*The*BlueD⊙t

Reimagining Education: Beyond the Rhetoric

*The*BlueD⊛t

ISSUE 13, 2021

THE BLUE DOT features articles showcasing UNESCO MGIEP's activities and areas of interest. The magazine's overarching theme is the relationship between education, peace, sustainable development and global citizenship. THE BLUE DOT's role is to engage with readers on these issues in a fun and interactive manner. The magazine is designed to address audiences across generations and walks of life, thereby taking the discourse on education for peace, sustainable development and global citizenship beyond academia, civil society organisations and governments, to the actual stakeholders.

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**"Look again at that dot.
That's here. That's home. That's us.**

On it, everyone you love,
everyone you know, everyone you ever heard of,
every human being who ever was,
lived out their lives.
The aggregate of our joy and suffering
thousands of confident religions,
ideologies, and economic doctrines,
every hunter and forager, every hero and coward,
every creator and destroyer of civilization,
every king and peasant, every young couple in love,
every mother and father, hopeful child,
inventor and explorer, every teacher of morals,
every corrupt politician, every superstar,
every supreme leader, every saint
and sinner in the history of our species lived there-
on a mote of dust suspended in a sunbeam."

CARL SAGAN
PALE BLUE DOT: A VISION OF THE HUMAN FUTURE IN SPACE

Education:
Beyond the Rhetoric

Dear Friends,

Happy New Year 2021. I wish your loved ones and you good health, and peace. At the beginning of 2020, not many of us would have imagined that we would be locked up in our homes for most of the year, transitioning to work from home, with most schools shutting down the world over and our children being forced to adjust to the 'new normal' of remote learning. The world has changed significantly and I believe the COVID-19 pandemic has brought to fore three overriding acknowledgements:

1) The first one is that **humans are really struggling to live in peace with ourselves,** trying to come to terms with the change that has overtaken our lives. While this trend has been on the rise even pre-COVID, the pandemic has re-enforced this further. According to WHO (2015), 25% of children between 13 and 15 years have some form of mental health issues, including stress, anxiety and depression – a statistic that is quite disturbing. The same report highlights another disturbing statistic – that over 800,000 suicides are reported every year across the globe amongst young people. When we discuss sustainable development and sustainability – this is definitely one trend that is not sustainable.

2) The second issue is that **we are struggling to live with each other** – brought to fore by the systemic racism and intolerance prevalent globally. In a 2015-2016 survey conducted by MGIEP globally, in which we collected 1,200 youth responses from 120 countries, many felt that in times of national security – it was okay to use force against others or it was okay for some to have more opportunities than others – again, a very disturbing trend.

3) And the third issue is **living in peace with nature** – viewing ourselves as part of nature (not divorced from it) and respecting nature as a living entity

These issues reiterate the need for change, which must start with ourselves. And what better way than through our education and learning systems, which present various opportunities that I detail below in four propositions:

1) **Proposition 1** – The education system that we have perpetuates the existential crisis we find ourselves in today because we look at education purely as an instrumental perspective – as a means to an end – an end which is material wealth and social status, propagating the I vs you and the us vs them – this needs to be deconstructed.

2) **Proposition 2** – We need an education for human flourishing – flourishing in a way that you have freedom to achieve the life that you value. We need an education system that trains us to be curious, to enquire and to be critical for our own understanding rather than just taking in what the teacher says. Additionally, we need systems that train us to be kind, compassionate and empathetic.

3) **Proposition 3** – A science and evidence-based approach to design such education systems as it is complex.

4) **Proposition 4** – Lastly, we need to relook at how we assess learning – it has to be continuous, dynamic, interactive, individualised – as opposed to being a one size fits all approach – where failure is embraced as a learning process.

Issue 13 of The Blue DOT aims to go beyond the rhetoric by addressing the four propositions presented above in our quest to build peaceful and sustainable societies. **This Blue DOT issue aims to propose new ways of looking at education systems in terms of content, evaluation and assessments, pedagogy, the role of the teacher, and capturing and integrating voices of the youth in education systems.** We hear from experts and youth around the world as they present inspiring solutions and ideas that are based on evidence and backed by the sciences for an interconnected, interdependent world.

I hope you enjoy reading this issue as much as we enjoyed working on it – and as always I look forward to receiving your feedback on how we can work on improving future issues of The Blue DOT.

ANANTHA KUMAR DURAIAPPAH

Reimagining Education in *COVID-19*

DOH-YEON KIM
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CHAIRPERSON, ULSAN EDUCATION FOUNDATION

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*I*t was in December 2019 that the COVID-19 was first reported. Today, more than 100 million cases have already been confirmed worldwide, and about 2% of them were sacrificed. The human society, where people live in groups and talk to each other, is vulnerable to the spread of respiratory infections. In 1918, when the world population was 1.8 billion, the Spanish flu occurred and nearly 600 million people were infected and up to 50 million were killed. It was the most devastating disease in human history.

Note that the current world's population (7.8 billion) is more than four times than that of 100 years ago. And among them, about 4 billion people are living in densely populated cities. In this respect, COVID-19 has been much better controlled than the spread of the Spanish flu. This is due to the greatly developed science and technology, so that we can accurately identify the virus and the path of infection.

The vaccine has been already developed. Therefore, it is expected that we will be able to escape from the COVID-19 disaster by the end of this year at the latest. **New viruses and germs that are now unknown right now, will continue to attack human-beings, but we will eventually overcome any pandemics of the future.** Recently, biomedical science is flourishing and it will play a greater role for the safety and healthy life of humans.

The Pandemics recorded in human history appeared all out of the blue, and they have greatly changed human society. The Pest, which spreading the mid-14th century, sacrificed one-third of Europe's population at the time. As earnest prayer played no role in the prevention and treatment of disease, and the absolute authority of the church became fatal. New era of the Religious Reformation and the Renaissance were brought forth by the Pest pandemic. And due to the Spanish flu, the participant nations in World War I were obliged to rush to agree on the peace treatment. Paradoxically, the

A thriving society handles the important problem first, but a declining one solves the urgent problem first. Education is the most important one for any society.

pandemic contributed to the transition from the war to the peace. The same will be true for COVID-19. The stagnant economy, the widening gap between rich and poor and social inequality are the emerging crises. How we overcome this serious crisis will be recorded in history. And it has already been recorded in the history that the crisis was an opportunity when we used it as a chance of innovation.

A thriving society handles the important problem first,

but a declining one solves the urgent problem first. Education is the most important one for any society.
We should take the COVID-19 as an opportunity for educational innovation. In fact, non-face-to-face education, which transcends time and space, has been being expected to become more important in future. The future has just somewhat suddenly arrived by the COVID-19. From elementary schools to universities, we must devote ourselves to developing education methods that effectively utilise non-face-to-face learning. And the overall education policy should also be adapted to the new era. The government's attention in this regard is absolutely necessary. ▶

Reimagining Education: Beyond *the* Rhetoric

STACY WINTERS
MOTHER, WIFE, MATH EDUCATOR, LIFELONG LEARNER, AND ENTREPRENUER

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*I*t's 8:30am and the bell rings to go to class. Students enter the room, find their seats, and get ready to start the lesson. The teacher goes to the board to show the class how to work through a math problem. The teacher displays her work at the front of the room. She encourages students to ask questions if they do not understand her work. The teacher walks around the classroom as students independently practice problems and she answers questions and provides feedback as to where they might be making an error in the method shown. At 9:15am, the bell rings for class to end. The teacher assigns homework for students to work on as they exit the room.

OR

It's 8:30am and the bell rings to go to class. Students put materials down on a learning space in the middle of the room and proceed to stand in small groups at the writing spaces displayed around the exterior of the room. The teacher puts a problem for students to work through on the front board. In collaboration with their peers, students begin to brainstorm ideas for solving based on their previous knowledge. The teacher watches from the center of the room, often directing students to look at each other's work

for inspiration or clarification. Students correct errors as they gaze around the room. Throughout the class period, the teacher monitors the group at large, interjecting instruction when needed and affirming students are arriving at the correct answer. Student work is displayed and different methods of solving are exposed. The lesson is driven through student ideas. At 9:10am, the teacher encourages students to take their seats and write a 5-minute reflection regarding their takeaways from the lesson. At 9:15am, the bell rings for class to end. The teacher assigns homework for students to work on as they exit the room.

The two scenarios above describe two mathematics classroom structures for students to learn the same content. In both classrooms, students will probably be able to successfully complete problems on their test, demonstrating their comprehension of skills/content. Does it make a difference which way a teacher chooses to structure her room and organize her class if students are learning?

The question to consider is What ELSE are students learning in the second scenario? The second classroom describes a shift we started to make in our high school math classrooms. Arguably, both

As educators in 2021, it is our responsibility to restructure our classrooms and design learning opportunities for students to develop these ancillary skills in addition to content.

classes will learn to "do math," but the students in the second class are learning so much more. The first class described may be more comfortable or familiar for the teacher, who is clearly in control and driving the lesson in the familiar I do, we do, you do model. **In the second scenario, the role of the teacher shifts to a more non-traditional educator role of facilitator. That transition allows for students to develop skills in communication, collaboration, and flexibility as they move through the lesson. Students learn from each other, design their own ideas for solving, and self-assess through the process.**

At a time when the country and world are divided and polarised, it is becoming increasingly more important for school to be a place for children to learn skills that will help them navigate real-world issues they will face. Greater attention needs to be placed on developing empathy. Students need to consider others and how they can learn from different perspectives and ideas. Strong problem solvers and flexible thinkers are needed to create a kinder, more peaceful world. **As educators in 2021, it is our responsibility to restructure our classrooms and design learning opportunities for students to develop these ancillary skills in addition to content.**

The worldwide pandemic is going to prompt a response for most educators to shift instruction to meet the needs of their students as they return to school. This is an opportunity to adjust the structure of the classroom to reflect the needs and well-being of all when we finally emerge from such unprecedented times. Consideration and development of habits of mind should influence the design of the learning environment. It is the job of schools to do what is best for student learning, through both social-emotional and academic content. I hope all educators honestly reflect on what students are learning in their classes and the potential changes they could make to nurture kind, inspiring, resourceful, and empathic learners. ▶

The *Concept*

REIMAGINING EDUCATION:
BEYOND THE RHETORIC

The events of the year 2020, driven predominantly by the COVID-19 pandemic, have forced governments, policymakers, educators and organisations to rethink the purpose, structure and modality of existing education systems.

Even while the world is struggling with climate change, decreased empathy, violent extremism, xenophobia and an increase in mental health issues in children, with a recent report by WHO highlighting that 800,000 people between the ages of 15-29 are dying by suicide ever year, globally[1], the COVID-19 virus singlehandedly shut down access to face-to-face school education for roughly half of the world's student population.

These ongoing and unexpected challenges bring to light the urgent need for education systems to be more adaptable, responsive, and resilient to future shocks and disasters. We can work to transform education in many ways, such as by translating our understanding of how the brain learns from the research laboratory to the classroom and leveraging the power of technology to ensure that learning can reach every child who hungers to learn. It is time we reimagine education to ensure learning continues with minimal disruption but also empowers students as compassionate human beings, prepared for an unpredictable future, but also as global citizens seeking a peaceful and kinder world.

The purpose of education needs to change from being instrumental (based on human capital) to one that is constitutive (human-flourishing), accessible to all and structured such that learning can happen anytime and anywhere and always.

WHAT SHOULD FUTURE EDUCATION SYSTEMS LOOK LIKE? HOW COULD CURRENT SYSTEMS BE REIMAGINED AND REDESIGNED TO EQUIP FUTURE GENERATIONS TO DEVELOP A WORLD THAT IS MORE SUSTAINABLE, PEACEFUL AND FUTURE-READY?

Quality Education - A whole brain approach to education

Let us start by defining what quality education should look like.

Current education systems were designed over 300 years ago to meet the workforce demands of the industrial revolution. Many education approaches continue to focus mainly on rote memorisation, aiming to build the intellectual capacities of learners and attempting to make them job-ready – recognising high academic caliber with grades based on performance in standardised assessments. The problem here is that continuing to focus education on the goal of increasing human capital isn't necessarily sustainable. Further, traditional grading, which is based on assumptions about humans based on the law of averages as expressed in a bell curve, necessarily creates winners and losers. As Yong Zhao puts it, there is a "manufactured scarcity" of educational achievement possibilities. Such a model sets up a large portion of students for failure from the outset. The traditional model is not just outdated from the standpoint of the paradigm out of which it emerged, it is inherently unjust. Anything less than assuming all kids can succeed is a crime against humanity. But there is a much more fundamental problem with traditional schooling. It was not designed to meet basic human needs, and the evidence is increasingly clear that many students face serious forms of neglect, mistreatment, and indeed outright

discrimination in schools. What schools should do is help grow strong, healthy, happy, and highly capable kids -- people who know how to direct their own learning and determine their own lives. People who flourish not just academically, but socially, emotionally, and creatively. And perhaps most importantly, people who can help support others to do the same. That's what strong communities are made of.

What we need education to focus on is the development of a more sustainable and peaceful way of living – with content, pedagogy, and assessments that facilitate human flourishing, constituting the overall well-being of the planet and humanity. This requires a fundamental revision of what is taught in education systems. Instead of merely focusing on the intellectual aspects of learning, a whole-brain approach to education is needed to focus on the development of both intellectual and emotional intelligence. Research from the neurosciences shows that just as our brains can be trained in intellectual intelligence, the concept of neuroplasticity indicates they also can be trained in emotional resilience and attention regulation. With such a focus for education, we can help our children grow into empathetic, compassionate individuals who are kinder towards themselves and towards each other and the planet.

Further, for education to be qualitative, it needs to harness the potential of technology beyond information and communications technology (ICT) as simply a transmissive form of education to digital pedagogy, which is a more transformative form of education. Instead of employing very basic tools of presentation and meeting software, online learning should incorporate tools such as storytelling, discussion and dialogue, games and gamification as well as case studies in order to provide a learning experience that is fun, immersive, interactive and engaging for the learner – so they 'learn to learn'. **No talk of quality education is complete without consideration of**

the one who imparts the learning experiences – the teacher. The role of the teacher becomes even more important in the context of a reimagined education system, in both content and pedagogy. For teachers to effectively nurture and train children in emotional intelligence, they need to be equipped with social and emotional skills themselves – so they are empathetic and compassionate to their students. They need to demonstrate excellent cognitive flexibility to meet the complex, dynamic needs of learners. They need to be able to adapt to unpredictable learning challenges, constantly improve their technological competencies, and most of all, master the art of truly connecting with kids.

As the final piece in reimaging education systems, we need to question the purpose and design of assessments. Given that the purpose of education thus far has been to measure wellbeing in terms of economic and material success, education systems today have focused primarily on extrinsic rewards in terms of marks and grades for assessment, often at the cost of declining mental health of learners as they strive to compete and succeed. When the purpose of education instead becomes supporting human flourishing and the development of kinder beings seeking to build a peaceful and sustainable planet, how might assessments be redesigned to focus on intrinsic motivation for learning and becoming better and compassionate beings? How might we include actionable feedback delivered during the learning process to enhance rather than measure learning, especially during self-assessment. Further, how might assessments be further strengthened and include real time and continuous reporting as opposed to the present style of reporting - a one time, standardized test in which students are pitted against each other? How might we leverage Artificial Intelligence (AI) while being cognizant of the need to protect the privacy of our young learners.

Reimagining education systems – beyond the rhetoric

Issue 13 of The Blue DOT will focus on how education systems can be reimagined to go beyond the status quo towards our quest of building peaceful and sustainable societies. The Issue will be driven by the vision of the UNESCO Mahatma Gandhi Institute of Education for Peace and Sustainable Development (MGIEP), reflecting on the impact of the Institute over the past six years and using the science and evidence-based approach employed by the Institute in its core work areas.

This Blue DOT issue aims to propose new ways of looking at education systems in terms of content, evaluation and assessments, pedagogy, the role of the teacher, and capturing and integrating voices of the youth in education systems. The inspiring solutions and ideas proposed in this Issue will be based on evidence and backed by the sciences in our interconnected, interdependent world.

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Senior National
Programme Officer,
UNESCO MGIEP

¹https://www.who.int/news-room/fact-sheets/detail/suicide

CONTENTS

OPINION

Towards the Use of *Commercial Games as Education Tools*

ROBIN SHARMA, **ADAM** DUBÉ

Robin Sharma is a Ph.D. student in the Learning Sciences Program of the Educational and Counselling Psychology Department at McGill University. He is a member of the Technology, Learning and Cognition Lab where he studies the design and curriculum integration of video games as learning tools. Previously, he has taught mathematics to high school students, designed curriculum guides for serious games, and created interactive learning experiences around commercial games.

Adam Dubé is an Assistant Professor and Director of the Learning Sciences Program of the Educational and Counselling Psychology Department at McGill University, the head of the Technology, Learning, & Cognition Lab, and a joint Fellow of the American Educational Research Association and the Society of Research in Child Development in middle childhood education and development. He investigates and lectures on how educational technology augments the learning process with a focus on educational games.

*I*n the last two decades[21], the rise of video games has spurred many educators and researchers to explore their potential as learning tools. **The genre of games specifically designed to target the acquisition of knowledge that is generally useful or specific to an academic context is called "learning games"[16].** Although research on the effectiveness of learning games is still inconclusive and contains contradictory empirical evidence[14], the educational gaming industry is growing rapdily[1].

The Potential of Commercial Games for Learning

Given the immense costs of developing high quality and visually appealing video games, many researchers have explored the potential of existing commercial-off-the-shelf (COTS) games for education. This refers to not using a "learning game" but a commercial game, developed for entertainment purposes as an educational tool inside or outside of classrooms. Berger and Staley[3] made recommendations for teachers on how to use the non-educational version of Assassin's Creed III as an educational tool in history classrooms. Similarly, researchers and teachers independently "repurpose" COTS games to fit curricular and learning needs. Some recent examples include the use of the game Angry Birds for teaching physics[24]; World of Warcraft for teaching civics[6], general science[23] and language[5]; and Minecraft for teaching mathematics[4].

Given the immense costs of developing high quality and visually appealing video games, many researchers have explored the potential of existing commercial-off-the-shelf (COTS) games for education.

**Many studies have examined the ability of different COTS games to lend themselves to an educational context.** Let us discuss the example of SimCity. SimCity is a simulation game that enables players to create cities as planners and helps them understand the phenomena from a more authentic perspective. It creates space for exploration and creativity as players can work with self-defined goals and strategies. Simulation games are those where the core mechanics involve "interacting and discovering an underlying model or system"[14]. Recently, it was used with university students to teach urban planning[26] and with adolescents to explore if playing the game changed students' perception of the city they live in[27]. Kim and Shin[15] used it as an authoring tool for undergraduate students studying urban geography where they observed improvement in learning outcomes, interest, and engagement. It was an appropriate educational tool as it aligned with the intended learning objectives of the course which revolved around topics like urban transportation, growth and management, and theories of city development. It allowed players to construct cities, considering what they had learnt in class. Overall, SimCity is a popular game used by many researchers that demonstrates the potential of repurposing COTS simulation games for learning.

Another widely used commercial game is Minecraft. As a sandbox game, it has been used with different age groups and disciplines. Sandbox games provide open interactions between the player and game objects with no pre-defined game goals. The open-ended nature of sandbox games presents opportunities for players to express creativity and problem solving. Researchers[13] used Minecraft with elementary school students for learning computer programming. They designed contextual learning activities within the game for the students, including 30 in-game tasks spread over 10 game levels. In addition to improved computer science competencies, they observed increase in motivation and collaboration skills. Bos and colleagues[4] outlined various Minecraft activities that can be implemented in a mathematics classroom. Each activity aligned with the Common Core State Standards for Mathematics (CCSSM) and, together, created a useful approach for teachers attempting to use commercial games as educational tools. The availability of Minecraft Education Edition, a version of the game allowing teachers to create and share lesson plans and students to access digital educational resources and collaborate with peers, has provided several opportunities for its use across various disciplines. Hence, well-designed COTS sandbox games have also shown promise to be employed as educational tools in diverse settings.

Thus, games with highly structured rule sets (i.e., simulations) and ones with practically no rule sets (i.e., sandbox games) can be used as learning tools and this demonstrates the broad range of learning experiences that can be supported with the correct use of COTS games in classrooms. However, 'correct use' is the key and research has provided some practical recommendations in this regard.

Pedagogical Benefits and Practical Recommendations

In this section, we look at some benefits and make recommendations for using COTS games from three different perspectives. These are, 'learning theories' that can be applied to the context of game-based learning, the 'role of teachers' and how they can maximize the use of a COTS game to suit the needs of their course, and 'implementation' challenges that must be considered prior to the use of COTS games.

GAMEPLAY AND LEARNING THEORIES
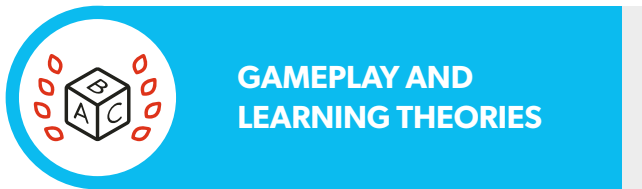
Haphazard inclusion of COTS games is not enough to ensure learning. Instead, games must be adopted into classrooms based around learning theories[20]. Playing games in isolation without associated curricular activities (e.g., presentations, article writing, debrief sessions) is not likely to have a significant positive impact on learning[6,7]. Instead, adopting a project-based structure around curricular activities is particularly beneficial[2]. Activities create space for students to reflect on their learning as they progress through a course and are central to students translating the in-game learning to the academic context[8]. A key tip is to include some form of peer interaction (e.g., collaboration) that engages with a social constructivist approach to learning[10]. Peer-evaluations of presentations in the middle of the semester helped students "clarify the strengths and weakness of their ideas" and incorporate feedback into their designs[15]. Such activities can be useful to reinforce and translate in-game actions to out-of-game academic context[8].

Using an existing commercial game for learning is an activity that is consistent with the technology savviness and game playing habits of the current generation[15]. Further, a student-centered activity can help enhance interest and active participation in the learning process. In the case of using Sim City, learners actively participated in applying the theories of urban geography while designing their cities. The open-ended nature of the game makes it possible for students to express themselves creatively, test hypothesis, and apply knowledge. Critically, these recommendations stem from constructionism and situated theories of learning[9], which offer a rich and multifaceted experience to learners by providing opportunities to construct models that represent knowledge. Therefore, learning theories should guide the practice of using COTS games in classrooms.

ROLE OF TEACHERS

The role of the teacher in the use of COTS games is critical as they make key decisions about game selection, alignment of the game with learning goals, and fit within the classroom setting and context. Teachers and instructors also need to plan and create new "in-game objectives" for the students that are aligned with the intended learning objectives of the class. A teacher's knowledge on how to use COTS games for learning is termed their TPACK-G (Technological, Pedagogical, Content Knowledge)[11,18]. In addition to content and pedagogical knowledge, a teacher's familiarity with the game and the game environment is essential for them to provide feedback and scaffolding to students. Sufficient time and training need to be allocated so that teachers understand the gameplay, design projects, curricular activities, and assessments that make the use of COTS games as effective learning tools. In particular, game selection should be a central concern as the game genre, environment, and narrative must align with the learning goals and theory that underpin the teacher's pedagogical approach.

IMPLEMENTATION AND LOGISTICS
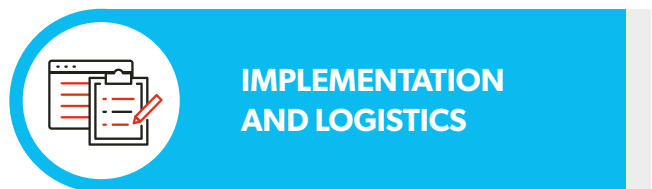
Simply identifying potentially effective COTS games is just the first step to their use in classrooms. Students need to be provided with sufficient gameplay training sessions before engaging in game-based learning activities. As not all students will be familiar with the nature and operational style of specific commercial games and need time to learn how to play[8]. Teachers will have to make decisions about replacing other, previously planned curricular activities to make room for games[22] and design new activities to support COTS game use. Also, sufficient technological infrastructure and personnel support needs to be provided for teachers to effectively use games in class. The most fundamental supports include the availability of devices and other hardware, software, and connectivity. More advanced supports include the repurposing and rearranging of limited learning spaces in schools such that they are more conducive to collaboration and peer learning[12]. The use of mobile devices is one way to address issues with technological infrastructure when high-end computers and consoles are not available or there are limitations with physical space[17]. Thus, implementing COTS games in classrooms requires training and supporting learners and teachers, addressing device availability, and rethinking classroom resources and environments.

Conclusion

Although there is a limit to the number of academic topics that can be covered in COTS games and sometimes the content might be incomplete or inaccurate[25], carefully curated COTS games have the potential to lend themselves well to an educational setting. Simultaneously, to successfully employ COTS games as educational tools, it is important that they form a part of a larger, carefully curated learning experience. Finally, it is crucial that logistical barriers like availability of hardware, software, technical and administrative support are overcome. Lack of infrastructure is a major concern preventing the use of games in classrooms[19]. There is so much more to game-based learning than just finding that one good game.

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AI In Early Childhood –
Six Things Teachers Need to Know

SAMIA KAZI

Samia Kazi, Regional Director for the Middle East for CE International, is a social entrepreneur, innovator, and partnership builder. She worked as a CEO of a leading ECE organization in the Middle East, called Arabian Child, supporting quality improvement, child protection, and early childhood education. The Huffington Post named her one of the top women who are reshaping early childhood education in the Middle East. Samia has a bachelors degree in applied computing, as well as a masters and a doctorate degree in early childhood education policy and education leadership. Samia strives to balance her love of technology and innovation, with her passion for early childhood education and care. She is especially interested in multi-sectoral, system-based planning for quality assurance in the early years.

Whether we like it or not, artificial intelligence is almost certainly an inevitability in the future of education. Attempts to design artificially intelligent curriculums for early childhood already exist, such as the MIT-developed "PopBots," meant to help preschool children interact with social robots to learn AI concepts. However, as research into AI and its application to the education sector expands, we need to consider the readiness of current teachers, and prepare future teachers, for this new reality.

In the recent past, AI in education may have seemed like a daunting, albeit distant, possibility, but turbulent times have catapulted us into the future. The time to prepare our teachers to understand, monitor, analyze, and select appropriate AI applications to use in early childhood education is NOW.

Teaching young children about what computers or social robots can do is not enough. Teachers will also need to guide children in their understanding about what these machines cannot do. For example, **machines are not humans and they are not good at ethical decision making, making moral choices, or applying social-emotional intelligence. These are skills teachers must nurture in children as they will be especially important as children begin to interface more with AI.**

Applications for AI present myriad issues and as AI gradually becomes an integral part of education, the following are some considerations future teachers need to keep in mind: Applications for AI present myriad issues and as AI gradually becomes an integral part of education, the following are some considerations future teachers need to keep in mind:

1

Learn to **Monitor the Use Of Machine Learning** *in Early Childhood Education.*

AI is everywhere, from speech and facial recognition, diagnostic healthcare, machine automation, video games, handwriting analysis, and in many other areas of our lives. Though there are many kinds of AI, teachers should particularly focus on machine learning.

What is machine learning?

Machine learning is an application of AI where systems automatically learn and improve themselves from experience

without needing additional programming. You give the machine data, and the system uses that data to learn.

How can machine learning be applied in early childhood education?

Let's consider a possible application of this in early childhood education, which we will call the iTeddy, an intelligent teddy bear that builds a profile of the child to provide personalized education, implementing AI based on developmentally appropriate practice (DAP). The National Association for the Education of Young Children (NAEYC)'s position statement on DAP states that *"every child, from birth to 8, has the right to equitable learning opportunities—in centers, family child care homes, or schools— that fully support their optimal development and learning across all domains and content areas."* One of the core considerations of DAP is that learning experiences should be unique to each child. Educators need to spend time getting to know the child, understanding their family and community, observing them, examining their work, and using authentic, valid, and reliable assessment methods to know their interests, strengths, personalities, and motivations.

This consideration is also in line with Lev Vygotsky's Zone of Proximal Development theory: finding the "sweet spot" where learning experiences are challenging but achievable. Some believe that something like an iTeddy could help meet this standard, by monitoring the child and providing 1-to-1 tutoring based on the child's needs. Imagine if iTeddy observed the child over a period of time and found that he or she has a keen interest in math and only a moderate interest in art. Recognizing this "sweet spot," iTeddy's AI provides the child with more and more math activities, while limiting the art-related ones. In one sense, iTeddy would allow better scaffolding for the child, exposing ideas at a personalized pace and implementing a developmentally

appropriate math curriculum to ensure the child is engaged and challenged.

The concern, however, is that the iTeddy might make an incorrect assumption about the psychological profile of the child by comparing the hundreds of thousands of other children with a similar age, developmental stage, and profile. It may also underestimate how humans and their interests change over time, potentially depriving the child of art-related activities in favor of an increase in math activities. This problem is not unique to AI applications, however, as students often get left behind in current learning settings. Their talents and interests may not be properly assessed by parents or teachers or a hesitance to try something new may prevent the child from blossoming in a certain area. The question remains, would an AI application like iTeddy open more possibilities for children or limit them?

The iTeddy is just one example of teachers needing to prepare themselves for various applications of AI within education. **Teachers will need to become data scientists; able to understand assessment data generated by AI and monitor its decisions. More than ever, teachers will need to be ready to comment on the developmentally appropriate use of AI applications.**

Teachers will need to become data scientists; able to understand assessment data generated by AI and monitor its decisions. More than ever, teachers will need to be ready to comment on the developmentally appropriate use of AI applications.

2

Act as **Advisors to Programmers.**

Though difficult to believe, computer scientists developing AI may very well consult teachers and other child development experts for their knowledge and advice. This is because children's development is a crucial part of artificial intelligence. In 1950, Alan Turing said, "Instead of trying to produce a program to simulate the adult mind, why not rather try to produce one which simulates the child's." Turing believed that the key to true artificial intelligence would be to design a machine with the ability to learn like a human child. Far from the "tabula rasa" traditions, children are a blank slate, the complexity of a baby's brain and its ability to innately know and to learn still shocks and awes most neuroscientists.

Roboticists and computer scientists are trying to figure out how to design a machine that has similar learning abilities, but we are still far from such a development. As the pursuit of machine learning continues, computer scientists will undoubtedly turn to experts in the learning process of a child's incredible mind. In this case, the experts are the educators.

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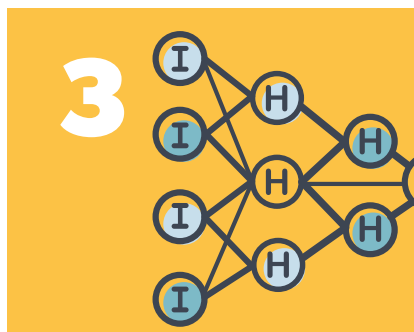
Understand the Dark Side of Neural Networks

As with many cases in technology, including in AI, advances made with positive intentions also often have unforeseen risks. Teachers need to understand the potential dangers that arise from neural networks and how children and adults interact with them in our everyday lives.

What are neural networks?

Neural networks are systems in which a programmer aggregates data for a specific set of objectives, and then the network analyzes the information to reach the best conclusion. For example, the app TikTok uses a neural network algorithm with the objective to keep you engaged and make you spend the maximum amount of time on the app. The app feeds you selected posts on a "For You" Page that this neural network believes will maximize the likelihood of achieving its objective.

However, neural networks work to achieve their objectives without considering broader consequences. For example, the AI of a social media platform could discover a person is attracted to angry, hateful, negative messages. The AI responds by sending that person more angry, hateful messages as they will be more inclined to react and spend even more time on the

platform, thereby achieving the goals of the AI program. However, the algorithm does not weigh the consequences of continually providing someone with anti-social or angry, hateful messages. There are no moral or ethical monitors for the AI program.

Similar corruptions of goals and detrimental effects can arise in neural networks used for education, so we must be careful to actively monitor our own and our children's engagement level, proactively making choices about what we watch and what we share with others.

4

Collaborate in Advocating for Responsible and Ethical use of AI in Education

The Social Dilemma, a recent Netflix documentary-drama, revealed how technology companies have manipulated human psychology and explored some of the dangers of AI in social media. While this is an important topic, discussion about the repercussions of AI use in other contexts, especially education, is vital, and thus far has been sorely lacking. We—the professionals, caregivers, advocates, and policymakers—are not talking about this enough and we must become more engaged in these critical conversations.

We need to hold events, invite all the stakeholders involved, and have open

discussions. We can't let computer scientists be the only ones coming up with 'metrics' or objectives for their hidden neural networks that could do harm or potentially destroy our future generations.

We can't do this alone. There must be a cross-disciplinary collaboration between computer scientists, statisticians, ethicists, teachers, early childhood experts, and social scientists all working together to solve these problems.

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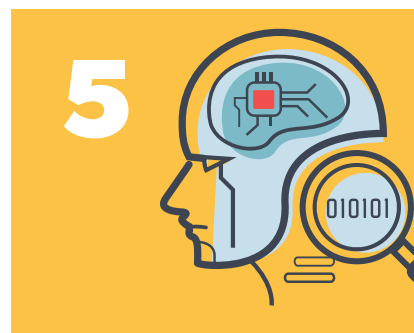
Ensure that any AI that is Used Follows Acceptable Standards

Through collaborative action and public discussions, we need to establish standards and ethical guidelines on the use of AI in education, particularly when it comes to use with young children. Young children are vulnerable, and even small experiences can drastically change the trajectory of their development.

We need to be asking questions like: Who has ownership of the data collected by AI? Who has access to the data? What measures are in place to monitor and protect it? How are AI systems trained? Who trains them? What went into their algorithms? What are the objectives?

We need to call for:

EXPLAINABILITY

New tech, including AI, must be made transparent & be able to be explained

FAIRNESS

Properly calibrated, AI can assist humans in making fairer, more equitable choices.

ROBUSTNESS

As systems are employed to make crucial decisions, AI must be secure and robust
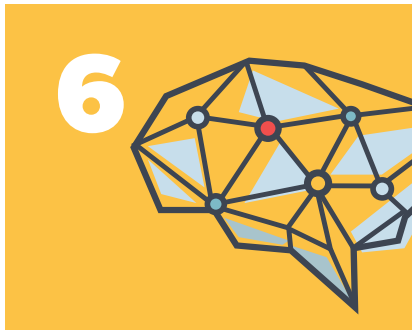
TRANSPARENCY

Transparency reinforces trust, and the best way to promote transparency is through disclosure

PRIVACY

AI systems must prioritize and safeguard consumers' privacy and data rights.

6

Remember Our **Priorities as Early Childhood Educators**

As the result of an increasingly technologically connected world, citizens are finding it difficult to effectively exercise civic responsibilities in relation to global issues such as climate change, poverty, conflict, and warfare.

Human capabilities such as ethical reasoning, persuasion, social understanding, and empathy will become more and more prized over the next decade. These functions will become differentiators as artificial intelligence and machine learning start to assume roles that were previously human tasks. Skills in emotional intelligence will become essential to anyone who wants to stay relevant in their field as automated systems proliferate.

We may not want our world to change. We may not be comfortable holding conversations about artificial intelligence. However, if we ignore AI we will not be able to respond appropriately as AI conversations and application in education increase. Artificial intelligence, neural networks, and machine learning could be extremely powerful and effective tools for educators and students alike, but without diligent commitment to ensuring these systems are explainable, fair, robust, transparent, and protective of privacy, the harm they could cause may very easily outweigh the good. We must get engaged and proactive on these topics immediately as educational AI is just starting to take its first steps.

Much like teaching a young child, the choices we make now at the start will have vast repercussions down the line. It's our duty to ensure those choices are wise, measured, and point us towards a better and more secure future.

RECOMMENDED RESOURCES

"What do babies think?"
TEDx Talk by Alison Gopnik
Professor of Psychology and Affiliate Professor of Philosophy at the Tolman Hall University of California at Berkeley
https://www.ted.com/talks/alison_gopnik_what_do_babies_think

"An Imminent Threat from Artificial Intelligence"
TEDx Talk by Aidan Gomez
Doctoral student of machine learning at the University of Oxford https://www.ted.com/talks/aidan_gomez_an_imminent_threat_from_artificial_intelligence

Reimagining Education: *What Assessments Should Look Like*

KATE ANDERSON

Kate Anderson is the founder of Unbounded Associates, a Washington, DC-based firm that supports governments, donors, UN agencies, NGOs, and researchers to increase their impact in education. Previously, Kate was an associate fellow at the Brookings Institution, where her research focused on 21st century skills, assessment, and global citizenship. She holds a M.P.P. from Georgetown University and a B.A. in Psychology from Pepperdine University.

*I*magine if an ill patient was hooked up to a blood pressure monitor in a medical clinic, and the doctor said, "We are going to measure your blood pressure now, but the results will be available next year." What good would that information be in a year? Perhaps the doctor could use it to save a future patient's life. But that is hardly reassuring for the currently ill person!

This might sound absurd, but for many teachers and schools worldwide, this is precisely how learning assessment data is collected and fed back (if it ever reaches the teachers and schools at all). **Unlike a blood pressure reading, which is quick, painless, accurate, and provides immediate results, educational assessment can take hours to administer, can cause stress, and the results can take months or years to be reported.**

Teachers must develop their own methods of collecting information on how students are progressing, which is time-consuming and can vary widely from classroom to classroom. In the current era of COVID-19, there is the added challenge of schooling being done at home, through distance learning, or through hybrid models of online/in-person education. This has further disrupted informal assessment teachers do through observing their students and individualizing instruction accordingly.

Learning assessment can be defined as "the process of gathering and evaluating information on what learners know, understand and can do."

Learning assessment can be defined as "the process of gathering and evaluating information on what learners know, understand and can do" (Clarke, 2012). It can take the form of national examinations, tests, quizzes, or anecdotal observations. It is widely acknowledged that assessment needs reform, renaissance, or even revolution. In 2014, Barber and Hill called for an "assessment renaissance," and before that, the Assessment and Teaching of 21st Century Skills (ATC21S) project brought academics and industry together to transform how we teach and assess students. Still, change has been incremental.

The current COVID-19 pandemic provides an opportunity to break out of the old habits of testing for testing's sake. In the recent Framework for Re-Opening Schools by UNESCO, UNICEF, and the World Bank, the three agencies recommend that during the COVID-19 crisis, education systems automatically promote students from one grade to the next without exams and assess students' levels of learning following school closures to inform remedial efforts. These policy changes, which would have been unheard of in many countries just a year ago, provide an open window to rethink educational assessment and prevent us from falling back into old patterns.

Now that the window is open, what kinds of assessment should we swap out the old ones with?

Assessments should measure the important things

Children need to learn how to read and do basic math, and they should not attend school for five or six years without learning these skills. However, the basics will not give children, especially children from marginalized backgrounds, the advantages they need to thrive in a 21st-century society. Now, nearly a year into the COVID-19 pandemic, with resistance to public health authorities and misinformation spreading rapidly through social media, we are reminded that while reading and math are critical skills, they are not enough to fully participate in a changing society. Problem solving, flexibility, perspective taking, and a basic understanding of health and biology are all vital as we navigate this crisis.

However, literacy and mathematics have a longer track record of being assessed than, for example, flexibility. According to the UIS, nearly all countries measure reading or math, but many struggle to measure these two domains accurately. Adding in additional domains to a national assessment system is a complex task, but

many countries are taking it on. Countries as diverse as Australia, Singapore, Bhutan, Costa Rica, Finland, Indonesia, Mongolia, Kenya, Nepal, the Philippines, and New Zealand have taken steps to include a broader set of skills in their curriculum and assessments (https://www.unboundedassociates.com/breadth-of-skills). Colombia has been a global leader in the assessment of citizenship and peaceful coexistence, which the government prioritized to help address the conflict that has affected the country for more than 50 years (https://www.tandfonline.com/doi/full/10.1080/03057925.2019.1574558).

Assessments should enable and inspire action

We are now in a moment when we have more technological advances than ever that could speed up the teaching and learning process through data. We have devices and apps that measure and give us real-time information on many things about our personal lives. Fitness tracking devices, weight loss apps, finance management apps, and health tracking apps provide daily feedback on our habits. **How can we harness advances in technology to get real-time data on learning to students, parents, teachers, and education policymakers? And how can they use this data to improve learning?**

Assessments should allow the school system—teachers, principals, and policymakers—to troubleshoot and find resources to solve problems. They should connect students, families, schools, and governments. This can be done with technology or without.

For example, Teaching at the Right Level (TaRL) uses assessment to group students by ability and progress their learning based on where they are. TaRL was developed by the Indian NGO Pratham and has been rapidly expanding across

Asia and Africa. The approach works by dividing children (generally in Grades 3 to 5) into groups based on learning needs rather than age or grade. The teachers then dedicate time to basic skills. Student performance is regularly assessed, rather than relying only on end-of-year examinations. Multiple research studies have found that when TaRL is successfully implemented, learning outcomes improve (https://www.teachingattherightlevel.org/).

At the policy level, Ghana Education Service instituted a virtual dashboard to support the implementation of an initiative to improve reading in the early childhood and primary grades. The dashboard provides monitoring data on, among many other things, student progress in reading. The data are available to the Ministry of Education, regional and district education directors, coaches, and school monitors. In response to having this data in an accessible format, district staff can better monitor schools and support teachers to allocate additional time for remediation of students struggling to read. Teachers learned how to group pupils by academic areas of need. The project developed and shared guides with remedial activities linked directly to specific academic areas of need. They report that teachers are using classroom assessment to determine whether the pupils in remediation groups are making progress (Marcia Davidson – Personal Communication, February 2020).

Artificial intelligence (AI) is also being used to provide feedback to learners. For example, a program called CGScholar used with graduate students can analyze thousands of pieces of information submitted by students through a web portal (comments, blogs, surveys) and present them to the learner in a visualization that reflects their knowledge, focus, and collaboration

https://www.tandfonline.com/doi/full/10.1080/00131857.2020.1728732?scroll=top&needAccess=true

Assessment should be fun (or at least painless)

My 3-year-old son uses an app that requires him to "save" letters from a letter-eating monster by correctly matching them with the sounds they make. He is not only learning phonics, but also providing his teachers with data on the letter sounds he knows, so they can emphasize the ones he doesn't know at his next virtual small group. He loves it; to him, it is playing, not testing.

Stealth assessment can measure creativity, persistence, and content knowledge in various subjects.

Assessment can be playful and can even be done when one doesn't realize they are being tested. Stealth assessment is "An approach to performance-based assessments that embeds assessments in digital games in order to measure how students are progressing toward targeted goals" (https://mitpress.mit.edu/books/stealth-assessment). **Stealth assessment can measure creativity, persistence, and content knowledge in various subjects.** Computer adaptive testing (CAT) can further make assessment less painful by matching the questions to the student's skill level on previous questions.

Another type of assessment that is less painful for the student is classroom-based observations (though teachers can be uncomfortable being observed). Used widely in early childhood education, classroom observations are increasingly being used with primary secondary students, through tools such as the World Bank's Teach tool, the Classroom Assessment Scoring System (CLASS), EduSnap, and the Measure of Early Childhood Environments (MELE). These tools provide information on elements of the environment and teacher practices linked to improving learning outcomes.

Assessments should reach all children

Education is a fundamental human right, and learning assessment is needed to ensure children are learning when they are in school. Currently, large groups of children and youth are left out of assessments, including children with disabilities, out-of-school children and youth, and children experiencing displacement (https://inee.org/resources/academic-learning-measurement-and-assessment-tools-education-emergencies-identifying). Many large-scale assessments intentionally exclude children with disabilities, those who don't speak the national language, and those who live in a part of the country where there are security risks.

Given the status quo of assessments and their propensity to cause stress and stigmatism, bringing all children into a broken system is not necessarily the solution. There are several NGOs leading the way in making assessment more accessible.

Save the Children developed the Holistic Assessment of Learning and Development Outcomes (HALDO), a rapid assessment tool that measures literacy, numeracy, social and emotional learning, and executive functioning. The assessment was developed for refugee and internally displaced children ages 4-12, with the wide age range intended to account for varied skills present in emergencies. It is designed for rapid deployment with minimally trained assessors in the immediate onset of displacement (https://www.fmreview.org/education-displacement/dsa-krupar-westrope).

Citizen-led assessments such as ASER and Uwezo developed innovative ways to assess children with disabilities, including conducting vision screenings and adapting questions from the Washington Group on Disability Statistics to their household surveys to get data on disability prevalence and type among children both in and out of school. These NGO efforts provide a model that can inform governments as they rebuild their educational assessment systems.

Conclusion

We are at a historical moment when world leaders are promising to build back better and learning assessment systems must adapt to survive. **The rapid expansion of remote and virtual instructional techniques can be leveraged to finally realize an assessment revolution.** A window of opportunity is before us to advocate for governments to rethink their learning assessment systems and make them more relevant, actionable, equitable, and, yes, even fun!

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If Teachers' Action is to Express New Priorities, *Then Who and What Can Support Teachers to Act in New Ways?*

MAUD SEGHERS

Maud Seghers is a Senior Education Advisor at the Brussels head office of VVOB, a non-profit organization with close to 40 years of experience in supporting Ministries of Education to improve their professional development systems for teachers and school leaders. She has been working in education (for development) for almost 25 years – on the implementing side, at NGOs such as iEARN (US), Teaching Matters (US) and VIA Don Bosco (Belgium + global) and VVOB (Vietnam + head office); and on the policy dialogue side at the Association for the Development of Education in Africa.

*F*or future education systems to facilitate human flourishing and make children more empathetic, compassionate, and kinder towards themselves and towards each other and the planet, those same systems will need to ensure that teachers also flourish. Teachers form the very backbone of today's and tomorrow's education systems and if the hope is that they will act with sincere concern for the learning progress of each child – where "learning" is "whole-brain" – then they, in turn, deserve the sincere concern of everyone with high hopes for that brighter future. Without it, moving beyond the rhetoric will simply not happen. But what could such sincere concern for teachers look like for governments, donors, and their implementing partners?

1. Cultivate existing bright spots

- Celebrate positive deviance

Existing education systems by and large focus on knowledge transfer and tend towards what is more easily amenable to measurement, like cognitive skills. **But even within the current constraints, there are highly engaged teachers who embrace change and perform exceptionally well. Identifying and celebrating these 'bright spots' is key to reimagining education systems.** Initiatives such as the Global Teacher Prize, which is run by the Varkey Foundation in partnership with UNESCO, are emblematic of this idea. It is impossible not to be inspired when hearing about

Ranjitsinh Disale's efforts to promote girls' education and watching his parents beam with pride during the virtual ceremony broadcast. QR coded textbooks and 'Let's Cross the Borders,' here we come! Importantly, the much-coveted Prize promotes deep and lasting change by setting criteria such as "helping children become global citizens through providing them with a values-based education that equips them for a world where they will potentially live, work and socialise with people from many different nationalities, cultures and religions" and "improving the teaching profession through helping to raise the bar of teaching, sharing best practice, and helping colleagues overcome any challenges they face in their school."

- Cherish the power of everyday action

But, of course, before his big win, Ranjitsinh Disale was 'at it' for years and his success was not always ensured. His heroism, like that of millions of teachers across the globe, lies in tactfully and doggedly challenging the status quo in practice on an everyday basis. Even policymakers' most deliberate attempts to reimagine education have a tendency of remaining trapped in the realm of discourse, at least in part because they are presented and thought of as wholesale reforms and paradigmatic shifts while not enough attention is paid to the changes they require in culture, behavior, and mindsets. The underlying reasoning seems to be that for change to happen at the scale that is needed, it also needs to be massive. **In reality, improvements that represent small departures from the current practices of educators and key staff in the education system are much easier to scale. In that sense, transformational change does thrive on many small pockets of change and celebrating the everyday wins can and does take on large-scale importance.**

- Encourage teacher leadership

The COVID-19 pandemic is presenting a unique situation in which teacher leadership and creativity can be demonstrated. Individually and collectively, teachers have found ways to keep learning going for many millions of children. Quickly dropping the usual tyranny of syllabus completion, they have modified existing curricula; adapted lesson plans to carry on instruction online, through mobile phones, radio, or television; and prepared take-home packages for students. Faced with a significant and urgent crisis, they have innovated en masse and with a keen awareness of how important it is to maintain learners' wellbeing and to equip them with social and emotional skills. This is not to say that the solutions found were always perfect or even great by the standards of "whole brain" education. **It does, however, speak to teachers' resilience and their ability to tackle new challenges, even with minimal preparation.**

What we witnessed as well, on the side of some governments, was the incredible power of letting go. Themselves at a loss for perfect (or even great) answers, some Ministers and Ministries of Education were compelled to give

schools and teachers more leeway than usual and to embrace school autonomy. Likewise, Ministries had to quickly re-tailor their professional development supply to meet educators' actually felt needs. In Ecuador, for example, where COVID-19 hit particularly hard and coincided with an already deep economic crisis, Minister Monserrat Creamer has tirelessly engaged in dialogue with the teaching workforce, no matter how difficult some conversations were. Upon popular demand, the Ministry of Education and VVOB joined hands to redesign an existing face-to-face course for student counsellors and teachers on how to use restorative practices in schools to develop a blended trajectory for supporting parents in creating safe and supportive homeschooling environments. **Sincere concern for educators means making responsiveness to their needs into the new normal.**

2. Surround teachers with support

- Foster effective school leadership

Teacher leadership thrives in a school culture characterised by trust, collective responsibility for learning, recognition, autonomy to solve problems, and support for teachers' professional development. **School leaders have a vital role in creating these conditions and they are, as such, the linchpin to transformational change in education. In turn, they need to experience connection, competence, and autonomy in their own role as well.**

In Rwanda, school leadership is traditionally top-down, with teachers accountable to headteachers who are, in turn, accountable to their hierarchical superiors at the district level. In partnership with the Rwanda Basic Education Board (REB) and the University of Rwanda College of Education (UR-CE), VVOB developed and implemented a post-graduate diploma course in Effective School Leadership, which aims to change the mindset and introduce shared leadership as a key element of headteacher competency. **After taking part in the training program, school leaders have a better understanding of the value of shared leadership, and they change their perceptions towards it.** Importantly, these changed beliefs translate into changes in practice. Some school leaders make time in the school timetable so that school-based mentors can set up communities of practice of subject teachers and organize formal induction programs for new teachers. Others create platforms for shared decision-making, such as School Improvement Planning teams. As a result of this evolution towards shared school leadership practices, teachers, in turn, indicate having more decision-making power when it comes to school improvement planning and more autonomy in lesson planning and assessments. **Teachers feel more valued and motivated and can approach their school leaders without fear of rejection or reprisal.**

- Nurture professional communities for teachers and school leaders

Teachers and school leaders, like most people, are not particularly keen on executing other people's ideas. **Ownership is key to any change process.** What is typical of change in education systems, though, is the very large number of frontline implementers combined with their relatively high levels of professional solitude. **Both the fact that there are so many owners and the fact that they are in a position to act according to their 'very own' ideas and beliefs represent challenges to large-scale transformational change in education.**

With experience in Ecuador, Rwanda, South Africa and Suriname, **VVOB has found that professional learning communities (PLCs) are a particularly powerful conduit for stimulating ownership over education innovations**

while maintaining a good amount of fidelity in their implementation in different classrooms and schools. As long as these communities have certain characteristics, that is. The role of the PLC facilitators is key to ensuring a good mix of formal and informal contacts, unlocking members' expertise or pulling in expertise from elsewhere when needed, and making certain that conversations are in-depth and sufficiently strong and frequent, so that participants go beyond spreading information and ideas ('advice') and move to spreading innovations through collective problem-solving and building complex, non-routine knowledge. Who facilitates the PLCs is quite context-dependent, we learned, as there is much variation in the human resources available in given education systems. Across the board, it has been necessary to invest in training and coaching the facilitators.

- Strengthen relations between schools and their communities

There is quite a bit of research evidence to demonstrate that community and parental involvement in schools can have a positive effect on education delivery and quality. Some conditions do need to be in place. These stakeholders need to be aware of their right to engage in the quality of their children's schooling and be provided with relevant information that enables them to do so in a meaningful way. The pathways for engagement also need to be clear. Interestingly, the available evidence also suggests that **building stronger links between schools and the community – for example, by engaging parents as teaching assistants – can help to enhance the status of teaching and, indirectly, the status of teaching and teacher motivation.** Effective school leaders will therefore focus on strengthening these relations as a way to surround teachers with support. **Strong school-community relations also open up a space for dialogue on what education is expected to accomplish and how such accomplishments should be measured. Such conversations are necessary to accomplish a shift to a whole brain approach to education.** They can trigger greater interest in social and emotional learning; help teachers better understand the needs of all learners, including the most marginalized and at risk; inspire community leaders to strengthen the ties between education, health, and social policy; and help parents and guardians in supporting social and emotional learning at home.

3. Do accountability differently

- Trust teachers and school leaders as professionals

Even the best-intentioned governments can find it hard to truly trust educators as professionals. In a working paper titled "The limits of

accounting-based accountability in education (and far beyond)", Dan Honig and Lant Pritchett refer to the classic principal-agent problem to understand the dilemma: The boss (principal) needs to rely on employees (agents) to get things done but doesn't fully know what they're doing. Agents may not share the principal's goals or may act in ways that do not advance the principal's goals, even when these agents, too, may have the best intentions. The principal can then attempt to monitor and control the agents in a variety of ways to ensure that agents act in ways desired by the principal. For instance, policymakers concerned about teacher absenteeism – indeed a serious problem in many schools across the globe – may respond by installing cameras in classrooms to check whether teachers are in attendance. But just as too little control is a risk, so is too much. **In some instances, it is possible to verify progress from a distance and monitor meaningfully on the basis of a few well-selected quantitative targets. That is not likely, however, to give a good picture of facilitating human flourishing through education.** For this, an alternative for policymakers would be to invest in creating a system-wide, deep, and shared understanding of expectations and joint purpose and to put greater trust in the professional judgment of teachers and school leaders.

- Enhance 'thick', horizontal accountability

'Real' accountability that will drive systems transformation in education (and far beyond) often is based on 'thick' description of processes, outputs, and outcomes, so argue Honig and Pritchett. Not all of this information needs to move up in the education hierarchy. It is important to create scope for local-level utilisation of the information by giving account inside schools and school communities as well as to parents, guardians, and learners, with the aim of fostering an environment for continuous learning and improving performance. This will be especially impactful when local stakeholders – including teaching staff – already committed to quality education are empowered. It is also for this reason that celebrating positive deviance is so important. To reduce the administrative burden on educators, district, provincial, or central Ministry of Education staff could be engaged through look-and-learn visits, study tours, hearings, and regular conversations, as a complement to the quantitative data they receive on a few well-selected indicators. **Such 'thick' accountability could also be more receptive to a range of instruments for measuring social and emotional learning, such as self-reports; teacher, parental, and peer evaluations; and so on.**

For sure, implementing these three lines of action of sincere concern for teachers – and learners! – is not an easy feat. But I believe that if we want to truly reimagine education systems, then we owe it to ourselves and future generations to be(come) the everyday heroes that challenge the status quo.

Reimagining education:
Perspectives From Africa on the Issue of Access

PATRICK MAKOROKO

Patrick Makokoro is an educational researcher and development practitioner with extensive experience working in community and international development. He is a dedicated child rights activist and passionate about social justice issues around the world. Among other social entrepreneurship initiatives, he founded the Nhaka Foundation, a charitable organization that provides education, meals, health care, psycho-social support, and other essential services to orphaned and vulnerable children in Africa. He is currently a Doctoral Candidate in the Faculty of Education at the University of Victory, Canada.

The impact of COVID-19 in Africa has been devastating and the real costs are still to be fully quantified. The pandemic revealed inadequacies and inequalities in social and economic institutions, including access to education. What we have learned has brought into clear focus the need for evaluation and transformation.

At a macro-level, a number of factors have determined how governments address the educational needs of children and their families during this crisis. Countries in the Global North have provided relief support to the citizens and businesses through stimulus packages. In these economies, taxes have been waived or deferred and this has brought much-needed relief to individuals and businesses.

In Africa, the governments have worked together through the continental political bloc, the African Union, to provide a strategic response, but implementation and coordination have been seriously restricted due to lack of funding. Therefore, the African Union launched

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LOCKDOWN
COVID-19

a fundraising campaign in order to raise funds that would be distributed to African countries through the African Center for Disease Control and Prevention (Africa CDC). The funds raised were to be directed towards mitigating the economic, humanitarian, and social impact of COVID-19 in African countries; these efforts included enhancing the capacity of the Africa CDC to respond to public health emergencies due to COVID-19 and for the distribution of personal protection equipment (PPE) and other essential supplies.

At a country level, endemic corruption in the distribution of PPE and food supplies, as well as poor leadership, exposed communities to the deadly reality of the pandemic. In health institutions, fear of contracting the virus because of insufficient PPE led to reduced service. This hampered the roll out of national-level public health responses. With policy measures to restrict COVID-19 infections in play, it also meant that other regularly deployed community health measures to contain spread of diseases were affected. Routine immunizations and child health monitoring assessments were stopped in most communities, increasing the risks for already challenged families. Quality of life for the most vulnerable segments in society, especially women and children, was gravely compromised.

Globally, schools were shut down as part of the COVID-19 lockdown measures governments introduced to protect their citizenry. In many African countries, schools being closed also meant that children's access to adequate nutrition through school

feeding programs was cut off. Children were now at home most of the time and, sadly, reports of physical, emotional, and sexual abuse started to come through. The significant constraints associated with the pandemic vitiated the social safety nets designed to provide succor for the vulnerable segments of society, especially the children.

With the disruption to schooling, compensatory programs were developed. However, access to these programs was impeded for some children, due to lack of internet service or power or because parents were not adequately informed. Being at home for some children meant spending more time working in the fields or carrying out household chores. Reading, writing, and doing math fell by the wayside as needs such as access to food became more pressing. Children living in urban areas had some advantages over their rural peers. While children in most urban areas had access to online learning solutions, children in rural areas had only limited access to some form of learning due to the lack of online technologies. In recognition of this challenge, various organizations, with the support of UNESCO and UNICEF,

began providing lessons via the radio. The true efficacy of such programs will only be known in coming evaluations.

Reimagining Learning

While shying away from overgeneralization about a continent as vast and varied as the African one, the challenges faced in Africa as outlined above provide an opportunity to reimagine education. **Does being in a physical classroom represent learning for children? Should a teacher be standing in front of the class to be recognized as a teacher? How can we draw on indigenous ways of knowing in order to reimagine education? What were the community teaching and learning systems that existed before and how can they be adapted to suit the needs of the student today?** What are the other available ways to teach young children? **Does rote learning still serve a purpose in the world today?** It is time to reimagine education in the context of providing opportunities for exploration and active, meaningful learning.

As an avid appreciative inquiry practitioner, I wonder if these questions are being taken back to the families and communities by local and international development partners. How can communities be involved in this process of reimagining? How do they see the child of today being an active and contributing member of their community years down the line? What are the community needs that education can lay the groundwork for addressing by future generations? Can a child access technologies to follow the weather and changing climatic conditions in their community? Can she access pricing information from the grain and vegetable markets? Students should be technologically proficient, able to use the internet for learning that is relevant to their lives.

Yet access to the internet is still problematic, and so it is also important to explore other ways of learning that do not rely on a live internet connection. It is time to strongly consider and implement offline learning solutions.

Offline Learning systems

Offline learning can provide children living in resource-stressed communities access to digital educational content that can be made available to users without the need for frequent external interaction. Children without access to a classroom or an active internet connection would still be able to learn through text-based or storage play back learning solutions. This means packaging learning activities and loading them onto solar-powered tablets that will be used by children and community members, with support from teachers. With such tools, parents and caregivers in resource-constrained environments are able to support their children's learning, using tablets that give them the ability to walk through the learning content.

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The content itself can be developed using the curriculum as set by the ministry of education in any particular country. Teachers can visit the villages to check on students' progress and spend time mentoring and coaching as needed. Remote and hard-to-reach communities can access educational content on the learning tablets. The frequency with which members of the community may need to travel to access educational resources can be minimised.

As these offline technologies are deployed, we must be sensitive to the possibility that users may never have interacted with computer technology. Providers must think through ways to provide training and enhance the capacity of tutors to be able to support learners using these digital learning technologies. The immediate benefit will be an improvement in digital literacy within communities, which then will have potential spinoff benefits such as greater access to education, health care information, and financial services. While digital literacy has been linked primarily to active internet, educators, governments, and development partners need to explore technologies that don't require constant internet connectivity. Only then can we ensure that unconnected populations in developing countries have access to learning and vital information.

Conclusion

The COVID-19 pandemic has presented opportunities to consider education as it once was and imagine what it can be in the future. It is possible that the traditional classroom-based instruction will be insufficient for our needs, and remote-based offline technologies will become more and more relevant. **This is an opportune time for reimagining education together with the children and their communities so that the new ways of learning are inclusive and embrace the daily realities faced by children.** Equally important is to find sustainable ways to increase access to these technologies for communities living in hard-to-reach areas. Moving ahead, countries in the Global South should explore strategies that bridge the digital divide that exists between urban and rural communities in accessing the internet and other offline learning technologies.

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Embracing Wonder and Curiosity: *Transforming Teacher Practice Through Games*

SHERRY MARTENS, KATHERINE CRAWFORD

Sherry has been inspiring learners in Alberta to be their best selves since 1987 as a classroom teacher, System Specialist and school-based administrator. Her teaching career spans K-12 across curriculum areas, particularly in the Fine and Performing Arts and Humanities as well as undergraduate and graduate students in pre-service education and educational leadership. She is a consummate learner whose eclectic research includes visual culture, visual displays in schools, teacher identity, student efficacy, assessment and historic school spaces and curriculum theory. Her love of shenanigans and bringing the past to life is played out in her work as she teaches as the Mona Lisa, Anne Shakespeare or Clifford Sifton.

Katherine is an educator invested in preparing pre-service teachers to be transformative and creative leaders in their future learning communities. She believes she can facilitate that by understanding the realities of the classrooms and learners with whom she works with, and by being actively involved in committees and research.

What is wonder and curiosity? Do children in school have the opportunity to wonder? Do teachers? We seek to know because we are curious, and children are innately so. From the time they are able to speak, children ask questions about the world

In Africa, the governments have worked together through the continental political bloc, the African Union, to provide a strategic response but its implementation and coordination has been seriously restricted due to lack of funding.

around them. Every parent of a toddler has experienced constant questioning: Why does the moon come out at night? Why is the grass green? Why is rain and snow wet?

A child's world is fresh and new and beautiful, full of wonder and excitement. It is our misfortune that for most of us that clear-eyed vision, true instinct for what is beautiful and awe-inspiring, is dimmed and even lost before we reach adulthood. . . . If a child is to keep alive his/her inborn sense of wonder . . . s/he needs the companionship of at least one adult that can share it, rediscovering with him/her the joy, excitement and mystery of the world in which we live.1

What is a sense of wonder and how do we cultivate it in a classroom? How do we recognize it when it appears? Can it be transformational for teacher practice?

Susan McWilliams2 suggests that children express wonder and curiosity through questions, observations, hypothesis making, theories, art, imaginative play, stories, myths, and conceptual play in language. She also identified the purposeful instructional decisions that teachers need to make in order to cultivate wonder, including offering opportunities to theorize and make predictions based on experiences in the classroom; taking risks in learning; providing active, humanizing responses to students' questions; and, most important, modeling wonder-type questions themselves. Ideally, teachers personalize and challenge students' thinking by providing opportunities for rich exploration of content.

Gamification and game-based learning provide a doorway for wonder and curiosity to enter a classroom. Teachers have used game playing in the classroom extensively as a way to practice and perform learning, such as using card games in math or creating a board game at the end of a unit of study to showcase understanding. This approach to learning relies on experience and social construction of knowledge and is motivating to students. More recently, gamification, "using game-based mechanics aesthetics and game thinking to engage people, motivate action, promote learning and solve problems,"3 promotes recent pedagogy in design thinking that asks the learner to create solutions for real problems. In order for games to be effective learning tools, the

Game Play

learner needs to be engaged, supported, and able to sustain a balance between play and achieving specific learning outcomes.

Escape rooms can be effective approaches to this gamification of education. Educators such as James Sanders and Mark Hammons4 have used escape rooms as ways for students to explore curriculum using design practices and share them on an open source project. Students can participate in an established escape room as a way to first explore a problem and find solutions as a team, or create original escape rooms to pursue their own exploration of subject matter.

I wondered how teachers might use puzzles and locks as a way for kids to explore curriculum. Was it a chance to engage in wonder and curiosity? How might it become part of long-term practice for a teacher?

We invited participants of Design X, a group of teachers who participated in several design thinking user experiences both in and out of their school, including an escape room, to discuss their experiences with us. We were interested to see what remnants of the design experience remained for the teachers and if they had continued using, or considered doing so, any aspects of the experience and why, particularly the phenomenon of wonder and curiosity.

They spoke of their teaching experiences, especially those that involved hands-on approaches such as makerspace:
The kids have used reflection journals and we would use them (for formative assessment) every time; that was good. I think I was saying, "We are also excited about learning in a different way." Same with them. When we tried the makerspace, they're so excited. They then put everything away

and took a step back. . . . They were thinking what they liked about this part or that game we tried, what was working well.

I like the variety of approaches in the escape room. I have a box of locks and stuff and that is my beginning escape room. I got really excited about it and so I think it lends itself to what I am teaching this year—one is in social studies and (the other) in math. I think just being able to introduce it to them and then being like we are one of the explorers or in the middle of the fur trade . . . that is only one level of it and so I think I will definitely like to keep using it and see where it goes.

How did the experience open up opportunities for wonder and curiosity? We asked about what evidence the teachers saw in the work itself or that was inspired by it later:

I think that students were inspired in the escape room experience. There were kids who are usually very quiet or reserved and they super excelled at the challenge. . . . Even kids who don't necessarily work well in groups. . . . They had to engage in a different way and they did. . . . We saw that in the makerspace later . . . in both places, you need to work as a team. Some even want to continue doing escape room parts in the next part of the research in social studies. They just did not get sick of it. They continued to be curious about the rooms and excited to do them again. . . . Even if they were completely wrong, it did not matter. Even when they knew they had already checked one pocket, they did it again, for the sake of their own curiosity. Even if 12 kids did it before them, they needed to satisfy that what they were looking for was not there. It just encouraged them to continue to try things later on.

We also want to share this with colleagues. . . . I think being able to show them that it's very reliable and then even just doing little bits of it, not necessarily making a huge escape room, but even . .

. small things like QR codes, like we did for math, we collaborated and every one of our kids were around the school. . . . I don't think it needs to be this big elaborate project. It can be the little things . . . the students have commented that they can have a little escape room at their desks by just using or planning a puzzle. If you finish the puzzle, you can challenge your friend . . . you can have the pieces all over the room. It just makes learning more interesting for the kids.

We saw aspects of gamification transforming the learning experiences for both the teachers and the students in the classrooms; perhaps they were being freed from the curriculum in new ways. We wondered what this meant to the teachers:

A game doesn't have a limitation. You can do a lot of things when you play, everybody can get it and find a place and it's not just about the individual person, it's about when you play and you can see so much learning going on. I think the kids know it too and it's very powerful . . . they ask all the time, "Can we play that again?" Now, I just give them the chance to try out new games or even better, make them themselves using puzzles.

Through the escape rooms, students are taking charge with a classroom activity that looks like fun but is truly engaged learning.

Providing students with opportunities to experience learning through games, such as escape rooms, puzzles, and scavenger hunts, brings wonder and curiosity back into the classroom. L'Ecuyer suggests that "wonder is the center of all motivation and action in the child. Wonder and beauty are what makes life genuinely personal. Wonder attunes to beauty through sensitivity . . . when wonder, beauty, sensitivity and secure attachment are all present, learning is meaningful."[4]

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Reimagining *Assessment*

RUSSELL CAILEY

Russell is one of the Headmasters of THINK Global School (TGS), the world's first travelling high school. Beyond the travel, TGS offers a distinctly unique environment for students to guide their learning through the Changemaker

*A*ssessment remains an universal component of education systems that firstly stands firm, stubbornly against change, and secondly is bizarrely universal across geography and educational models.

It feels like we are a long way from John Dewey's educational dream of learning-by-doing.

If the COVID-19 crises has taught educational leaders anything it has been that our shared assessment model, largely dependent on testing, with a scattering of coursework where deemed necessary is largely insufficient within a wider context of prolonged school closures.

This crisis emerges in a preexisting narrative of exhaustion and frustration with traditional testing which stands accused of being outdated and merely a snapshot in time, rather than a deep assessment of student ability.

If the COVID-19 crises has taught educational leaders anything it has been that our shared assessment model, largely dependent on testing, with a scattering of coursework where deemed necessary is largely insufficient within a wider context of prolonged school closures.

At Think Global School (TGS), we have collectively struggled with the design and implementation of a student-worthy process of assessment, and by no means has the journey concluded. When the Changemaker program launched in 2017 members of the TGS team headed off into the global education conference circuit and looked for feedback on our ideas for assessments, it is fair to say that audiences received much of the model with surprise and criticism. However, in light of the COVID impact upon our industry and the subdued success our model has achieved, in addition to the feedback from parents, students and (more recently) industry experts, we again emphasise the need for students to drive assessment, not schools and that assessment needs reimagination.

These assessments offered at Think Global School are formulated by educators in three domains, student-designed rubrics, the table of excellence and self-awarded grades.

Student-Designed Rubrics

At Think Global School, students include a selection of nine families of Learning Targets within their teacher-led, personal projects and mastery projects (this being a final thesis project completed mainly in Grade 12). Students then establish a criterion following Bloom's taxonomy of what novice, specialist, and mastery look like for each of the selected learning targets (usually between 6–8 targets per project).

Rather than doing projects, students learn how to deep dive into cross-curricular subject matter through the teacher-led modules and then are given more freedom as they move through the program. As students learn how to adapt to the Changemaker program, the learning targets that are predominantly achieved in the novice and specialist zones, and students slowly learn to bridge the gap between specialist and mastery by taking more opportunities to create, coach and mentor on their passions and the PBL-process itself. Rubric design starts with baby-steps in the teacher-led modules and personal projects, with students focusing on maybe singular targets to push to or practice at mastery, pushing a broader scope of mastery (maybe a scope of 4/5 targets) by the time they reach their final mastery (or passion) project.

Table of Excellence

Once learning targets have been selected, and an evaluative process has been established for predominately novice and specialist, students complete a 'Table of Excellence'. The purpose of the table is to add a more personalised approach towards the assessment of a project. Students here can focus away from the more academic-based learning targets and focus on more transferable skills (sometimes unhelpfully called 'soft skills') such
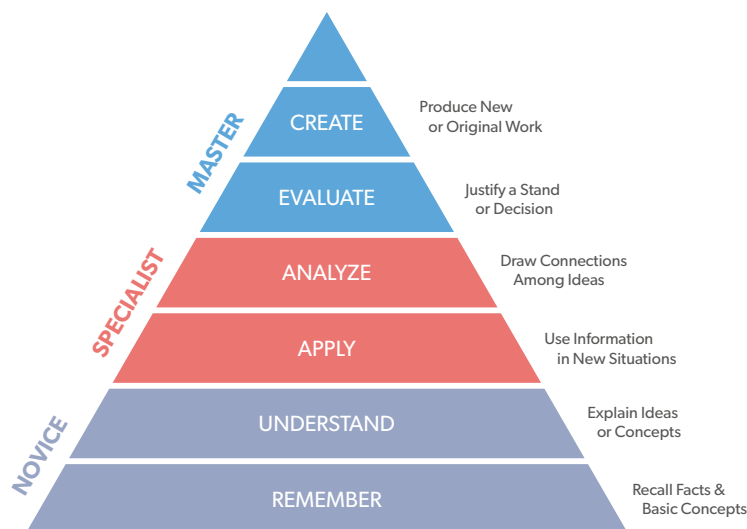
Assessment and Mastery at THINK Global
Source: https://thinkglobalschool.org/what-are-learning-targets-at-tgs/

as general communication, presentation skills, or accepting and giving feedback. The table of excellence is also a chance to embed 21st Century Skills within the student's projects and also push themselves to reflect on the positive community impact of their designs or/and prototypes.

The Self (student)-Awarded Grade

Probably the most controversial aspect of the TGS approach to assessment is the 'self-directed grade', and this indeed receives the most surprise from our external guests, conference attendees or critical friends. Moving away from the traditional model in which the teacher and school are the sole arbitrators of achievement and success, once the student completes their project they award themselves their Grade based on the work recorded and presented to staff in a process portfolio based against their self-designed rubric and Table of Excellence, in short, did they do what they aimed to do?

This project grade is awarded in collaboration with their guiding educators in the form of a formal and structured exit interview. If the educator feels that the Grade and evidence provided does not sync, they can either ask for the interview to be repeated at a later date or can challenge the Grade through pointing out the discrepancies between the various student-designed entities (portfolio, rubric and Table of Excellence).

It is the TGS belief that having the stated internal assessment system geared towards regular dynamic feedback led by student-directed and designed criterion is nothing to shy away from, a new approach to assessment can propel us collectively towards what Ito and Howe (2019) call learning over education.

We can all collectively think back to the days when student assessment looked like a regular practice test, a mock exam followed by an external assessment, but is it with embarrassment or pride? Is this the best we can do? A system so archaic and brutally exposed by COVID and current events that we are now collectively fumbling in the dark as an industry to award grades based on scrambled data thrown together at the last minute with no agreed or approved mechanism.

In addition here at Think Global School we encourage a debate on moving assessment into other domains, moving away from testing centres and examination halls. How can assessment be more dynamic and based within real world experience? Can gradings, if they persist, be a reflection of community service, emotional intelligence, empathy, survival skills, care for the planet, and moving even a step further into project-based designed model of education, how can assessments be a product of quality driving questions that drive quality student products that are built, designed and actualized.

Educators also have the opportunity to experiment more widely within the formative assessment designs, this can become a sandpit of innovation, not all the pressure needs to be placed on the heavier summative design. If trial-and-error within smaller formative assessments are a success and cross collaboration within departments and faculties these can be then taken further in their design and made into the end of module, syllabus of unit assessments if successful.

So what's next? **With much more progressive educational establishments trying to break away from the old model, there is a need to come together in some capacity to begin to share best practice and begin to formulate assessment approaches that can be shared with colleagues and schools struggling to formulate a different path.** The purpose of this article and more widely the publication it resides within is to generate a collective debate on what could and should come next.

With much more progressive educational establishments trying to break away from the old model, there is a need to come together in some capacity to begin to share best practice and begin to formulate assessment approaches that can be shared with colleagues and schools struggling to formulate a different path.

Is the next step for student assessment, sticking as we are, more tinkering, or a true re-imagination?

Solve to Involve:
The Power of Students Designing Their Own Problems

ALAN NOVEMBER

Alan November is an international leader in education technology. He began his career as an oceanography teacher and dorm counselor at an island reform school for boys in Boston Harbor. While Alan was a computer science teacher in Lexington, MA, he was probably the first teacher in the world to have a student project on line in 1984, a database for the handicapped. He has been director of an alternative high school, computer coordinator, technology consultant and university lecturer. He has helped schools, governments and industry leaders improve the quality of education through technology.

Background to the Story

This is a story about a math teacher who creates an incredibly motivating classroom environment and sees the results show up in standard test scores. The concepts that are applied in this story can be applied to any subject across the grades. The primary storyline is that students become problem designers and the teacher becomes a model pupil. There are two core principles at work. One is to provide students with skills to "learn how to learn" and to tap their creativity and natural curiosity. The second highly related principle is to provide teachers with deeper insights into student thinking.
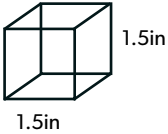
The Story

A friend of mine, Jessica, loves teaching Geometry in a suburb of Dallas. Like many of us, Jessica began to shoot photos from her daily life when smart phones put a camera in her pocket. Often, her photos had something obvious to do with the subject she taught – triangles, circles, squares. At other times you had to use your imagination to dig for the geometry buried in the photo, such as the center point between various objects. Every photo had at least one geometry challenge if not infinite.

A few years ago, Jessica began to share some of these photos with her students to support their thinking about geometry in

The height of the soda in this right cylindrical cup is 5in, and Mr. Caviness wants to add 3 cubes of ice to the cup, can he do so without the soda overflowing?

r = 2in

8in

1.5in

1.5in

The first photo Jessica shared with her class was a shot of the infield while she was at a Texas Ranger's baseball game with her husband. She challenged her students to put a mark in the photo of the location of a perfect bunt. Solving that problem requires you to imagine the circumcenter of the triangle formed by the pitcher, third baseman, and catcher.

Her challenge required all students to get the same answer and demonstrate the same content knowledge. This kind of challenge fits the traditional model of assessment. **Give the same problem to every student and measure if they can solve it.** Since she told her students that this assignment was for fun and would not count toward their grade, she was stunned when the majority of her class chose to solve it. That motivated her to send out another photo. But she made a fundamental change in the complexity of the assignment.

With the second photo of a paper-cup Jessica added what appears to be a very simple change to replace the word SOLVE with INVOLVE. For example, compare these two challenges: 1. Solve for the volume of this cup (every student gets the same answer) 2. Involve the volume of this cup in a problem of your own design (No two students have the same design).

The second "involve" challenge would require students to use their imagination to come up with their own problem rather than look for an answer to a problem presented by the teacher. To Jessica's surprise, the first student to respond submitted a very complex problem. He added 3 measured ice cubes to the side of the cup photo. He also added dimensions for the vertical and radius of the cup. His problem, "If I add these three ice cubes to the cup with an inch left at the top with no soda will the cup overflow?"

This problem involved the displacement of ice. That concept is covered much later in the Geometry curriculum. When a teacher is desperately trying to cover the curriculum in order for all students to finish the year and do well on a standardised test, it can be disruptive to jump around the curriculum or add in new variables from other subjects such as physics. Potentially, multiply this one disruption by $20 - 30$ students for every problem associated with a simple photograph and you can see how "covering the curriculum" can spin out of control.

However, the time management can be managed. First of all, Jessica does not grade the problem designs.. Research quoted by Dan Pink in his video, "The Surprising Truth About What Motivates Us" points out that "When a task gets more complicated, and it requires some conceptual, creative thinking external rewards do not work." In other words, taking the time to grade can be counterproductive. Furthermore, students do not even have to solve the problems. The goal is to inspire students to see geometry in their daily lives and to spark discussion about the application of the subject.

daily life. Within days of sending out her first photo, responses from her students made her realise that she had unleashed a sense of creativity and excitement within her students to take up their own hunt for the daily application of geometry. **The process also had an impact on the social emotional intelligence of many of her students; especially those who did not see themselves as successful students.**

What I believe is one of the most important aspects of Jessica's work is how she evolved from expecting all of her students to solve the same problem in the same way (similar to taking a test) to empowering students to design their own problems. This is an aspect of one of the most important questions we should be asking during this time of unheralded change in the tools and information sources available to support learning. What is the balance of control between a teacher managing learning and students taking responsibility for managing aspects of their own learning? In Jessica' classroom that balance is being recalibrated toward student ownership and more student collaboration with some amazing results.

This challenge actually leads to Jessica saving time instead of adding something else to a packed curriculum. She enjoys listening to the class conversation about applying geometry sparked by the student-authored problems. Jessica has also learned from years of experience with this process, that students often design problems that fit into the curriculum, and she can use some of their examples to design future homework and tests.

Every once in a while, Jessica chooses to model how she would solve a student-designed problem. An argument can be made that teaching students how a teacher learns can be more powerful than sharing what she already knows. If the teacher struggles along the way and makes mistakes - all the better. Watching a teacher cope with failure can be an enormous relief for many students who lack confidence in their own skills.

Compare the two different approaches of solve vs. involve. When the class is guided to arrive at the same answer for the "baseball game "solve" photo", the teacher learns about specific content knowledge. There are two possible drawbacks to this approach. The simple one is that some students might copy from their friends. The more complicated one is that it is possible for a student to memorize how to solve a problem without actually understanding how to apply the knowledge beyond the structured support of the teacher. However, when the directions shift to "paper cup "involve" in photo 2", the teacher gains an extra insight into the creativity of the student to design a problem. Now the teacher has a deeper understanding of a student's comprehension.

Jessica comments on students as problem designers, "I really get to know my students better. What is sad, is that so many of my students come to class thinking they are not good at math. All my students seem to have doubts. It kills me because they are good. They just do not know it. I can

see the stress of worrying about failure melt away when they start designing and writing their own problems. It also helps them become better test-takers because they learn to understand the structure of different kinds of problems as authors. The other day, one of my students, Andrew, pulled the concept of collinear into an example of a photo of a line of defenders in his soccer match. It was a spot-on application. Now I know he really understands that concept. I will probably use that photo in the future because all of the soccer players in the class said "that makes perfect sense."" Inevitably, I have students ask me when will they ever use quadrilaterals in their life. I am honest with them and tell them "probably never." But then I explain that they will be faced with having to struggle with learning something they really will need. I promise them that they will learn how to learn. Many students value that.

Jessica adds yet another level of excitement and challenge by sharing her students' designs in an online community. Many students have this natural curiosity about wanting to know what their classmates are thinking. (This can also be a source of stress when they do not know how they fit in with classmates.) Since there is no concept of cheating embedded in this process, it makes huge sense to create a shared online space for students. This community sharing can motivate students to push their own thinking as problem designers and potentially to be more creative.

By the way, within days of posting her first photo, students in her class were shooting and sharing their own photos of geometry in their daily life. This is another source of learning more about her students' interests. Jessica encourages discussion between her students to ask each other questions and make comments. This online commentary can also provide students with a classmate's image or explanation that provides an extra scaffolding for learning. Sometimes, the extra question of a first-time learner

can help another student even more than a teacher's careful lesson.

Remarkably, some of her students continue to send in photos and design problems after they have left the class. To her delight yet consternation, in her second year, she had to send a firm message to the previous year's class to hold back from contributing online to allow the new class to fully participate! How many teachers have to caution past students to control their enthusiasm for learning to allow participation for the new class?

Conclusion:

The messiness of the "Involve" approach of using a photograph (or a quote, graph, short video, painting, video game screenshot, or a tweet quoting Shakespeare) to challenge students to design their own problems can be a powerful approach to deepening students' thinking and creativity. It can also provide teachers with greater insights into how students think and see the world. Add in continuous sharing in an online community and you have created an ongoing engine for student motivation to think and share thoughts as problem designers. Furthermore, there is a built-in aspect of social-emotional intelligence to help students manage stress and the dread of failure.

Reimagining Education: Moving Beyond the Rhetoric

ANNE BAUER
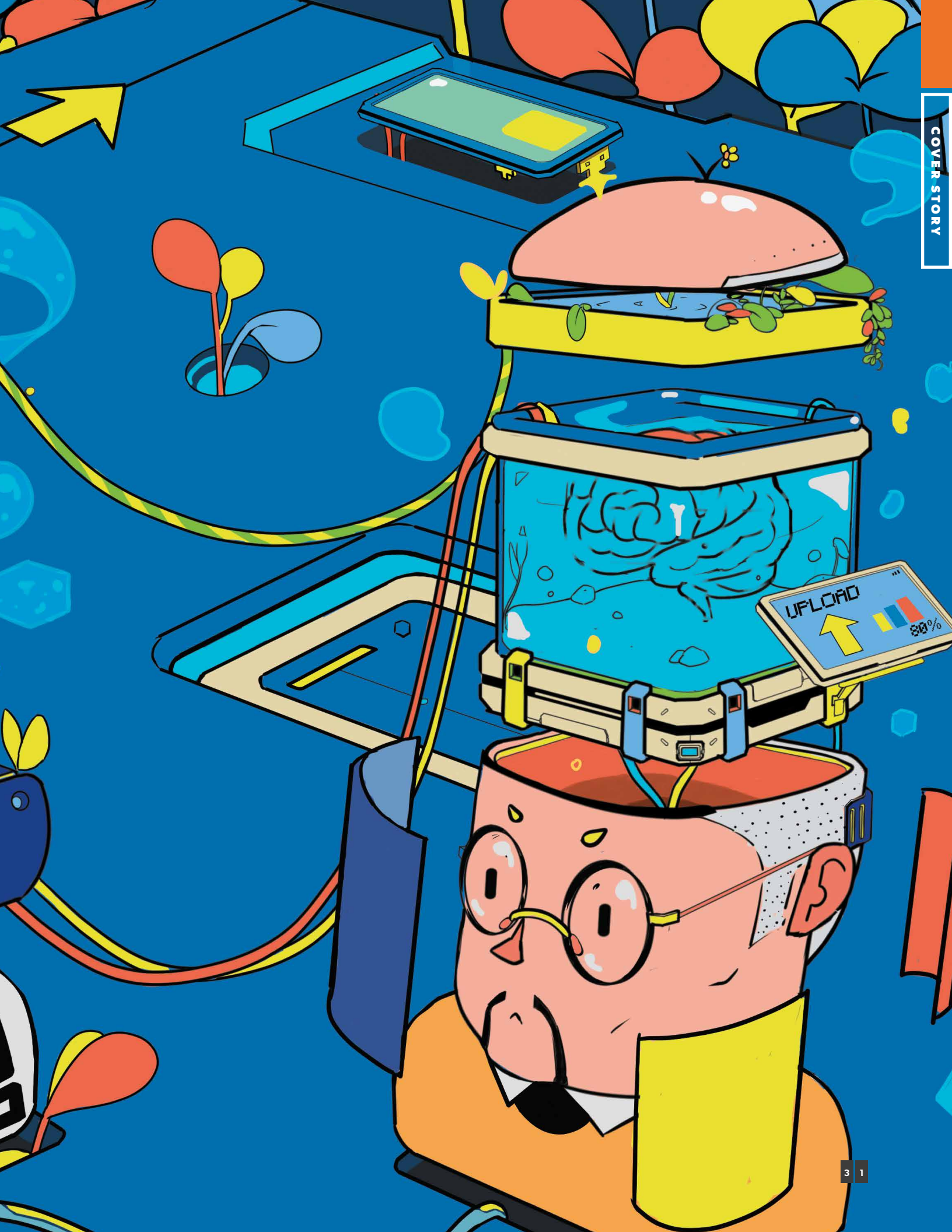DIRECTOR OF PUBLICATIONS,
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UPLOAD

80%

A conversation between 5 young students at our recent TECH 2020 conference on the future of education highlighted the following aspects -

Jimena *(Colombia)* 99

Education that is guided by values such as integrity, honesty, teamwork and respect helps solve most of the problems in the world such as violence, pollution, inequality, corruption
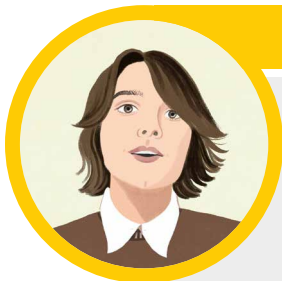
Anatole *(The Netherlands)* 99

I think learning spaces are just as important as teachers and the material. They all have an astronomical importance when it comes to education. You can have the best teachers in the world, the most detailed textbooks but it doesn't mean anything if the students don't feel safe.

Kemi *(Cape Town)* 99

A fulfilling learning experience for students is made up of many different facets. But it is a good teacher that is crucial to most. Having teachers who are dedicated to offering clarification on homework or encouraging small group study sessions are important.
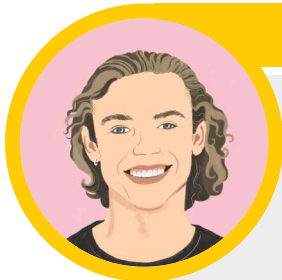
Luca *(Cape Town)* 99

Seeing assessments as an end goal undermines the process of education"

Vineet *(Bangladesh)* 99

Society designed the education system in a way that ensures people follow the same path that has been followed by previous generations believing that is the only path.

These student voices make us wonder **"Has education as it is understood today failed humanity?"**

As a superior species that co-inhabits planet Earth, humans are believed to possess advanced cognition and evolved capabilities that can ensure an environment of flourishing - a world where every being/species has an equal right to thrive and flourish. Instead we seem to have created a society with rising violence, diminishing empathy and a fearful and an uncertain future.

Education systems are created by society - and it is tragic that we continue to follow a system that was created nearly 200 years ago that is outdated and obsolete - and advocates only one path. Assessments are treated as 'end goals', an idea that is fundamentally flawed and stressful.

So, for education to change, the 'value' system of society needs to change. We need to 'value' 'co-operation'. We need to 'value' the 'environment' and we need to 'value' service. We also need to talk about learning spaces - and they must make us feel safe. Students do not learn if they do not feel. And finally, we need to treat assessment - as a tool to improve learning not the end goal of learning.

Three passionate individuals about education who happen to also be our brilliant editors of this edition of The Blue DOT, Anne Bauer, Director of Publications, Childhood International, Gareth Manning, Educator, THINK Global School, Host, World Teacher Podcast and Nandini Chatterjee Singh, Senior Programme Officer, UNESCO MGIEP have a three-way conversation to attempt to answer the following questions

1) What should the future of education look like

2) How might we achieve it? What will be the competencies that we will need to cultivate in each learner?

3) How can we ensure that this happens? how should we evaluate learning – both for the learner and for the system?

Listen to the audio version of the discussion here:
https://youtu.be/Vz96Bv969UM

Nandini

Gareth and Anne, it has been quite fascinating listening to the kids talk about how they want to reimagine education and I am very impressed by how they seem to have a lot of ideas very much in the right place; in the sense that they talk about the value systems that the society needs to change and think about and how it is really the society that begins to cue the design of education systems.

Education systems end up building the values that the society values and therefore it becomes important we value the right things in people. This leads to a fundamental change in thinking about education and change in mindset in the sense that we are talking about a bottom up approach that if society begins to change its value system, education will start working around meeting that value system.

Is that something either of you have strong ideas about or different ideas about? I would love to hear from both of you. Maybe, we start with Gareth?

Gareth

I would actually disagree. That assertion is a very old assertion and it is a very interesting one – one that people put a lot of thought to. John Dewey for instance argued this in 1902 - that fundamentally education was a project of taking an underdeveloped person and looking at the social aims and values of society and trying to fit those together in a way that makes sense. What schools do is that they tend to reproduce the social order that we already have.

So its like we have the social order, schools will reproduce or create the people for that society but I think that is problematic within our current social order. The school system that we have now was not designed to produce people for the world but for the workforce. It was designed to select good workers for management essentially and that is not the only purpose of society. I think if we tried to change society and change education or change education and change society, it won't work. I think it is an illogical proposition. I think fundamentally – if you want to transform education, we have to start with the individual. We have to start with the human person and personalise education.

Several of the students spoke to this and I think they are correct about that. And if we start with the human organism – we understand what human individual needs are, and then secondly, individualise those needs for a given human because we are massively different, we are beautifully diverse, we all have different needs. How would an educational process that's formalised in school best serve an individual? We need to be able to answer those questions and work from there I feel.

Nandini

Whilst it is very exciting that we may be able to think of education systems which are very personalised, and could cater to individual needs, don't you think this could also get a little chaotic if needs vary too much. Given the fact that we live in a certain societal structure, there needs to be a common value structure that we need to bring into place.

Gareth

Do we have a shared value system? I would say in some degrees yes. So, if you look at anthropological research and societies across the world – from hunter gatherers to advance capitalistic societies - certain fundamental values cut across beliefs and cultures, I would argue: the right to life, all rights - non-violence, non-harm are values that are universal but there is so much more beautiful complexity amidst that universality that we would miss if we try to impose any kind of monolithic value system.

Anne

I think we may be able to think about it with an in-between approach. I do think that if we can focus on something that education has not been good at – and that is valuing what individual students in the class are learning and bringing from other parts of their life; not just valuing what they are learning from the curriculum. But recognising and valuing and supporting the learning that they are doing in their homes and communities. You know the things they are learning from their families and their friends and the society – how to live with one another, how to care for one another, how to co-operate with one another. If we can really redirect education to truly value those aspects, it is going to naturally make a difference in how we are teaching and be able to individualise based on the needs of the particular classroom. Of course, we also need to be aware

that children are potentially learning undesirable things in the world: they may live in traumatic situations, they might be experiencing poverty and violence and they might not have the benefit of having truly caring people around them. So, again, we need to be aware of what they are learning outside of school and find ways to support and build on that learning and find ways to counter and provide - as those students said - a safe environment for them and potentially counter misinformation, prejudice and bias and some of the negative things that they may be learning.

To me it seems, if we can ensure what we try to accomplish through education – as Gareth said – try to back away from checking certain boxes and specific skills that will be good for a certain kind of work force or production oriented society and focus more on who the students are, what their personal fulfilment is and if that is the underlying goal for education, some of this I think can be more realistic in terms of reflecting those values of society because the approach – the way we are connecting the children will be from that personal fulfilment, personal growth perspective – rather than thinking that they need to do this very specific work oriented task.

Nandini

Thanks Anne. Listening to both Gareth and you, one thing that excites me tremendously – because we now understand how the human brain is structured - I actually think we have a very unique opportunity where we can try and get to what Gareth is talking about and what you are talking about too and also try and make a difference in society. And here's a way I would want to pitch it. So, one of the most reassuring things about the way the human brain is wired is that we are naturally wired to be empathetic and to be kind and to be cooperative. So, if we are in a position where we just follow those natural

tendencies that we are born with. And we know this across humanity – this is not specific to you or Gareth or me, this is true across all human beings. And since we are born with these – what we really need to do is allow people to nurture these natural tendencies and then we can probably begin to work towards a society that is naturally empathetic, kind, and cares for the environment – all three of these together. In that sense, it will cater to what Gareth talks about allowing each person to individually enhance rather than impose, which is what the education tends to do these days. **And so, we are actually taking children away from a lot of their natural nurturing processes towards competitive processes – which ends up giving them stress and develop not very sustainable value systems.** In some ways probably because of our understanding of the way human beings are wired but also the way we congregate as social beings, is almost conducive towards creating an education system which allows each person to grow and nurture but cooperate to be able to co-exist. That is something that I think is an important part of being human – is to not only begin to grow yourself but also to realise that as you begin to live with others, you have to be flexible enough to be able to accommodate all of that. And that's where we need to be able to cooperate and collaborate. If each of us does what we want to do, that is not going to end up being a very sustainable system. But if we allow our natural tendencies to be nurtured, we might actually be able

And so, we are actually taking children away from a lot of their natural nurturing processes towards competitive processes – which ends up giving them stress and develop not very sustainable value systems.

to arrive to an organised system, which is essentially sustainable, nurturing and empathetic yet allows us to be good versions of ourselves.

We have now the biology and the science to support it. If anything, I think it is now a good time to try to find ways that might happen. Is that something that either of you may be willing to buy into?

Anne

An interesting thought popped into my mind when we were talking, Nandini. Because I completely agree with what you are talking about but you are talking about from the perspective of how the student will best learn. But if you apply the same definition to education itself and think of it as an entity that could be supported in terms of a cooperative entity and an empathetic entity – may be that's a direction that will help us reimagine education for the better. Because I know that a lot of the really impressive innovations that I have read about, have to do with schools and education systems that are partnering with places in their community that the schools themselves have a deep connection with and are working to do good – not just for how they teach – but also to make their broader community a better place. And they bring community development in and they support parents and families that need help. But they also have close connections with society, businesses and so the school itself becomes a caring, communicative, cooperative entity – that provides and easier template to be able to communicate and support those same strengths in the students that they are working to teach.

Nandini

Gareth, I'm wondering what Anne talked about very nicely lends itself into already broadening the idea a school actually going into what we might want to start calling learning spaces. So, **we begin to broaden our ideas about education and learning is something that is not just happening in school but in a learning space and a learning space might combine and consist of multiple structures** – ideally, it is the world, because you are learning all the time. But if one had to include the communities, environments, businesses – all of these become learning spaces so learning in education is happening all the time. Do you think this is something that we can begin to think about as we get into this discussion and not just think of that learning is happening in schools?

Gareth

The idea that we need to see that learning is happening not just in schools. Of course, it is absurd. Where do kids learn most – they learn through play and they learn through the internet

unfortunately. I think Anne made a really good point earlier about the nature or the environment that we have. Well kids are literally learning all the time. Are they learning things that are worthwhile to be learnt is the question? I think the best argument against personalisation is kids don't know what they don't know. They are just kids. They don't know all the horrible things out there and some of the awful things out there seem cool and they seem fun – and they really engage their drives and desires in ways that are really damaging. I don't think humans are solely empathetic and caring – I think we are all sorts of things. But the question is why? And I think it is because we are damaged. We are traumatised. And we really traumatise each other through schools, through
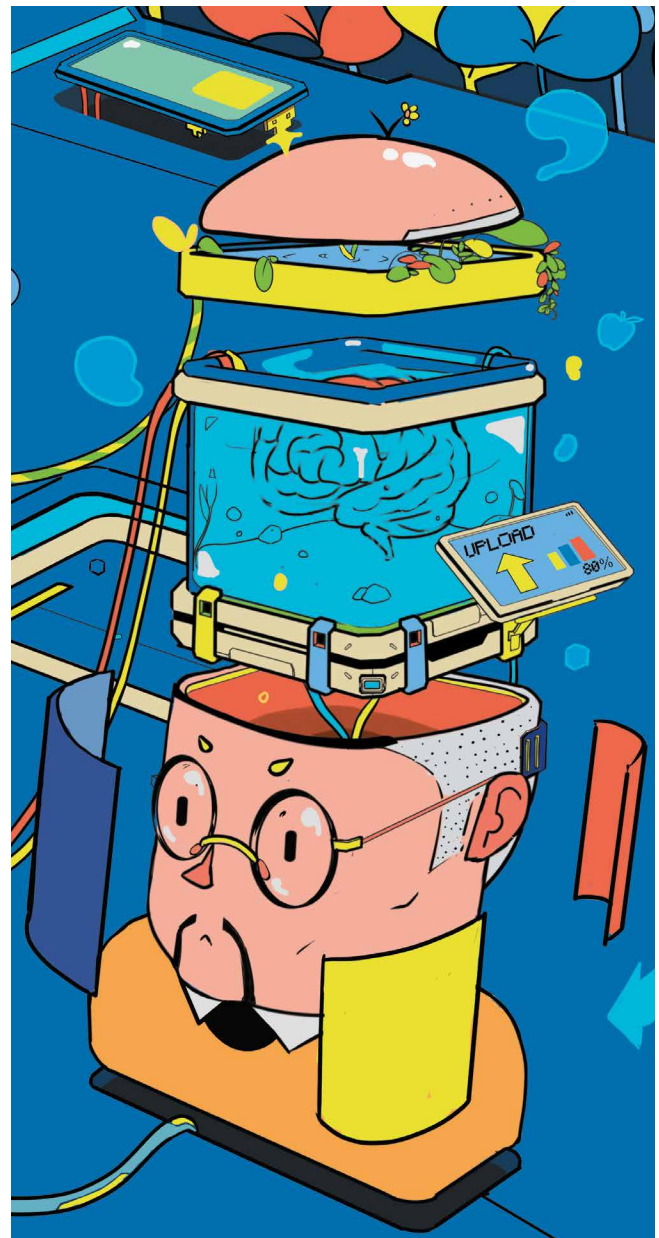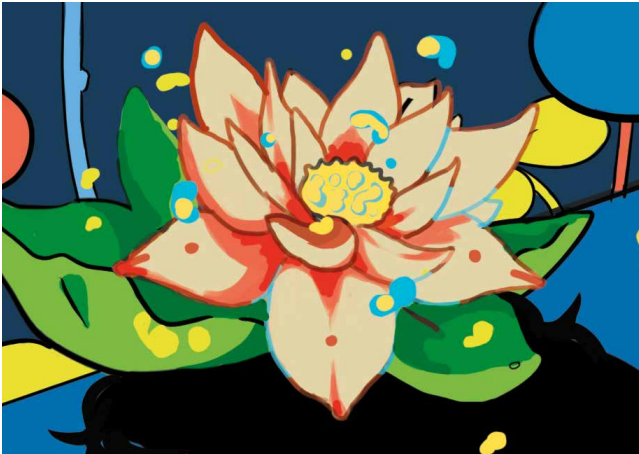
parenting, through socialisation – we don't know how to get along. **I would argue that we cannot really learn how to get along unless we have really excellent social and emotional learning that is personalised.** So, let us take a given person as an example. We can have a community where we know bullying is bad, and it is important to be nice and all these things – like norms in a classroom. But fundamentally if I don't understand my own emotional self, my own conditioned reactivity, my own habits of engagement that are destructive as well as constructive – then I don't know how to interrupt and change those.   We need to fundamentally rethink and revolutionise education so we actually do what matters – which is help humans flourish as their creative selves. But that will never happen unless we learn about ourselves in community with each other. It is definitely both, but we really need to start – I would argue – based on a lot of experience with every individual kid helping them figure themselves out. It is a very difficult thing to do but it can be done. And it is just a question how to do this best at scale.

Nandini

So, whoever has cracked that has cracked the million-dollar question on how to do it and at scale.

I am glad you are gradually starting to move the discussion towards if we are to reimagine education systems and if we really want to think of a different future – the clear idea that seem to be emerging from the discussion are education somehow has to become personalised. Understanding the self, the emotional self, the social self, the connected self – that is working with the other, become crucial to making a fundamental change not just in education systems but in lives of human beings to co-exist and I think that's kind of bringing us to the idea of that education is almost trying to do is make sure we know how to live with each other. That's what education seems to be about. The internet can now provide information but learning to live with each other is what education seems to be all about.

Gareth

In a loving way. We already live together.

Anne

And how can you voice your own ideas and concerns in a productive way, while at the same time being very respectful of others and what they might have to contribute. And find that point of negotiation. That point of consensus. And to do that without traumatising ourselves as Gareth said because that's unfortunately a potential when you are trying to bring people with different ideas together. And the potential is very strong. I see it every day in the news in terms of one side and the other side – the us and them mentality – but it is important that people do have that opportunity to share their voice, share their ideas and their thoughts and to figure out what that even is and to have the freedom and safety to explore the ideas that they think and feel and gain the additional information and knowledge that helps them develop that without it falling into a rut of this is what I should think. So, to have that independence of thought. And at the same time lovingly as Gareth said and respectfully be able to work with someone who may be going down a different thought path – ideally bring it together into something that will function for the society, the community – to bring something productive and valuable out of it.

Gareth

I think valuing diversity. The fundamental order and principle of nature is diversity. We wouldn't have evolved to where we have evolved to if we didn't have such as diverse planet. We don't value the diversity amongst humans thought. And it is disrespectful to mother nature. And it is disrespectful to ourselves and it is really a problem. We need to stop doing this. But it is not necessarily easy. We are conformist by nature because it helps us get along socially but our conformism is also a barrier to our personal growth especially young kids they go through phases – i.e. grades 4,5,6 and forever really – of getting super conformist minded and focusing on "popularity" and being cool and they become really mean. And that has to be worked out amongst the collective learning community. It is really difficult and problematic actually. Because we have all these conditioned reactions and we have the internet saying these people are idiots, or these people aren't cool, and we align with people whose voices re-enforce our own beliefs so we feel safer and we become stronger in our belief that we are right and they are wrong. This is really bad. We need to see the beauty in everyone. **As the kids earlier said, we should be able to create social spaces that are safe – psychologically safe, socially safe – so everybody can be their full selves instead of hiding all the time.** The kids are hiding because they are

afraid of being themselves because they are afraid of being judged and it hurts to be judged. We need to work on these kinds of skills. Like first and foremost fundamentally, in the early years, to really activate our potential – if we don't do this – what we get is what we have and what we have isn't good enough. We need to change, and we can.

Nandini

That brings us to another interesting point – as I heard you and Anne speak - **a fundamental change education and learning needs to do – is empower humans to be themselves.** That's it and it is as simple as that. I don't have to be like anybody. I have to be myself and be ok with it. It is as something as simple as that but extremely difficult to do.

Gareth

One of the hardest things on earth.

Nandini

So, imagine – thinking of your school days where you will spend a significant time discovering yourself, a significant time being in the environment – that sounds like such a fun school day. And being in an extended community – not just being in four walls but talking of the new learning spaces that we were talking about. And given the fact that we live in a day and age where it is impossible to close on a discussion on education without talking about assessments – which is a little sad, because it has been over emphasised. But I thought one of the kids did a great job saying that rather than assessments being an end goal, they need to become a tool to make sure what kind of learning is happening and whether there are some changes that need to be made. And that made so much sense to me. That's true – it is treated as an end goal and I am wondering how both of you might want to talk to the notion of assessments.

Gareth

Don't conflate grading and assessments. The purpose of assessment is not to measure learning – it is to drive learning. So fundamentally assessment is about figuring out what you can do relative to what is it that you want to do or what the teachers are saying you need to do. Where are you and then being able to ascertain that well and then giving excellent feedback information that is specific and actionable so that kids are able to push learning forward and reflect on whether they have achieved their goals. If that is how assessment is used, it is used really well. That is how coaches use assessment. Like a baseball player gets better at batting not by (the coach) looking at his batting percentage and not getting mad at him and comparing it to the other person's batting percentage is and saying "Oh that manager has better players." You need to look at where an individual is at and what they want to do and help them get there and that can only work in a personalised way. It can work very well – collaboratively – there's lots of excellent digital tools to be able to help kids do collaborative assessment, which is really powerful. Kids can often learn best from each other in terms of feedback information because they are closer to the problem. There's often a knowledge problem that teacher have – professors have this worst. Professors are so knowledgeable in their area that they don't really know how to explain it well – because it is just so obvious to them. Whereas somebody who is new to learning a complex concept or skill has much more closeness to the problem of learning to be able to explain to another person what is it that they need to do. Whereas often the experts don't really know how to explain this well. We need to be able to galvanise the power of kids' intelligence vis-à-vis each other so they can help each other learn. And that isn't going to happen automatically – it happens when it is facilitated well by excellent teachers – but a lot of teachers

already do that. This is something that's been in the works for a really long time. Dylan Williams is probably the biggest expert on this and is very worth listening to. I think this is one of the easier things to change. The problem fundamentally is that universities want grades - they don't want growth. They don't want grown humans or mature beings. They want whatever they want. They want to select for their purposes – which I would say is counterproductive to the development of a human and of the community.

Anne

Yes, I think that's kind of the key in terms of making a difference to assessments. **At the very beginning of our conversation, we talked about what is it that we want education to be doing – because if we really make a difference there then that's going to necessitate a change and what we are assessing for.** Are we assessing for what the universities want in terms of grades or are we assessing if we have made a difference in young people's lives in terms of their personal development and growth. I would like to see it be something that makes a difference in the social and emotional side of things. Are assessments really evaluating how the students are themselves feeling about their education. Are we using assessments as an opportunity to tell us where things aren't working for them and so if they are feeling that their voice is not being heard, if they are not getting an opportunity to make a difference. If they feel that they are just having to check off boxes to get to the next stage. If the assessment can tap into that then we can start exploring how we can reach them better. But if don't pay attention to that – we won't know. So as I said, it kind of goes back to what are we trying to accomplish before we can think about we assess it.

Nandini

So, as you said, coming back to where we started out and given that we started out talking a lot about personalised learning, education. I am even looking at whether we can look at changing the word assessment to personal growth. Therefore, it begins to put in an idea – is growth always for the better or can there be a different nuance towards growth too? Or do we want to continue to call these as assessments? I am trying to see if we can end this conversation by may be putting out one or two other ideas on what an assessment should look like or might be referred to in the context of personalszed learning, education and development? Any other terms that might come your way that you think we can begin to put out for people to begin think about? Or should we just continue to stay with the word 'assess'. Somehow 'assess' seems to have a very college-like grade quality (related) to it. So, I am just leaving it out as a last shot in the dark – whether there is something we can end this conversation with – new terms. I am not really saying measuring learning but to make sure learning is happening.

Gareth

I am not sure the word assess is that big a problem. It is what we assess. **It is how we assess. As Anne said, what are the purposes and what are the things we care about to assess? And then are we assessing for growth or for outcomes?** And I think we should assess for growth. And I think if we do thatthe word assessment would have significantly less of a negative connotation. One of the things I would really like people to ponder over is how would we seriously assess social and emotional learning growth in individuals. What would that look like – how would we be able to identify and be able to support and measure and nudge an individual in understanding their own feelings and being honest with themselves? And being able to understand and face their own pain and try to heal. It is such a complicated question. To get into a sort of

a flourishing self / actualizing – social and emotional state – will be a very different journey for every person. And so I wonder how we might help the kids understand what a 'well' human looks like and what the social and emotional components are and how a given individual and incredibly diverse sets of individuals – not a perfect human but an ideally 'well' – may be weird human but still healthy in terms of a good self-concept, good self-esteem, good self-knowledge, being able to co-operate, understanding the ability to communicate clearly to deal with social conflict, to resolve in restorative way problems that come up – what would it take to be able to identify those outcomes and assess them? I think it is a really big project and I think it should be a global project.

Nandini

Sure, absolutely. Anne, your last thoughts about this?

Anne

Well, to go back to your question about words and terminology - I think we are all coming back to the word 'growth' in one way or another and progress may be. Although that can be kind of tied in a little too much. I do like Gareth's analogy of a baseball coach. Because some of the best coaches whether they are from athletics, music, education – they are focusing on how you have improved personally. It is not about whether you are the fastest runner on the cross-country team. It is about – did you go faster – have more stamina, feel better physically than you did at the end than you did yourself last month? So, **to be able to think about assessment as personal growth rather than comparative progress.**

Nandini

So very interestingly therefore we are coming back to complete Gareth's initial model – we can begin to talk about personal growth and we can set our I would say benchmark and that is

something maybe that universities can start looking out for. How much of what you aspire towards – you have grown towards and if you have been able to show you have been able to grow, you are on the right path. And therefore, some learning has certainly happened. And ultimately, I think the success of education and learning how happy every morning you can be when you wake up and look forward to the day ahead. It is just as exciting every morning to wake up and say "I am looking forward to the day ahead" and I think it ultimately just boils down to that. So that's my personal notion of it.

Gareth

I like that

Anne

Yes

Nandini

But I think at least it keeps me grounded and keeps it simple so I can actually discuss that whether it is somebody who is sweeping the streets, or a world class musician – they all understand that language. And I think that is the power of education or learning – to be able to communicate with anybody and everybody and lovingly and kindly. That's really what we are all about.

Anne

Absolutely

Gareth

Very beautiful

Nandini

So, it has been wonderful chatting with you. And I've enjoyed this conversation and can probably go on for another 12 hours but I recognise we have days and evenings ahead of us.

Thank you.

Reimagine Education Post COVID-19

YONG ZHAO

Yong Zhao is a Foundation Distinguished Professor in the School of Education at the University of Kansas and a professor in Educational Leadership at the Melbourne Graduate School of Education in Australia. He previously served as the Presidential Chair, Associate Dean, and Director of the Institute for Global and Online Education in the College of Education, University of Oregon, where he was also a Professor in the Department of Educational Measurement, Policy, and Leadership. Prior to Oregon, Yong Zhao was University Distinguished Professor at the College of Education, Michigan State University, where he also served as the founding director of the Center for Teaching and Technology, executive director of the Confucius Institute, as well as the US-China Center for Research on Educational Excellence.

*T*he COVID-19 pandemic has disrupted human lives in unimagined ways. Lives have been lost, families broken. Businesses have stopped or closed, with massive unemployment around the globe. More than 1.6 billion children have been closed out of schools, at least for a short period of time. While the coronavirus vaccines have begun to be delivered in some countries, we still do not know when the pandemic will end and what exactly the consequences will be.

However, we know that the pandemic may be a great opportunity to rethink education. Rarely do we have a massive global event like the pandemic, which has forced schools, students, and educators to innovate, to adapt, and to make unprecedented changes. These changes coincide with societal and technological changes that demand significant educational changes. In other words, the pandemic has facilitated significant changes in society and technology and given the education sector an opportunity to rethink, reimagine, and reinvent itself (Zhao, 2020a, 2020c).

Failures of Education

The existing education has failed in a number of areas. First, it has failed to educate all children to achieve their best. Children are natural learners, diverse learners, and intentional learners. Education, with the aim to homogenize, has struggled to educate children as individuals with their own strengths and weaknesses. Instead, it has been a system

of selection using the same criteria, sorting children into a hierarchy of highs and lows, and mistreating millions of children who are not willing or unable to align themselves with schooling (Zhao, 2018a).

Second, education has failed to teach the skills and knowledge needed for today and the future. The world is experiencing widespread social dissatisfaction and division within and among nations. COVID-19 has exacerbated the situation. The social dissatisfaction and division may have many reasons but education is a major one. Without successfully educating citizens of the world to value human interdependence, to think reasonably, and to creatively take advantage of new technologies and associated changes, we have an increasing social inequalities and rising income gaps, which essentially fuel dissatisfaction and division (Goldin & Katz, 2008; Zhao, 2012).

Third, the dominant education paradigm deprives many children of an education. The current way model of education makes children the passive recipients and thus requires teachers to teach in a classroom. This arrangement makes teachers a necessity for all learning to take place. As a result, many developing nations have been busy preparing teachers and developed nations have been working on improving teachers, while many children are either left outside school or taught by unqualified teachers. Qualified teachers are undoubtedly valuable, but preparing them takes time and we have children growing up all the time. We must find other ways to provide education. Peer tutoring and online education are possibilities (Elmore, 2011, 2016; Mitra, 2019; Zhao, In Press).

Fourth, the current paradigm also constrains educational opportunities. It supports a system of manufactured scarcity of learning opportunities. The division of learning into different levels of education (primary, middle, high, college, and beyond) is but an artificial reality and having to select students for high

school or college and beyond is largely unnecessary. Today it is entirely possible for anyone to learn anything, given the power of technology, abundance of resources, and the more resources that governments can invest in developing.

Fifth, the current education paradigm limits opportunities for students to serve as owners of their learning and exercise their rights to self-determination. **The traditional grammar of schooling has carefully planned and pre-determined everything for students, leaving little space and time for students to exercise decisions over their own learning as self-determined owners.** As a result, students rarely understand their own passions and strengths or develop life-long learning abilities.

Changes We Need

Now we have the chance to rethink and reinvent education. The changes we need should be big and fundamental instead of minor and superficial. The changes should consider the nature of the learner and process of learning, the future, and the technology we have today.

Engage students as change partners (Zhao, 2011). **Educational reforms rarely consider students as active participants. They have been typically treated as recipients of whatever policies and practices that are developed by adults. But students are key to any changes we make to education.** While they may be able to accept the changes, their participation in making the changes makes the changes much more powerful. Today's students have a lot more access to resources. They are also socially active and globally connected. They can contribute tremendously to the development of new educational paradigms.

Develop students as owners of their learning (Zhao, 2012, 2018a). One of the biggest changes needed is to make students owners of their learning. Learning should not be managed and controlled by teachers because it is the business of the learner. Students need to own the process and outcomes. They can pursue a life-long learning journey with the guidance and support of teachers and other adults.

Redefine what is to be learned. Students are diverse learners, with their own talents, passions, and diverse backgrounds. The future needs a diversity of individuals who are more human and more uniquely developed to thrive in the age of smart machines. Moreover, there are numerous educational outcomes that can be in conflict with each other and no one student can master all educational outcomes (Zhao, 2018b). Thus students cannot be learning the same set of predefined curriculum. Instead, their curriculum should have both common experiences that help them fulfill responsibilities as citizens and unique experiences that make them thrive as individuals. The curriculum should include requirements for all students while allowing space for strength-based and passion-driven personalization of learning (Zhao, 2012, 2018a, 2020b, In Press).

Redefine learning and teaching. **When students manage their own learning and when they can learn from and interact with other students and teachers online globally, the context of teaching changes.** There is no reason for learning to take place under the teacher's direction and instruction. Students can learn from peer tutoring (Elmore, 2016) and the peers can be from all over the world. They can also learn from MOOCs and various online resources. As a result, the role of the teacher changes from an instructor to a personal coach, a resource manager and curator, a project manager, and a community builder (Zhao, In Press).

Develop global learning ecosystems. The current way of organizing education through schools is not capable of providing high quality education to children all over the world (Illich, 1973). There is also no reason to organize students into classes by age. Furthermore, students can technically learn from, with, and for anyone globally online. Thus as learning becomes more personalized, we can form a new education that does not define students by levels of education. Rather this new education is many educational ecosystems, both online and physical, both global and local. Students participate in various learning opportunities and learning communities locally and globally. They take whatever education that suites them with the support of their local teachers. Governments at all levels, international and local organizations and businesses, as well as individuals from around the world can all participate in creating and sustaining these learning ecosystems (Mitra, 2019; Zhao, In Press).

Conclusions

We have an opportunity to reimagine education. **But this reimagination cannot be bounded by schooling, which is the most common form of education we have experienced and known. We need to reimagine education without thinking about schooling.** Schools are just one way of providing education. Our current education system was created over 100 years ago when the societies were drastically different from today. With increased levels of globalization and technology, we must recreate education to meet the needs of today's children and society.

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Meaning of Human Flourishing and Education

A RESEARCH BRIEF BY THE INTERNATIONAL SCIENCE AND EVIDENCE BASED EDUCATION ASSESSMENT
AN INITIATIVE BY UNESCO MGIEP*

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Introduction

This short paper provides a definition of human flourishing, education, learning, teaching and student evaluation, more commonly known as student assessment. These definitions and their relationship with each other set the context of the International Science and Evidence based Education (ISEE) Assessment. The ISEE Assessment, an initiative by the UNESCO Mahatma Gandhi Institute of Education for Peace and Sustainable Development (MGIEP), was designed to provide the science and evidence support to UNESCO's Futures of Education initiative.

The Futures of Education is necessary given global political, economic and ecological developments that increase injustice in the world and are a threat to people's opportunity to develop optimally and live a complete human life. Therefore, human flourishing is proposed as the central purpose of education in the ISEE Assessment.

Just after the programme had started, the COVID-19 crisis hit the world. The pandemic, which has led to lockdowns and school closures around the globe, has made it even more important to reimagine the purpose of education and to reflect on ways in which teaching and learning can contribute to realising education's purpose. For this, it is first necessary to understand what human flourishing could mean and how education may contribute to the possibility that human beings lead flourishing lives. As human flourishing and education are both capacious concepts and often contested, this short paper describes key meanings of these concepts as well as the relationship between flourishing and education.

Human Flourishing

The description of human flourishing in this paper is informed by various academic disciplines. It is quite comprehensive but also general in character, i.e. it does not favour a particular theory of flourishing and avoids using words that are associated with particular theories. Moreover the description is formal, allowing for various interpretations of the central elements of the description (possibly informed by a particular worldview).

"Human flourishing is both the optimal continuing development of human beings' potentials and living well as a human being, which means being engaged in relationships and activities that are meaningful, i.e. aligned with both their own values and humanistic values, in a way that is satisfying to them. Flourishing is conditional on the contribution of individuals and requires an enabling environment."

Flourishing is a hybrid concept: it is naturalistic, culture-dependent and agent-relative. Flourishing is also both objective and subjective: There are potentials that human beings need to be able to develop and enact to say that they are flourishing, but human beings also have their own views, preferences and desires about the way in which they best develop and enact their potential.

Optimal Development

The phrase optimal development is used here to explicitly express the aspirational quality of flourishing. Flourishing means developing oneself throughout one's life in relationship with others and the world towards living and doing well.

It is important to note that optimal development is agent relative, which means that it should not be interpreted as a uniform standard applicable to all humans in the same way, but that which is related to individuals' potentials. Human beings share many potentials, but individuals have different potentials and different levels of potentials and therefore what is optimal/aspirational for A can be different from what is optimal/aspirational for B. It is also agent relative, because human beings develop potentials through different pathways (influenced by their cultural background, beliefs etc.) and also for different ways to live well. For example, cognitive and emotional potentials can be developed for human beings to be good parents or friends, but these potentials are also needed to learn, work and be active citizens.

Potentials (this encompasses capacities, propensities and capabilities)

That human flourishing is phrased in terms of development of human potentials is not contentious; that children are entitled to develop their potentials to the full is also recognised (e.g. Article 29 of the Convention of the Rights of the Child). However, what human potential means or what it is, is not self-evident. Israel Scheffler (1985) has made a helpful distinction between three notions:

Capacity is a possibility. A capacity notion of potential only denies that a person cannot acquire some characteristic; it does not say that s/he will. [Compare to definition in Oxford English Dictionary: The power, ability, or faculty for anything in particular, or James (2018): capacity means the ability to hold]. Propensity expresses that a conditionally predictable endpoint will be reached if the right conditions are present. [Compare to character strengths as a trait like propensity to contribute to individual fulfilment for oneself and others (Peterson & Seligman, 2004).]

Capability is a person's power and freedom to effectively pursue what s/he has set out to do. [Compare to Sen (2010): a person's opportunity and ability to generate valuable outcomes, taking into account internal and external preconditions. It captures the individual's freedom of choice and agency in deliberating what constitutes a good life].

Living well as a human being

There are aspects of living that are good for all human beings, simply because they make a life a human life. We identify here three main categories of what constitutes "good": First, having relationships (with family-members, friends, community-members, citizens, animals, and the environment); second, being engaged in activities (e.g., play, work, learning, caring); and third, agency. Note that these categories or dimensions are general and the way in which they are enacted is influenced by the culture in which humans live and dependent on or relative to what is good for an individual human being.

Meaningful

Relationships and activities are meaningful when they are a source of significance and purpose. Significance means that they are important to an individual – they matter to her and contribute to her feeling that she matters. Purpose means that relationships and activities contribute to her reasons for living her life (in a certain way) – they provide her with worthwhile aims in life.

Meaning has both a subjective and objective quality: who she can be and what she can do is only meaningful if it is worthwhile to her, because it aligns with her values. But the activities and relationships are also meaningful only if they are worthy of love and engaged in a positive way (Wolf, 2010), or put differently, that they are pursued for a reason that lies beyond the person herself (Damon, 2009). Central humanistic values are: negative and positive freedom, equality and equity of human beings, solidarity with (groups of) human beings, care for sentient beings, and care for the environment.

Satisfying

Satisfying has both a cognitive valuative and emotional dimension. Human beings flourish if they a) can (authentically) affirm that their life is good, i.e. they have reasons for giving a positive evaluation; b) have overall positive feelings about their life (they are happy) – which does not mean that they have to have these positive feelings all the time or about everything they do.

Internal and external preconditions

Human flourishing is a dynamic state of being (in relation to others and the world) that can only appear when basic internal and external preconditions are fulfilled. Examples of internal preconditions are mental and physical health; external preconditions are for instance safety, freedom, being respected, living in a democratic society, a healthy environment.

Characteristic of these preconditions is that they are not (completely) under the influence of a single human being and are therefore sometimes regarded as 'luck'. Some can be influenced by collaborative action – which in itself can also be regarded as an aspect of human flourishing.

It is important that preconditions are not only understood in a unidirectional or linear fashion. Whilst the environment may provide opportunity, affordance or be viewed as enabling, it is the dialectic between the person and the world that leads to the ongoing development of the human being's potentials. Examples of the dialectic may include how a person finds meaning by living a healthy life or how he flourishes through his activism for the recognition of a minority in a discriminating society.

Education

A formal element of education is that activity which describes education as a human relation. In other words, without the formal element of human relations, education cannot exist. Education is what it is on the basis of human relations with themselves and others, such as humans with other humans, non-humans and the environment.

Material elements of education manifest in practices such as teaching, learning and evaluation. Put differently, teaching, learning and evaluation are multiple ways in which the concept of education is realised. Within teaching, as an instance of education, there is a relationship among teachers and students. Likewise, learning denotes a relation among learners, teachers and texts. In a similar way, evaluation is underscored by relations among evaluators (teachers) and evaluatees (students). Consequently, teaching, learning and evaluation can be considered as educational activities. It is the concept of education that organises the many ways in which teaching, learning and evaluation unfold. Put differently, the concept of education is constituted by the acts of human relations that in turn give rise to how teaching, learning, and evaluation are organised.
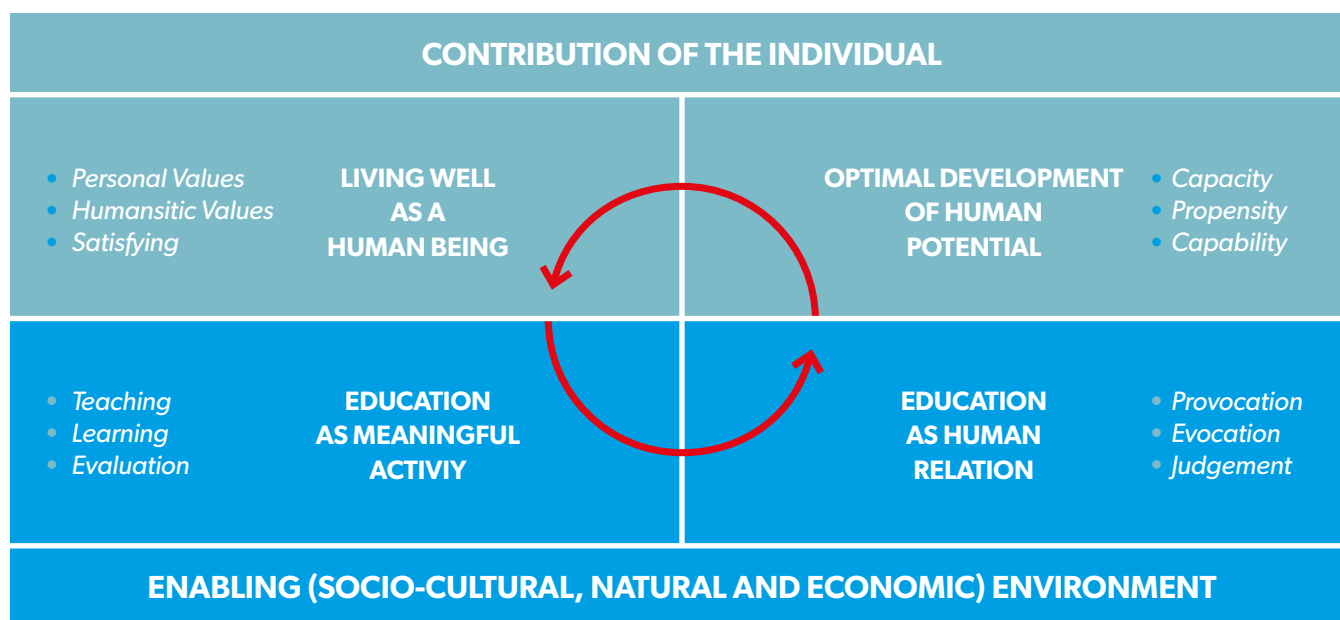
Teaching

When one teaches, one provokes students to come to understanding. Teaching would not be teaching if students were not aroused to see the point (Greene, 1995). The point about teaching is that it implies a relational act according to which students are encouraged to act in particular ways. And to provoke students implies that they are invited to think for themselves - a matter of being summoned to come to understanding. In turn, by provoking the students, the teacher also learns and the students provoke their teachers as well, stimulating her to learn too (if she is sufficiently open to being provoked).

Learning

Learning happens when students' potentials are evoked to come to understanding in agential ways of being and acting (MacIntyre, 1967). Learning would fail to be learning, if students' potentials are not evoked in the quest to gain understanding, insight, and be encouraged to embark on academic, political, economic, social and environmental activism. In learning, students act as human agents being intent on coming to make sense of the knowledge they are

CONTRIBUTION OF THE INDIVIDUAL

- *Personal Values*
- *Humansitic Values*
- *Satisfying*

LIVING WELL AS A HUMAN BEING

OPTIMAL DEVELOPMENT OF HUMAN POTENTIAL

- *Capacity*
- *Propensity*
- *Capability*

- *Teaching*
- *Learning*
- *Evaluation*

EDUCATION AS MEANINGFUL ACTIVIY

EDUCATION AS HUMAN RELATION

- *Provocation*
- *Evocation*
- *Judgement*

ENABLING (SOCIO-CULTURAL, NATURAL AND ECONOMIC) ENVIRONMENT

taught or read and/or the experiences they gain. That is, their learning becomes significant on the basis of their potentials being evoked to see the point. Now when their potentials are evoked, they exercise their freedoms to think for themselves and to make sense of the world around them.

Evaluation

Evaluation involves making reasonable judgments about what is taught and learned – that is, as a form of deliberative inquiry, teachers make sense of what students proffered as a consequence of their learning. Evaluation would not count as evaluation if reasonable judgments are not proffered about what constitutes teaching and learning, and if such judgments are not determined in deliberative action. To evaluate as teachers do, and to be evaluated as students are subjected to, do not happen in isolation but rather, in a way that both teachers and students can justify. When teachers justify their evaluation of students' work, they give an account of why students produce work of a specific kind - that is, they provide a justification for their evaluation.

Relation Between Flourishing And Education

Figure 1 shows how human flourishing (light blue) and education (dark blue) are intertwined (mutually reinforcing):

a. Education enables flourishing – human beings need to be introduced into the social, cultural and natural world by teaching and learning, in relation to teachers and the environment, for they need to be able to make sense of their world in order to be able to live well as human beings. This means that flourishing can be regarded as an aim of education.

b. Flourishing enhances education – when teachers and students flourish in their teaching and learning, in other words when they can develop their potential and live well and when teaching and learning are meaningful to them, their relations will prosper and both the teaching and learning will have a higher quality. The intertwined character of flourishing and education also shows that flourishing is a hybrid concept: the development of

human potentials that make life a human life must inform education (the naturalistic quality of flourishing), but the worlds in which these potentials are fostered are different (cultural-dependent) and good education takes into account that children can develop different ways of living well related to their specific potentials and their

ideas and preferences about how they want to live in the world (agent-relative). That the last is true can be shown by the fact that for some adults being a teacher is a meaningful way of living well, while others want to use the potentials that teachers need to become engineers, doctors or parents (and there are also human beings who do not have the specific potential to become good teachers).
Finally we note that the naturalism of flourishing also draws attention to the basic human needs that need to be fulfilled before education is actually possible: Children need to have sufficient food, water and sleep, safety and security, and also freedom in order to be able flourish as pupils and to benefit from the education they receive.

isee

ASSESSMENT

The International Science and Evidence based Education (ISEE) Assessment is an initiative of the UNESCO Mahatma Gandhi Institute of Education for Peace and Sustainable Development (MGIEP), conceived as its contribution to the Futures of Education process launched by UNESCO Paris in September 2019. In order to contribute to re-envisioning the future of education with a science and evidence-based report, UNESCO MGIEP embarked on an ambitious project of the first-ever large-scale assessment of the knowledge on education.

The overall goal of the ISEE Assessment is to pool the multi-disciplinary expertise on educational systems and reforms from a range of stakeholders in an open and inclusive manner and undertake a scientifically robust and evidence-based assessment that can inform education policy making at all levels and scales. It is not to be policy prescriptive but to provide policy relevant information and recommendations to improve education systems and the way we organize learning in formal and non-formal settings. It is also meant to identify information gaps and priorities for future research in the field of education.

In the education sector, the term assessment generally refers to activities used to measure student progress. Going beyond this narrow notion of education assessment, and drawing lessons from the IPCC Assessment Reports and other scientific environmental assessments (such as Millennium Ecosystem Assessment and IPBES), UNESCO MGIEP aspires to initiate a scientifically credible, legitimate, relevant and inclusive process that will assess the state of education as a complex system and its role in achieving sustainable and peaceful societies.

The ISEE Assessment uses the 1996 Delors report's four pillars of education Learning to be, Learning to know, Learning to do and Learning to live together as the evaluative benchmarks and the lens of "what", "where", "when" and "how" we learn and teach. The assessment is designed along three Working Groups: (1) Human Flourishing, Education and Learning; (2) Education, Learning and Context; and (3) Learning Experience. In addition, there is a technical group on Data and Evidence. The ISEE Assessment Report is expected to be released in November 2021.

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Note: This text rests on many more academic shoulders than these eight references above. The brief is a summary of Chapter 2 of the ISEEA Report, to be published in 2021, with more than a hundred references.

YOUTH VOICES

- **JAIMIN** PARIKH
- **HINDA INA** BICAJ
- **AMELIE** ANDREAS
- **SUSHMITA** KRISHNAN

Disconnect between *Policy and Action*

JAIMIN PARIKH

Mr Jaimin Parikh is a diplomatic researcher associated with the European Institute of Policy Research and Human Rights, EU. He is also a policy team member of the GYAK. He likes to debate and discuss international issues.

Nobel Peace Prize winner Nelson Mandela had once said, "Education is the most powerful weapon which you can use to change the world" but what if the same weapon loses its charm and becomes blunt? While I am writing this, I do not have an iota of doubt that the sharpness of "the most powerful weapon" is lost amidst the realities of the global education systems. The way 'education' has been developed, its "purpose" has been defined and the "systems" that the present generation has inherited clearly reflects a discontentment among all the stakeholders of education, especially the students and the policymakers, irrespective of their geographical location. The clear reason for this - is the widening of the gap between education policies and the actions taken to implement them.

All the stakeholders of education across the globe have a special responsibility to think about the future of upcoming generations before it's too late. Firstly, policies that are formulated at every level – global, national or regional – have to accommodate and widen the role and voices of students and parents, while doing away with the bureaucratic structure. Without direct involvement and considerable autonomy of students and parents in policy formulation, it remains incomplete, thereby directly affecting the 'action' part which policies try to accomplish. Secondly,

> **All the stakeholders of education across the globe have a special responsibility to think about the future of upcoming generations before it's too late. Firstly, policies that are formulated at every level – global, national or regional – have to accommodate and widen the role and voices of students and parents, while doing away with the bureaucratic structure.**
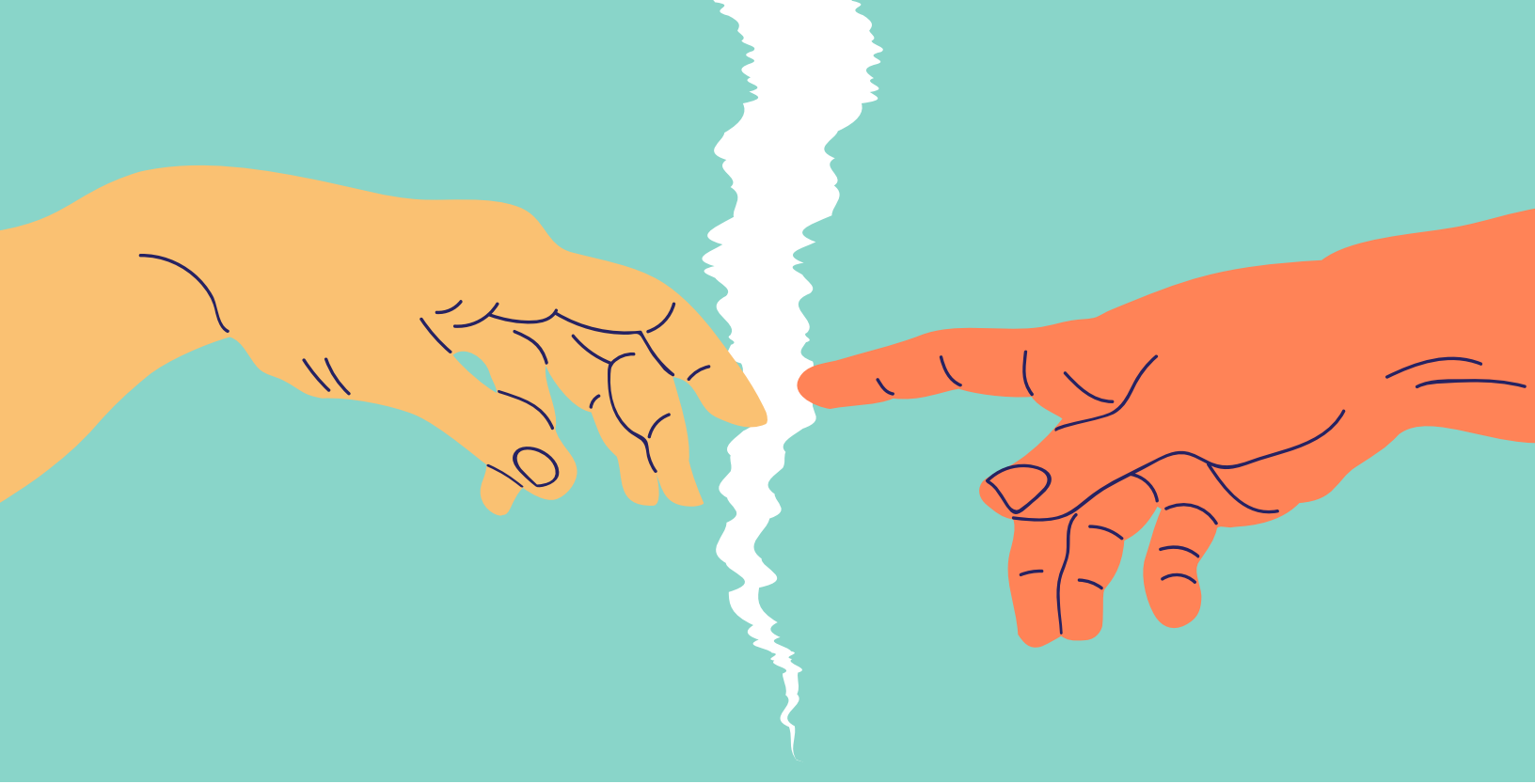
the present education policies and curriculum are outdated and rigid and lack the flexibility to change. They merely lead to equating education with 'grade based achievement' and its purpose as getting an 'economically well-off lifestyle'.

As we move towards 21st-century education, we need to have policies driven by Social and Emotional Learning and Compassion, which in turn will find a place in the daily life actions of students. Thirdly, the social realities have to be kept in mind while formulating respective education policies. A special focus by Public-Private Partnerships on socially and educationally marginalized communities across the world is necessary to remove them from the vicious cycle of discrimination bringing them at par with the privileged sections. This forms an indispensable part of 'purpose' and the 'action' of true education which becomes further relevant in the Post-COVID-19 times. Finally, the education sector has to be looked at beyond economics and privilege of holding the ministerial positions as a medium towards inculcating values for bringing positive changes in the society driven by the respective talents of the students and educators.

So the moment 'action' gets redefined and policymaking creates more space for educators and educational entrepreneurs, we will see the gap, I have earlier mentioned, bridging ultimately changing the 'system of education' which everyone now and then likes to talk about!

So the moment 'action' gets redefined and policymaking creates more space for educators and educational entrepreneurs, we will see the gap, I have earlier mentioned, bridging ultimately changing the 'system of education' which everyone now and then likes to talk about! Ultimately the "action" in the reimagined education will depend on how much we – as policymakers, students and educators – have been able to change our mindsets. I am hopeful that the future generation students and educators will not suffer the similar setbacks of the past and the present times.

Teachers of the *Future*

HINDA INA BICAJ

Ina is a Kosovar Albanian who graduated from Think Global School. She is a member of Uzina Cultural Space in Tirana where she engages in grassroots work as an active member of her home community. She's part of a project implementing a creativity module with the aim of offering a safe space where kids can flourish creatively. Ina is committed to challenging illegitimate forms of power and the way we structure our working and learning spaces, beginning with the classroom setting. Ultimately, she wants to promote a more joyful education so that kids are happier, more motivated and better critical thinkers!

The classroom was always an environment of frustration, fear and anxiety - a place that stripped me of the freedom to make my own choices and become my own person. I grew bored with my voice not mattering or being silenced altogether. Consequently, I became the noisy brat who constantly disagreed with the teachers or stirred up debates. I had no other choice - it was disrupt or sleep, but sleeping led to far more trouble and disruption at least kept me somewhat engaged!

A teacher in middle school transformed my relationship with the classroom, education and most importantly, myself. One day when I was especially disengaged, she invited me to chat with her after class. I confessed to her that the problem was that I was overly emotional. She comforted me by explaining that my ability to feel so much was rather admirable, a strength, and that she always appreciated my sensitivity in class discussions.

That simple act of acceptance has shaped me in profound and lasting ways. I learned to accept and value my emotionality, rather than repress processes completely natural to the human mind. I loved that class. Not only was it stimulating and intriguing, but the teacher valued what each one of us brought – the debates, the sensitivity, and the irascibility.

Her unconditional acceptance and

The classroom was always an environment of frustration, fear and anxiety - a place that stripped me of the freedom to make my own choices and become my own person.

compassion encouraged an open and trusting learning environment where the students could freely contribute, take risks, and truly challenge ourselves. Studies confirm that) students who feel unconditionally accepted by their teachers are more engaged in learning and more likely to enjoy challenging tasks (Makri-
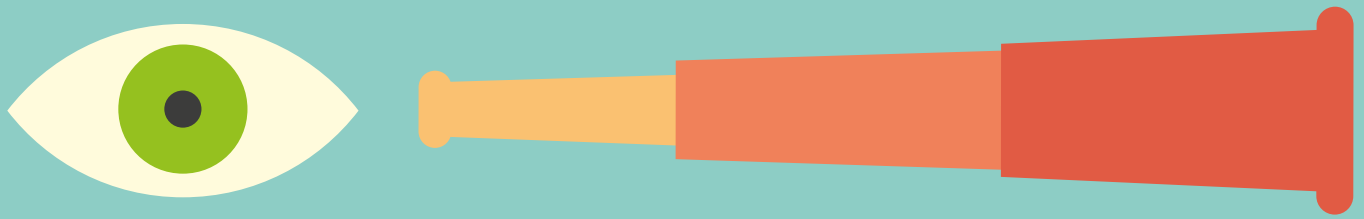
Botsari, 2001, qtd. in Kohn, 2005). I want teachers of the future to challenge kids to grow by making them feel heard, supported, and loved.

I was recently reminded of my middle school experience when hanging out with kids from a marginalized neighborhood. They told me how much they disliked school and how they skipped class because of it. They'd joke about their teachers slapping them or dismissing them. In an attempt to design a different learning environment for these kids, my friends and I took on the challenge of creating an after-school creativity module.

We tried to make the module as much of a dialogue as possible with those whom it would impact the most. The kids chose the activities they'd like to participate in and identified what they wanted to learn. We also included them in decision-making, to show them that we trust their capabilities and that their voices and needs matter. This inevitably meant discarded lesson plans, messy and loud discussions, and the occasional group conflict. **However, exactly in those moments of perceived chaos, the students were forced to think critically and cooperate. In a trusting and caring environment, they learned to resolve disputes on their own. Allowing students to make decisions and to take charge is crucial for creating responsible citizens.**

I never managed to express my gratitude to my middle school teacher, Ms. Shayna. That's why I'm grateful that the kids I work with give me letters and drawings after almost every session. When the kids discuss what they like most about the module, they seldom mention the field trips or fun outdoor learning experiences. They talk much more about the care and compassion of the facilitators. As both a student and as a teacher, I've realized that what kids will remember most is not the details of your lesson plans or the contents of their textbooks, but rather how you make them feel.

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Rethinking
Assessment

AMELIE ANDREAS

Amelie is a graduate of travelling boarding school THINK Global School, and is currently in her first year of university studying Science Communication at Reed College in Oregon. She is the daughter of two teachers, and has always believed that quality education is the key to a better world. In the future, she hopes to inspire young scientists with creative and accessible media, help colonize Mars, or perhaps both!

As a newly minted highschool graduate who's attended school in more countries than I have fingers, I've had my fair share of assessments. **From scantrons and MAP tests to slam poetry physical theatre and surfing competitions, I see assessments as kind of like breeds of dogs.** Have you ever seen a Chihuahua and a St Bernard in the same room and thought, no way are those the same species? Well, that's how it feels for me looking back on the exams and projects that have all fallen under the label of 'assessment' throughout the past 12 years of my life.

All good assessments are united by the intent to place students in the 'Performance Zone', as described in Eduardo Briceño's brilliant TED Talk "How to get better at the things you care about". **The performance zone is where we try our best to execute a task at the absolute pinnacle of our ability; after spending a term or module intentionally building competencies in the 'Learning Zone', performance-based assessments give students a chance to apply what they've learnt under a degree of pressure.**

Whether or not a summative task effectively induces the performance zone has been much of the deciding factor between the best and the worst of my assessment experiences. A well-designed assessment performs a synthetic function,

> The performance zone is where we try our best to execute a task at the absolute pinnacle of our ability; after spending a term or module intentionally building competencies in the 'Learning Zone', performance-based assessments give students a chance to apply what they've learnt under a degree of pressure.

tying together abstract learning and concrete skills into a reality-grounded performance that prepares students to succeed in multiple situations. **After a semester spent learning about biomechanics, sport psychology, and surfing, entering the performance zone by coaching a classmate to later compete in a surfing competition forged transferable competencies such as effectively teaching skills to peers, analyzing movement from a biophysical perspective, and of course shredding some gnarly waves.** Without that foray into the performance zone, I may have never gained the confidence in my abilities that I now have, or had the opportunity to see how all the hard work I'd put in could come together to help me achieve complex goals.

Of course, an appropriate balance must be struck between the pressures of performance and the fertile learning zone. **Many of the least enjoyable assessments I've had the pleasure of participating in have made the mistake of assuming that the performance zone is inherently a stressful place, where failure simply isn't permitted.** For example, many tests go as far as to create circumstances that are more stressful

than those we would encounter in real life, presumably with the goal of forcing students to 'perform' at their highest capacity with no room for failure. Asking a student to perform at their highest level without the understanding that if they do fail, it isn't the end of the world, is a recipe for miserable kids who are incapable of handling inevitable mistakes when they do occur. In many ways, the most important part of a performance is afterwards returning to the learning zone and analyzing successes and failures with growth in mind. This aspect of assessment is completely ignored in most standardized tests. In the SAT for example, an extra fee is required to even access the details of individual questions, granting this all important post-performance revisitation to the learning zone to only those who can afford it.

Finding that perfect performance-learning balance in assessment is my challenge to future educators. May your assessments be delightfully demanding, yet still empathetic towards the students who endure them. May they encourage students to do their best work, but still have the capacity to learn from their mistakes. And, most importantly, will they not be multiple choice tests. Please!

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Teachers of the Future -
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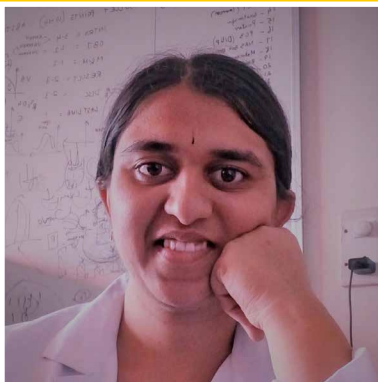
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Sushmita Krishnan is a Masters student in Life Sciences from Bharathidasan University. A budding ecologist, interested in different research topics pertaining to plant-herbivore interactions, conservation, environmental sciences, sustainability and a freelance archivist at the National Center for Biological Sciences, Bengaluru. She is a recipient of the 2019 Indian Academy of Sciences – summer research fellowship. She is a youth leader at the UNESCO TAGe 2020 in series 1.

*T*he global education system revolves around a vicious circle of unfair assessment, incompetent teachers, the endless widening severance between the teacher and student through physical and emotional means, obscure curriculums, desolation and ecstasy of students based on how they fare the assessments. The system has been thrusting its tentacles deep into the minds of students to the extent that they have started isolating themselves from the very purpose of education. Sadly, the prevailing situation validates the inability of education systems to surpass the challenges of the 21st century. For instance, the current education system which is unimaginable without a stereotyped classroom, is now struggling to adapt to the online mode in spite of being inaccessible to the marginalized sections of the society. And this is just the prologue of the challenges in store.

The first series of UNESCO MGIEP's Talking Across Generations on Education (TAGe) online dialogue on Reimagining Education attempted to gather opinions by young people on the future of education. Most participants felt they could ace in their fields of education if we were to collectively work in the right direction of change. Each participant demanded unique perspectives of teaching methodologies that could help them become better persons. Largely, the consensus was "though the world might be connected beyond imagination, there is a need for teachers to build strong relationships with the learners to work for a common good".

Plutarch (AD 46 - AD 120) believed that teachers should use research based teaching techniques and build strong relationships with their students to inspire students to achieve their dreams and aspirations. **In the present scenario, adopting a 5C approach - collaboration, communication, critical thinking, creativity and complex problem solving skills - can prepare the students with essential 21st century skills to navigate the challenges of the future** (Wang et al.,

2016). The early human used these skills while hunting for food and discovering fire by rubbing stones. It is evident that s/he found purpose in life and made landmark discoveries.

Our brains are wired to apply the 5Cs and this approach warrants purposeful learning. Opting for the 5Cs in a classroom requires a paradigm shift from a teacher-centered classroom to a student-centered classroom. Open minded discussions in a classroom can nurture the innate curiosity of the student (Catalano et al., 1999). Although introducing such an approach appears to decrease the importance of the role of the teacher in the classroom, it is critical to note that even with such an approach the teacher will have a key role to play in designing purposeful activities and integrating knowledge of students knowledge into creative expression. This reminds us of a clichéd shift in the role of a teacher from "sage on the stage" to "guide by the side".

Furthermore, it is important to realise that from this point forward, automation will substitute routine jobs done by humans. Teachers of the future will need to cultivate students to develop problem solving and deep-thinking skills as learning and unlearning will be key skills to survive and adapt to changes. With deep learning and illustrative teaching, education of the future can transform innovation and enable students perform non routine creative jobs. Civilization was for our betterment, but it has led to wild complexities. Till date, the quality and accessibility of education are inconsistent, issues that are causing voids in attaining grade level knowledge at different levels. In this scenario, a teacher in a classroom plays a pivotal role to impart the skills required to face the ever changing world. Does that not force us to reimagine education that is inclusive?

This is the tipping point of realisation that education needs to transform with the torchlights of research based teaching and student centered classroom activities. Students undergoing this formation will be prepared to perform non - routine creative knowledge work which will help solve critical problems of the future.

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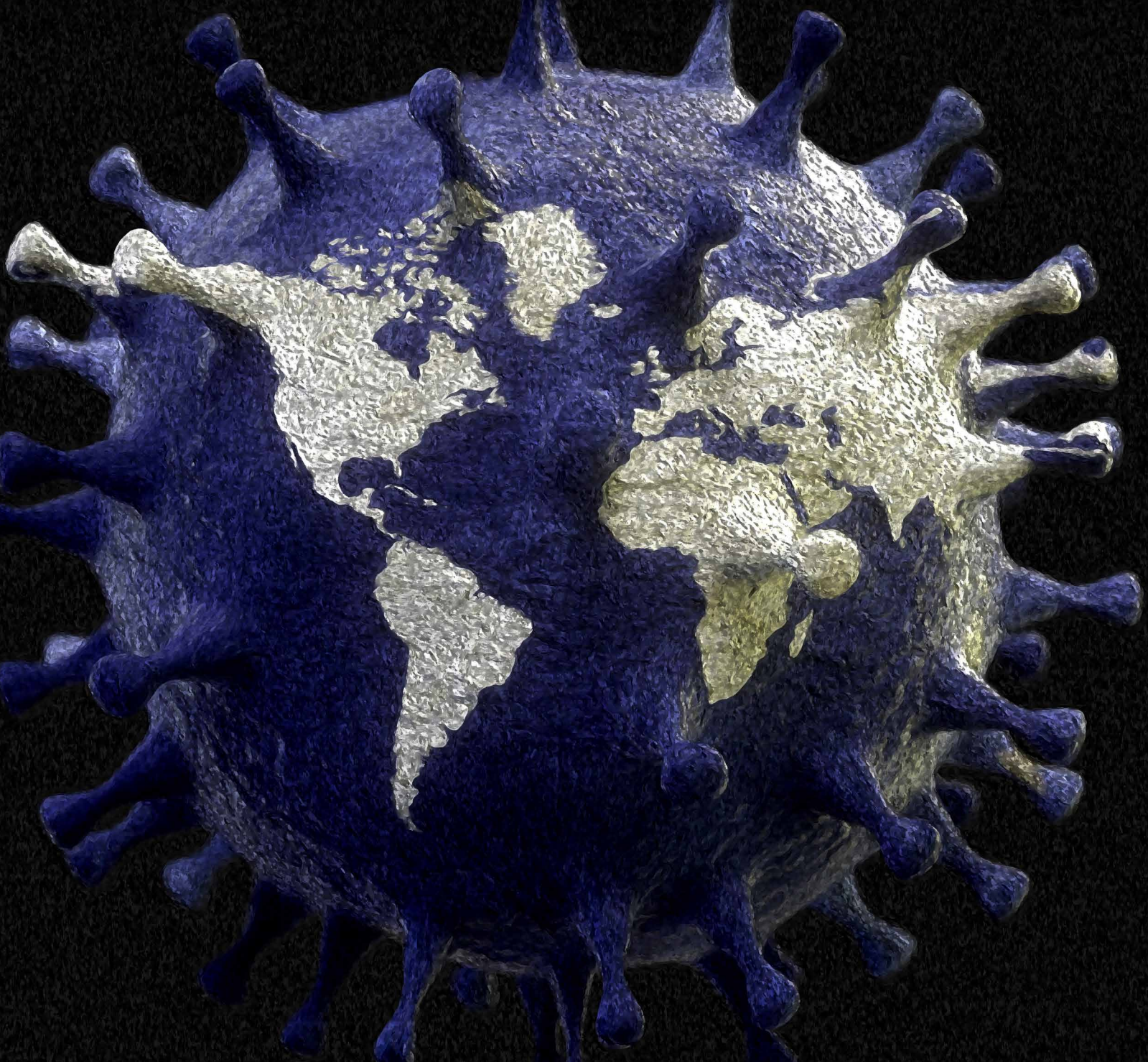
UNESCO
United Nations
Educational, Scientific and
Cultural Organization

MGIEP
Mahatma Gandhi Institute
of Education for Peace
and Sustainable Development

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*A fulfilling learning experience for students is made up of many different facets. But it is a **good teacher** that is crucial to most. **Having teachers who are dedicated to offering clarification on homework or encouraging small group study sessions are important.***

KEMI, Cape Town

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