- the capacity for a learner to act and leverage knowledge accessible in the digital environment.
- As a society, we need to make sure that education continuity stays on course with the vast available technologies at our disposal. Viable and compassionate strategic policies need to be concretized in the governmental and institutional levels. Whatever the new emerging and catastrophic risks, however daunting this “perfect storm” - we need to ensure that our selected solutions minimize the risks of new inequalities and prevent a digital divide.

Roadmap

Timeline

We are in the process of creating this NGO. Our MVP is in order and we need now to find supporters.

- Some students are poised to graduate and will soon enter a competitive job market. They have switched to online courses to finish their term and will likely be following online courses over the summer in many places across the world.
- They need to learn important skills, and learn them well in a timely manner in order to succeed in their future jobs. Educational institutions need to carefully weigh upon the timing of programs and initiatives.

Surviving the storm

- In this scenario, important questions arise. Can our education systems re-balance this digital divide? How can policy makers and educators plan ahead?

Plan for continuity

- These strategies may not be easy, but they are doable. Many of the key issues can be fixed, especially in developed economies. However, it will take time since it is not merely a question of access to technologies but also a question of mastering these technologies within a pedagogical context.

Success Metrics

- Rate of penetration: Public Schools Globally.
- User satisfaction: Students, parents, teacher, principals, faculty, administrators.
- Surveys.

Projected Cost

\$5, \$50, \$500 million milestones.

Caveats/Risks

- In a humble attempt to help the community, Qangaroo provides, through a not-for-profit legal vehicle, a platform for video conferencing and a Learning Management System to K-12 teachers in schools that do not have the resources to use commercial solutions at scale.
- Yet even with this support, the schools will continue to face a digital divide. Even with a technological platform or targeted strategies to ensure education continuity, some schools are still left behind. Many classes within these schools have been unable to adapt. Several students in well-equipped schools experienced a major setback in their learning.
- Educational institutions need to take on a proactive approach and a long-term perspective when seeking solutions to these technological disparities.

Other Areas for Investigation

- Beyond higher-education disparities, there are also - even in our developed economies - digital disparities in K-12 schools. It became obvious in our communities that some K-12 schools were fortunate to have access to commercial tech tools, and some schools ceased operations due to the lack of adequate technological infrastructure.
- Even in the former case, students face either technological issues, such as a slow Internet connection, or motivational issues or social issues. Education continuity is a challenge that should not be underestimated, as there are societal consequences, notably due to the digital divide.

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