EXPO 2020
إكسبو
دبي الإمـارات العربية المتحدة
DUBAI, UNITED ARAB EMIRATES

المجلس العالمي
WORLD MAJLIS

WORLD MAJLIS REPORT

INSIGHTS FROM
KNOWLEDGE AND LEARNING WEEK

16th TO 22ND JANUARY 2022

What if we learned to
learn differently?

EXPO 2020
إكسبو
دبي الإمـارات العربية المتحدة
DUBAI, UNITED ARAB EMIRATES

Download the report or watch the full World Majlis session at:

virtualexpodubai.com/about-history/detail/world-majlis

SUMMARY AND CONTENTS

SUMMARY AND CONTENTS

Deeply rooted in the traditions of the UAE, the majlis is one of the cornerstones of Emirati society, a space that welcomes friends and strangers to share news and ideas.

The Expo 2020 Dubai World Majlis is an inclusive, open and informal conversation space, physical and digital; one that brings together diverse voices from all over the world to reflect on complex challenges for the well-being of people and planet.

WELCOME
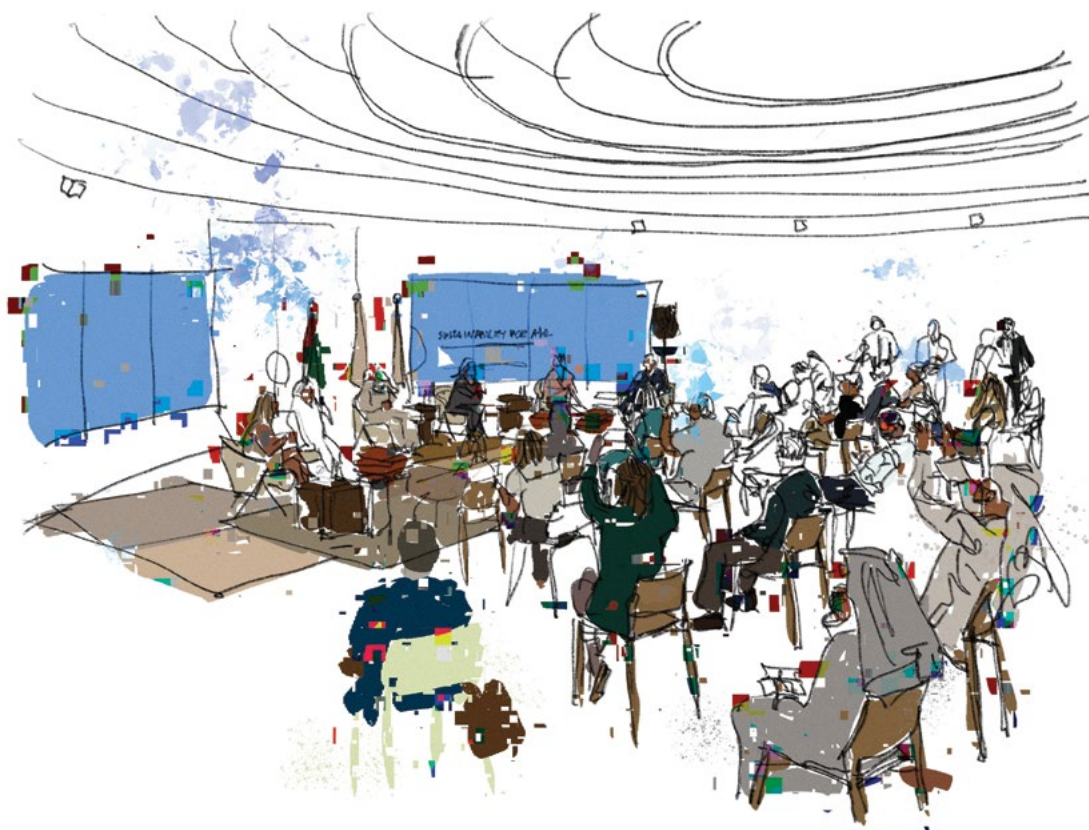
Between the 12th and 18th December 2021, Expo 2020 hosted five World Majlis to explore the theme of Knowledge & Learning through the lenses of business, art, digital innovation, youth and women's issues.

1 **The Science of Everything**

Science Versus Disinformation in the Digital Realm

In collaboration with USA

How do we manage misinformation and disinformation in the world today?

2 **132 million girls**

Tackling Gender Disparities in Access to Education

In collaboration with Dubai Cares, KSA, and USA

How do we guarantee every girl goes to school and create gender-inclusive learning?

3 **Equipping Youth to Thrive**

Rethinking Education for a Changing World

in collaboration with

How can we open up the full breadth of learning possibilities in the age of the Fourth Industrial Revolution?

4 **The Winning Match**

When the Worlds of Education and Play Meet

How can playing games help educational outcomes and foster skills development?

5 **A School for My Children**

Notes from the Teachers and Parents of Tomorrow

In collaboration with the Expo Schools Programme

What kind of schools would today's young people like to build for the children?

WELCOME
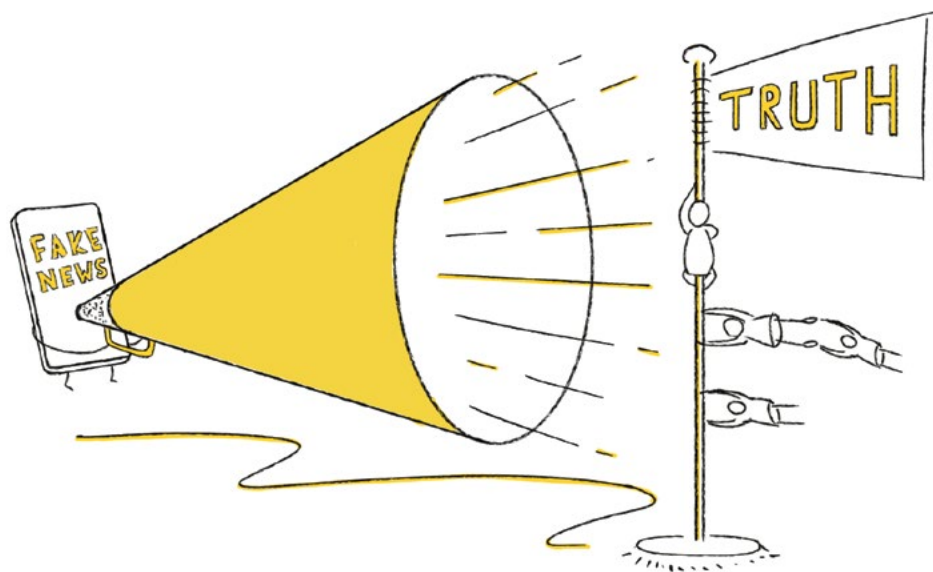
PARTICIPANTS

The Science of Everything

Science Versus Disinformation in the Digital Realm

In collaboration with USA

Terra – The Sustainability Pavilion
12th December 2021

H.E. Ambassador Omar Saif Ghobash
Assistant Minister for Cultural Affairs, Ministry of Foreign Affairs and International Cooperation, UAE

Prof Liina Pylkkänen
Professor of Linguistics and Psychology, New York University, USA

Alicia Wanless
Director of the Partnership for Countering Influence Operations, Carnegie Endowment for International Peace, USA

Fares Akkad
Director of Media Partnerships for News in Growth Markets, Meta, UAE

Dr Sumaiya Shaikh, PhD,
Neuroscientist, Violence Researcher, Science Fact-Checker, CVE consultant, Sweden

---

Sultan Sooud Al-Qassemi
(Moderator)
Columnist and researcher, UAE

Rashid Al Awadhi
CEO, New Media Academy, UAE

PARTICIPANTS
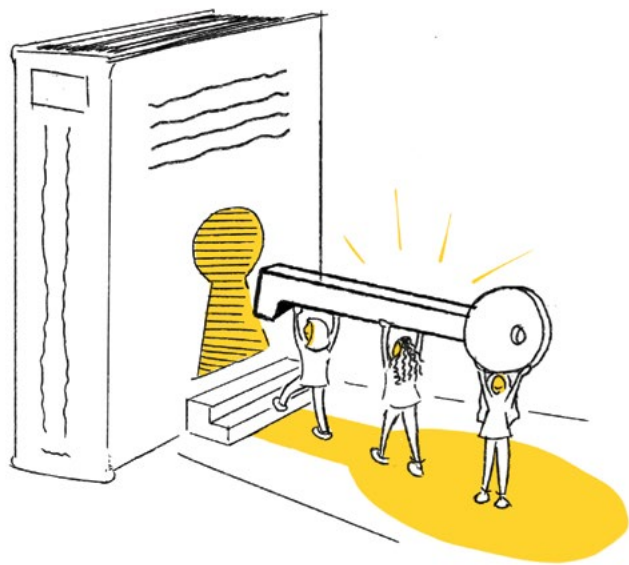
132 million girls

**Women's World Majlis:
Tackling Gender Disparities in Access to Education**

In collaboration with Dubai Cares, KSA, and USA

Women's Pavilion
13th December 2021

H.E. Dr Tariq Al Gurg, Chief
Executive Officer and Vice-
Chairman, Dubai Cares, UAE

Safeena Husain
Founder and Executive Director
of Educate Girls (EG), India

Dr Fanta Aw (Moderator)
Vice President of Campus
Life, American University
(Washington D.C.), USA

H.E. Maruja Gorday de Villalobos
Minister of Education, Panama

Dr Mounira Jamjoom
CEO & Saudi Entrepreneur,
Aanaab Holding, Saudi Arabia

Raya Bidshari
Founder and CEO, School
of Humanity, UAE

Yasmine Sherif
Director, Education Cannot Wait
(ECW) United Nations

PARTICIPANTS

Equipping Youth to Thrive

Rethinking Education for a Changing World

المجلس العالمي
WORLD MAJLIS

Terra — The Sustainability Pavilion
14th December 2021

H.E. Aymen Tawfeeq Almoayed
Minister of Youth and Sports
Affairs, Bahrain

Dr Colin Kennedy
Head of Innovation Education
at Creative HQ, New Zealand

Sir Anthony Seldon
Former Vice-Chancellor of The
University of Buckingham, UK

Denise Amyot
President and CEO, Colleges
and Institutes, Canada

Wendy Kopp
CEO and Co-founder of Teach
For All, USA

Sultan Sooud Al-Qassemi
(Moderator)
Columnist and researcher, UAE

Prof Dr Renaldas Gudauskas
Director-General of the Martynas
Mažvydas National Library of
Lithuania

Adam Pensotti
Head of the Canon EMEA Young
People Programme, UK

The Winning Match

When the Worlds of Education and Play Meet

In collaboration with Spain

ESPAÑA
Expo Dubái 2020

Spain Pavilion
16th December 2021

PARTICIPANTS

Dr Mansoor Al Awar
Chancellor of Hamdan Bin Mohamed Smart University; Chairman of the Governing Board of the UNESCO Institute for Information Technologies in Education (IITE); Member of the Executive Council of the Association of Arab Universities (AARU), UAE

Patricia Heredia
Telecommunications Engineer and Co-founder of ValPat STEAM Channel, Spain

Judit Polgar
International Chess Grandmaster, Hungary

Valeria Corrales
Student and Co-founder of ValPat STEAM Channel, Spain

Mikaela Jade
CEO and Founder of Indigital, Australia

Raneetha Rajaratnam
Director of Programmes and Exhibitions at the Archives and Libraries Group of the National Library Board (NLB), Singapore

Charles Pappas (Moderator)
Senior Writer, Exhibitor magazine

Leontxo Garcia
Educational chess expert, Spain

Adrián Silla Merchán
R&D Training Area Lead, Real Madrid Foundation, Spain

PARTICIPANTS

A School for My Children

Next Gen Majlis:
Notes from the Teachers and Parents of Tomorrow

In collaboration with the Expo Schools Programme

Portugal Pavilion
24th January 2022

Marwa Al Ali
Sharjah American International
School, Dubai

Fatma Riad Belhoul
Al Mawakeb School – Al khawaneej,
Dubai

Achal Mohandas
Our Own English High School,
Sharjah

Amna Almansoori
Emirates National School RAK, Ras
Al Khaimah

Helia Fazeli
Iranian Towheed Girls School,
Dubai

Nityaansh Parekh
Delhi Private School,
Sharjah

Abdullah Al Balushi
Al Mawakeb School – Al khawaneej,
Dubai

Isabel–Juliana Mewald
Dubai International Academy –
Emirates Hills, Dubai

Rohan Roberts (Moderator)
Innovator, Author, Entrepreneur,
Futurist, Edtech Advisor,
Educational Consultant

PARTICIPANTS

SUGGESTED ACTIONS AND INITIATIVES

SUGGESTED ACTIONS AND INITIATIVES

For Government

SUPPORTING THE SKILLS FOR THE 21ST CENTURY

Support schools in defining the new subjects for this era **[p24, 28, 37, 43]**

Promote and recognize lifelong learning **[p25, 33]**

Explore the value of games in education **[p30]**

DEVELOPING INFORMATION LITERACY

Build information literacy amongst decision-makers **[p55]**

Promote information literacy in schools **[p55]**

EMPOWERING TEACHERS AND STUDENTS

Promote the value of teacher training **[p31, 32]**

Create an environment where teacher are valued financially and socially **[p35, 36]**

Create opportunities and spaces to give a voice to the youth **[p31, 35, 49]**

For Educators

UPGRADING CURRICULA

Explore subjects that are relevant to our era **[p24, 28, 37, 43]**

Consider including a deeper learning of information science in the curriculum **[p55]**

Consider developing deeper subjects around sustainability **[p25, 47]**

Teach how to grow a vegetable garden and care for farm animals Include games as part of the curriculum **[p37, 47]**

EMPOWERING TEACHERS AND STUDENTS

Focus on teacher training **[p31, 32]**

Create opportunities for students to engage in two-way conversations **[p31]**

SUGGESTED ACTIONS AND INITIATIVES

TEACH PROBLEM SOLVING

Consider inviting professionals from different industries to enrich the curricula by sharing their problem solving and adaptation skills. **[p23]**

For Businesses

DISRUPTING THOUGHTFULLY AND RESPONSIBLY

Companies in the information space have a growing responsibility to support education literacy **[p26, 55, 75]**

Companies in relevant sectors that impact climate change can be 'partners' in supporting the direction of education **[p26, 55, 75]**

FUTURE INQUIRIES

Connecting the ideas from 40 thought leaders from 17 countries has sparked new lines of inquiry for future conversations and research.

As innovation disrupts
the education system,
how can companies
actually support
schools and help fill
the knowledge gap?

Who else could be
invited to teach in
the classroom?

How do we balance the
skills provided by games
with their often addictive
nature? It the game or
the device which
is addictive?

What curricula changes
need to take place to
help students truly
master information and
language science?

Are there novel
community-based
platforms that can
certify sources?

How do we balance truth
versus social cohesion
and solidarity?

What makes a source
trustworthy?

Is fact checking a
solution if we cannot
keep up with the speed
of information spread?

FUTURE INQUIRIES

CONTEXT

Context

What if we learned to learn differently?

How can today's education prepare us for a world that cannot be predicted and has yet to be built? Transformations in technology, culture, and the planet are making us question the very foundations of education, including rethinking how schools can meet the needs of the next generation and adapt to rapid change.

Readiness for an Uncertain World

Creating education systems has always been crucial to the future. Today, a large part of our education systems and practices of education are largely a product of the First Industrial Revolution. These systems were developed for a world that was predictable and perceived to be on a linear trajectory of growth.

We are in the midst of an existential crisis shaped by climate change while also recovering from a global pandemic. The systemic changes around us are creating greater instability of our circumstances and unpredictability of outcomes, of which youth and adults alike are increasingly aware. This impacts our education systems by affecting the mindset and the mental well-being of the younger generation and by creating the need to develop the resilience and capabilities to face the challenges of the future.

In parallel, the world of information and content is full of threats and opportunities, specifically as our societies are increasingly dependent on information and communication technologies for all aspects of our well-being.

CONTEXT

CONTEXT
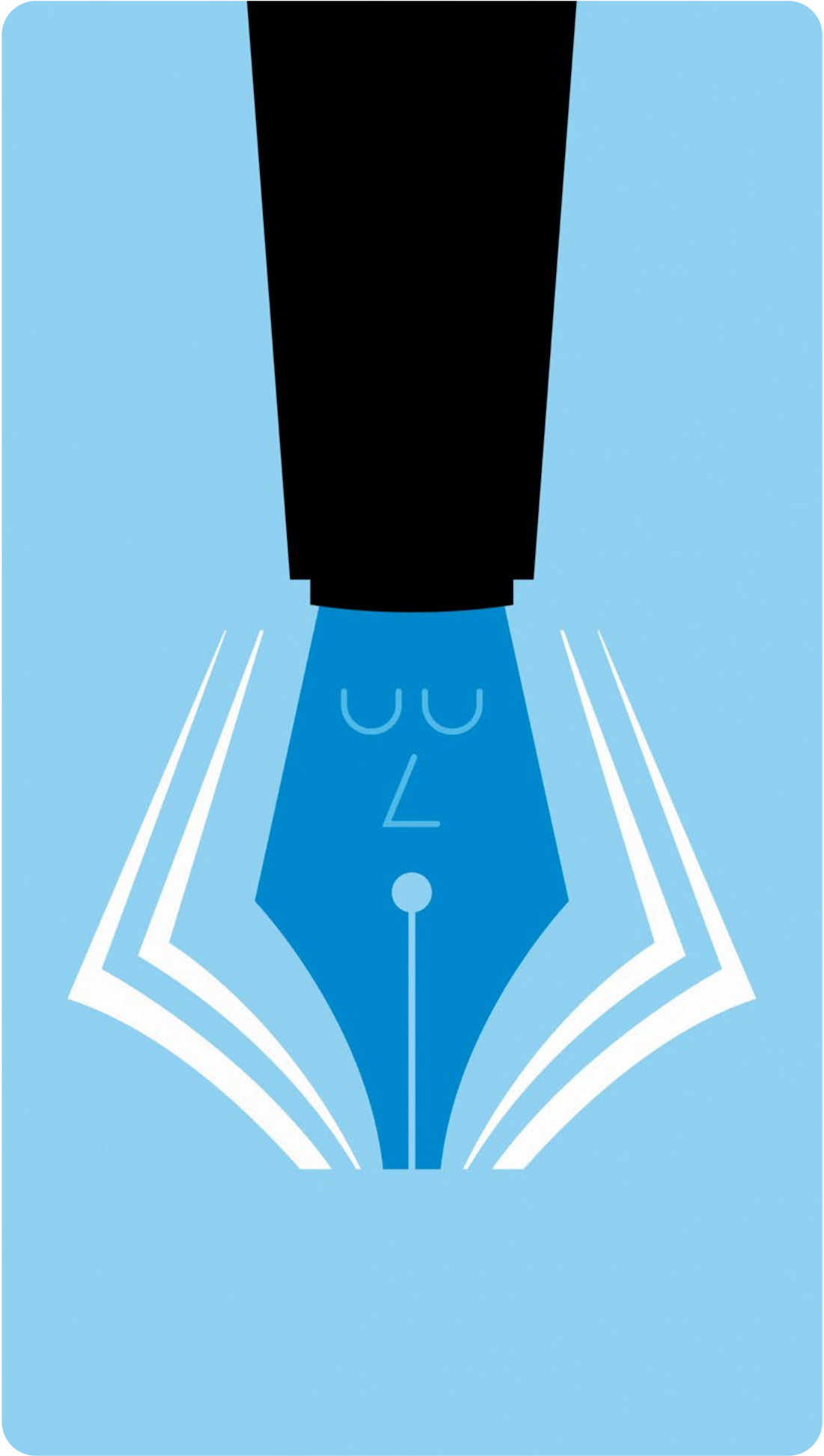
On the one hand, communication technology and social networks have added new layers of possibility, shifting education towards more collaborative approaches to learning. These technologies have enabled educators and students to share information, acquire knowledge, and foster collaborative community learning environments on an unprecedented scale.

On the other hand, our information environments, shaped by the speed and reach at which information can move and affect people's ideas, decisions and actions, are also increasingly toxic. It is therefore imperative that our education systems provide the tools to navigate the changed information environment and use it constructively.

According to UN data, Covid-19 has set back education and many of its gains and there are still over 130 million girls with no access to school.

These disparities are not only significant in light of the efforts that need to take place to achieve universal education, but also as we ensure that the information environment that is increasingly accessible to everyone is healthy and does not contribute to further negative social impact.

"As we look to the future of education, it is important to highlight there are still over 130 million girls who may never have the chance to read or write, count or even achieve their full potential in life."
Tareq Al Gurg

CONTEXT

Covid-19 has wiped out 20 years of education gains.
(https://sdgs.un.org/goals/goal4)

CONTEXT

" **It's no longer just about children, it's about educating all of us, and we can make the difference.** "

— Sir Anthony Seldon

The traditional trajectory of going to school as a child and then remaining employed in the same job for 30, 40, 50 years is no longer the case. Similarly, there is learning that happens beyond the classroom walls. We are lifelong learners and the potential to gain knowledge is everywhere around us.

The future of education involves a whole ecosystem that goes beyond the traditional role of the schools and classrooms and involves families, policy makers and other institutions from libraries, to museums, to the digital world.

There is a rich world of content that can make education more suitable to the world of tomorrow. It is also a world that requires new tools and values to support the education of the future, in all countries.

CONTEXT

Thinking differently about Knowledge and Learning

The changing world of technology and information coupled with connectivity, climate change and the aftermath of Covid-19 require new ways of enriching our education systems and new methods to impart the skills for the 21st century.

THINKING DIFFERENTLY ABOUT
KNOWLEDGE AND LEARNING

We are all learning everywhere...

The leaders, teachers and decisions makers of today have all been brought up in education systems which have evolved incrementally out of the beliefs and practices of the First Industrial Revolution. Today, we are in the midst of an industrial revolution which is not only affecting the jobs of the future – for which schools prepared the pupils – but requires everyone to navigate and adjust to new technological environments, the emergence of new industries and the rise of campaigns of manipulation of information to drive behaviour, be it political, economic and social.

At the same time, we are quickly embracing new and richer possibilities for learning in the age of the Fourth Industrial Revolution. COVID-19 has revealed great vulnerabilities in society, but it has also demonstrated that remote learning and engagement can complement in-person education. The ability to link classrooms to vast archives of knowledge, to dynamically generate and visualise information, and stream images and videos directly into the classroom have opened new horizons for education.

Learning goes well beyond the traditional one-directional teacher-student relationship during a number of years at school. It now builds on a broader definition of 'learners' which includes everyone within the school system and beyond. It is also no longer just about children, it's about educating every-one: students and teachers, families and institutions and more broadly cre-ating a mindset of lifelong learning to face a world with rapid changes, chal-lenges and requirements.

... and from everyone

Governing bodies could leverage the expertise of professionals and make it easier for them to enter into the education sector to impart their experience onto students. Professional are indeed people who put into practice problem solving, adapting to challenges and learning on a constant basis.

Rediscovering the meaning of education

The word *education* means "leading out; raise up; conduct". This deep significance is also leading a conversation focusing on active engagement and not just passive listening.

Education must touch all aspects of human intelligence: intellectual, practical and emotional. It is about developing all of people's intelligences – the mind, the hands, the heart and the soul. At the same time it is also about recognising that each person learns differently and that we need to move beyond the one-size-fit all approach of traditional curricula and exams.

New challenges for literacy

Our societies are completely dependent on information and communication technologies for all aspects of well-being. Technology has increased the speed and reach at which information moves, engages people, taps into their interests and beliefs, with both positive and negative effects.

It is increasingly important to engage in this information environment in an 'informed' way, based on an actual understanding of how information is generated, processed and consumed by our brains and what are the skills and intent of those that produce it and disseminate it. This is a new form of literacy - no one can afford not to master a full understanding of our information environment.

THINKING DIFFERENTLY ABOUT
KNOWLEDGE AND LEARNING

The impact of climate change

Climate change is not only transforming our world, but also our education systems. Students must develop the knoweldge and the problem solving skills to deal with an increasingly unpredictable world shaped by climate change. At the same time, there is a need to balance out the engagement in technology and the time spent in front of screens with productive time within nature.

Educating for resilience

In our rapidly shifting world, education needs to focus on building resilience and skills that can help cope with an uncertain future but also create problem solvers for our times. Good education can build emotional and psychological resilience. The ability to cope with crises, mental health issues, and unpredict-ability are just as critical as developing academic and workforce skills.

Lifelong learning for everyone, everywhere

Education is no longer just for young people, but for everyone.

In the next decade, the OECD predicts that more than 1 billion jobs, roughly one-third of the world's jobs, will be revolutionised by new technologies. According to the World Economic Forum, 133 million new jobs will be generated in advanced economies by 2022 in order to meet Fourth Industrial Revolution demands by 2025.

At the same time, economic and demographic changes are putting further strain on today's workforce. It is imperative that we embrace lifelong learning as a way to develop agile learners able to train and upskill constantly, to be well-prepared for the jobs of the future. Life-long learning also ensures that learners have the opportunity to make positive contributions to their communities and societies over the course of their lives.

Education can no longer be limited to the traditional institutions in a one-directional way. It is multidirectional, it is lifelong and it should encompass new institutions such as museums, exhibitions, online resources that complement the role of traditional schools, as well as World Expos.

**Emerging questions
for future conversations**

As innovation disrupts the
education system, how can
companies actually support
schools and help fill the
knowledge gap?

Who else could be invited
to teach in the classroom?

THINKING DIFFERENTLY ABOUT
KNOWLEDGE AND LEARNING

Education in the 4th Industrial Revolution

21st-century education needs to build qualities and capabilities to face an uncertain world. Today's education system must be better equipped to adjust to new technologies and encourage new areas of study that are critical in today's world.

EDUCATION IN THE 4TH
INDUSTRIAL REVOLUTION

Even before the virus struck, UNICEF was predicting that by 2030, 825 million children in low- and middle-income countries would reach adulthood without the skills they need to thrive in work and life. That is half of all young people on the planet.

"If we do right by those kids, we will solve the world's problems, and if not, we will be right here, right where we are, having the same discussion in 20 years."
Wendy Kopp

Yet, the children in our classrooms today are the people who can get us out of the deep polarisation in our society and find a way to make the planet a better place. They need to be able to work across lines of difference and solve the many geopolitical conflicts. Our education systems are essential to provide the tools to this generation provided they encourage new areas of study and not just gearing up to existing employment needs.

In parallel, the Fourth Industrial Revolution requires new educational paradigms to respond to the demand for new skills, job disruption from emerging technologies such as AI, and increased socioeconomic disparities. The primary legacies of the past are education systems carved along rigid subjects, exam-based assessments which are focussed on following instructions and conducting repetitive tasks consistent with mass manufacturing jobs.

Quality education

Quality education could combine academic skills with emotional and psychological resilience. The ability to cope with crises, mental health issues, and unpredictability are just as critical as developing academic and workforce skills. It also enables young people realize who they are, what they enjoy about life, what they can give to life.

The educational environment will play an important part to help channel learning to make it more healthy, fun and exciting.

EDUCATION IN THE 4TH
INDUSTRIAL REVOLUTION

"From the moment the children are in the womb, they are beginning to learn. The definition of a great life is that you are learning as much on your last day on Earth as you were in the first.We have that curiosity, not bludgeoned out of us by dull school systems that we have in the world today, but by developing our curosity, our heart, soul and our mind."

– Sir Anthony Seldon

EDUCATION IN THE 4TH
INDUSTRIAL REVOLUTION

ACTIVE   Education needs to move beyond passive listening, to actively engage the learners in both conversations and experiences.

HOLISTIC   There are multiple intelligences that we need to develop. Alongside training the mind, we must also focus on the heart and soul – our emotions and values – as well as our hand – our capacity to build things.

INCLUSIVE   Everyone must have access to education, including to the educational products as well as the creative thinking that goes into using them.

LIFELONG   Education should be a lifelong mission that helps everyone to remain adaptable and capable in a fast changing world. It is ever more possible given the ability to learn remotely.
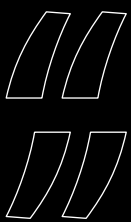
" THERE ARE COUNTRIES THAT SPEND WELL OVER $10,000 PER CHILD TO EDUCATE THEM. WE ARE WORKING IN COUNTRIES THAT ARE AFFECTED BY CONFLICT, WHERE YOU NEED MORE IN ORDER TO PROVIDE A QUALITY EDUCATION. INSTEAD, WE'RE MOVING AROUND BETWEEN $200 AND $300. DON'T YOU SEE THE ENORMOUS INJUSTICE? WITHOUT THE FINANCIAL RESOURCES, QUALITY EDUCATION IS JUST EMPTY TALK.

– Yasmine Sherif

EDUCATION IN THE 4TH
INDUSTRIAL REVOLUTION

EDUCATION IN THE 4TH
INDUSTRIAL REVOLUTION

"More than 60 percent of education budgets are spent on teacher salaries, but how much of that budget is really spent on upskilling the person that is working with our girls and our boys in schools?"
Mounira Jamjoom

Student-centric and empowered

High-quality education starts with the students being at the centre. To achieve a high quality, student-centred education, there needs to be a two-way conversation - it's not just about students extracting information, it is also about sharing ideas.

Part of encouraging independent, inquisitive minds will come from moving away from classrooms that are set up for listening to active production of information and knowledge. Helping students discover what they are interested in and passionate about is more important than trying to teach things they will not put into practice.

Our world's educators are required to be at the forefront of new ways of teaching. This includes teaching in an online world and integrating new elements of the curricula such as gaming. While this approach is proving to have a great deal of potential across many aspects of learning, the benefits must be considered against the potential loss of personal interaction with teachers and peers.

The new systems need to support the teachers themselves and enrich their professional development. In some cases, even encourage them to unlearn the ways they were taught, the mindsets that come with that, and relearn a different way of teaching.

With a crisis in the supply of teachers worldwide, there is an opportunity to change the expectations for this job when educating the new generation of teachers that are very much needed. Teachers will need more autmy and support, better pay and be more valued than they currently are.

There a great deal of potential also in tapping into other avenues, such as professionals who are already trailblazing in their job roles.

"COVID HAS CONSIDERABLY ACCELERATED THE MARCH TOWARDS USING AI AND 4.0 TECHNOLOGIES ACROSS EDUCATION. TWO YEARS AGO, IT SEEMED A VAGUE IRRELEVANCE. NOW IT IS AN UTTER NECESSITY FOR EVERYONE INVOLVED IN EDUCATION TO UNDERSTAND AND CONSIDER HOW TO INTRODUCE."

Sir Anthony Seldon
Former Vice Chancellor,
Buckingham University, UK

Worst   Best
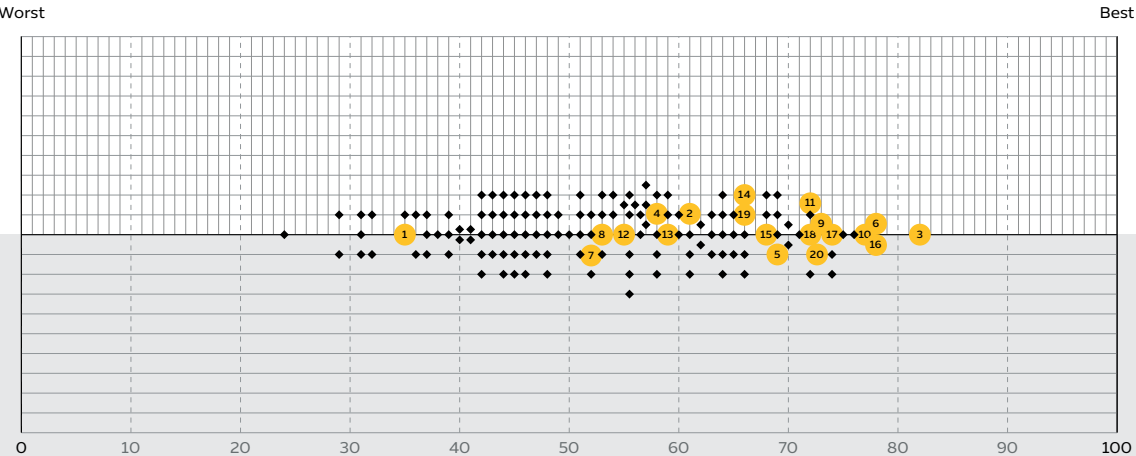
Percentage of executives that believe people in their country have sufficient digital skills
Source: World Economic Forum, 2019

Key = ① HIGHLIGHTED COUNTRIES   ◆ OTHER COUNTRIES

Digital skills will be vital for countries to build the fastest-growing industries. Some countries are doing better than others in building these capacities in their population.a

01.	Brazil	11.	Norway
02.	Egypt	12.	Poland
03.	Finland	13.	Portugal
04.	France	14.	Russia
05.	Germany	15.	South Korea
06.	Iceland	16.	Sweden
07.	Iran	17.	Switzerland
08.	Italy	18.	USA
09.	Malaysia	19.	United Kingdom
10.	Netherlands	20.	UAE

RESPONDING TO THE TEACHER SHORTAGE

Close to 70 million new primary and secondary teachers will need to be recruited worldwide by 2030 to meet targets in the Sustainable Development Goals.

Teach For All recruits top college graduates to teach for at least two years in the poorest schools in their country.

ARCTIC

Network Partners

Teach For All's global network of partner organizations spans 61 countries on six continents.

117M OF
1.6B

Of 1.6 billion students globally, 117 million go to schools still closed due to Covid.

ATLANTIC

PACIFIC

PACIFIC

INDIAN

0%

100%

45%
1948
Only 45% of the world population had set foot in a school.
(UNESCO, 2021)

90%
2020
Over 90% enrolled in primary.
(UNESCO, 2021)

SOUTHERN

EDUCATION IN THE 4TH
INDUSTRIAL REVOLUTION

Personalised and Lifelong

Education needs to be tailored to the person, the culture as well as the environment, and in particular the labour market. This customisation which is happening in many different industries, including medicine, is still lagging in the education system.

The focus on employability is important for many obvious reasons, but also because it instils a sense of security about the future. In Bahrain, for instance, the focus on employability as a key performance indicator for the education system is having an impact on the whole infrastructure of education.

Bridging gaps

Bahrain noticed a phenomenon that is common in small communities: the delay between what the market needs, versus the inputs into the system, the graduates from the education system. Individuals who have studied subjects like architecture, law and so on would come back, become successful, receive attention and then the next generation would then be motivated to study those same subjects. The result is a constant flux between very short or a very high supply in certain professions.

Creating pathways

It is important to create pathways by developing skills through pro-fessional and technical education and training. There should be no barrier to start in one sector, even vocational training, and then move to the academic sector or vice versa.

Learners of all ages, should be able to start in one path and then continue in another one. In Canada, this has been addressed by cre-ating post-grad certificates focussed on areas of applied learning that answer the needs of the labour market. For instance, someone with a business degree, could pursue an applied learning course of eight months in cybersecurity, or in data analysis to increase their marketability as a graduate.

What does inclusive mean?

In March 2021, a UN installation entitled the "Pandemic Classroom", represented the 168 million children who have missed out on formal schooling the previous year. This made visible today's global learning crisis. 116 million of the 1.6 billion learners around the world remained without schooling at the end of 2021.

School closures combined with lack of access to resources disproportionately affected girls and young women, exacerbating inequities that existed before the pandemic. Nearly half of the world's households have no access to the internet. For the unconnected and underconnected, the pandemic closures combined with the digital divide left millions of students with few options for learning—many will never return to school.

In the case of girls out of school, to support their attendance, it is essential to work in partnership with the community: the parents, the grandmother, the government, all contributing to encourage and support the girls to go back to school.

"We find that it's the three P's, poverty, patriarchy and policy, which really leaves the girls to be out of school. And now you have the fourth P, which is the pandemic, which is obviously making all the Ps much worse off, by making poverty worse."
Safeena Hussein

"If we educate one generation of girls around the world and educate another generation, we're talking 20 years of humanity."
Tariq Al Gurg

EDUCATION IN THE 4TH
INDUSTRIAL REVOLUTION

EDUCATION IN THE 4TH
INDUSTRIAL REVOLUTION

Best practice

Bahrain employability skills portal

Bahrain created an employability skills portal which shows the vacancies in the market as well as the skills that are required to apply for those vacancies. The system shows the disconnect between current skill sets and what is required. Micro-credentials help learners develop the skills to bridge these gaps.

Low cost early childhood development as an educational tool

The Canadian government recently announced the launch of highly subsidised early childhood development across the country. It is not free, as in some countries, but it is very low cost at $10 per day. One of the provinces, Quebec, implemented this 20 years ago, and discovered that having more women at work significantly increased productivity. Moreover, early child development allows children from vulnerable communities to have a chance to participate as equals as they get better training for learning to read and write, than they might otherwise, during their formative years.

Teachers seeing students as teachers

Teach for All, a global organization, surveyed 250 teachers globally who were standouts because they were cultivating student leadership with agency, awareness of the world, and their place in it. Their students demonstrated strong problem solving and critical thinking abilities, a positive outlook, empathy and the capacity to work across differences. How did they become so terrific and inspiring to their kids? Teach for all was so struck by this that they made them write essays about how they developed as teachers. They found extraordinary similarities. The teachers were all in some way affected by encounters that made them rethink big mindsets. As a result they started seeing their pupils as leaders. And instead of being the source of all knowledge, they—the teachers—saw themselves as the learners.

Anaab

Anaab, which in Arabic means grapes, is an education platform that focuses on making teacher education accessible to Arab teachers all over the world. It brings the best of the global programs in Arabic - e.g., Harvard, Cambridge – and makes them accessible and affordable to every Arab speaking teacher in the region. The programme launched before Covid-19 and already 10,000 teachers are benefiting from the platform.

Education Cannot Wait

Education Cannot Wait is the United Nations first global fund dedicated to education in emergencies and protracted crisis. It works in partnership with the communities where it operates (mostly in India), with 15,000 young people on the ground pushing its mission. These young people come from the same communities and go door to door to find every single girls who is out of school. They run counseling (individual, parents, neighborhood) to bring girls back into school; they organise remedial learning programs and ensure that the school infrastructure is there to also support the needs of girls, including separate toilets.

EDUCATION IN THE 4TH
INDUSTRIAL REVOLUTION

New tools for learning

From collaborative communication to grappling with complex systems, today's youth need a different set of skills and ways of thinking to prepare for 2030 and beyond. We need to develop new tools for learning that drive curiosity, and support our heart, soul and mind. Gamification can play a pivotal role in fostering critical thinking, collaboration, fair play and leadership skills.

GenZ and the rise of mental health concerns

GenZ – the cohort born between 1995-2010 - represents about 32% of the global population at the moment; they have been valued at 140 trillion U.S. dollars in terms of potential spend, i.e. about 40% of the entire global spend.

According to the global survey "What is GenZ and why is it important?" carried out by Dr. Colin Kennedy, this generation is suffering for a variety of reasons and their mental well-being is of primary concern.

There is also evidence connecting the increase in mental health issues with the focus on exam grades as being all that matters. At the same time, while these are important, there is more to human beings than great brains. Reducing education to academic achievements fails to help young people to focus on how to broaden themselves as human beings and helping them learn who they are.

"It is not only the global pandemic and the sense of isolation and lock-down, but also the realisation, looking into the future, of the debts that they're going to carry, the high costs they will face, the growing inequalities and the growing polarisation. How do we instil a sense of hope?"

– Dr. Colin Kennedy

NEW TOOLS FOR LEARNING

Play - a new toolkit for learning and motivation

Games are proving to be powerful tools for achieving the holistic learning we need in our world. In our fast-paced world, they create spaces for reflection, concentration and active engagement. By stimulating different parts of the brain, gamification encourages flow—the state of total engagement in an activity—as well as sparking other cognitive processes such as lateral thinking, associative thinking and creativity.

Games such as chess and many sports can effectively drive learning and motivate young people to cultivate skills critical to be successful in the 21st century, in ways that are joyful and meaningful.

Games help develop critical thinking, transferable skills as well as values. They can teach laterality (development of one side or the other of the body), psychomotricity, classification, memory, attention, concentration, diagonal and vertical respect for the rules, respect for the opponent, first impulse control, and so on. Games also help channel potentially violent behaviours and reflect on the consequences of actions.

"Chess, for instance, works well in prisons because it teaches about the consequences of what you are going to do before doing it. The second is related to the notion that every human being has a tendency, to a greater or lesser degree, to be violent, and chess is like mental boxing. This means the violent tendency is being channelled by playing a game."

– Leontxo Garcia

NEW TOOLS FOR LEARNING

NEW TOOLS FOR LEARNING

"The school invites the parents to go to the school on a Saturday, for instance, for some activities with the kids. The children demonstrate how they use chess, to develop laterality of psychomotricity or things like that. And then the parents help the kids, and this works really very well."
Leontxo Garcia

"The academic achievement only forms 20% for people who are going to get the trophy after graduation. 80% is about soft skills, - analytical, innovation, passion for knowledge, research, teamwork, communication skills, and we have national identity."
Dr Mansoor Al Awar

Games and education are not at odds

Globally, gamification has yet to be fully integrated into education. A few countries have taken the lead, but the vast majority lag in adapting games into learning spaces. One reason is a misunderstanding of the value of play for cognitive development and in the learning process itself; and many decision makers do not perceive play as a driver of skills development.

Play is still viewed as the opposite of studying. With greater community awareness among educators and parents, the integration of play and gamification can be better implemented, beginning with early childhood education and extending well into adulthood. In this way, the potential of games as a mode of lifelong learning can be fully explored.

Involving parents in the process can be done by inviting them to be part of it, to see demonstrations and interact with the children.

Learning about yourself

Games are adaptable to self-directed learning and are strikingly multidimensional—they can be layered and extended in multiple directions and aligned with other teaching approaches. They also help address the fact that children and adults learn at different rates and in different ways.

Through games like chess, players do not just internalise rules and follow them; rather they shape their own intellectual adventure. Players learn to navigate through the complexity and ambiguity of a game at a pace that is suitable to an individual's capability and growth.

Modified games in the classroom can promote project-based learning by exploring real-world challenges. When children design games, they are creating their own pathways for learning as they define their own goals; teachers act more as mentors and guides.

By offering more intrinsic motivation, games empower players to rely less on external instructions and cues for self-improvement. The very nature of games provides ongoing incentives for learners to consistently progress and learn.

"How do we win? We work with teammates, respect the rules. For us, it's more important that we teach the values, under the thrill of the game, and how they use it, when they are playing."
Adrian Silla Merchan

Learning the process and values

The value of play is still underestimated in academia, partly due to misconceptions. The important educational aspect of the games is not the game itself, but the process and the values it teaches.

The aim of a game or a sport is not the competition, but rather how you play, how you achieve the goals and the values you need to have to do so.

Fair play is a critical part of learning. In chess, like in every game, it is about how to behave, how to treat the opponent, how not to cheat.

By purposefully creating spaces to promote sportsmanship, games and sports open up new possibilities for community building, character development and ethics.

"We should use gamification, to inspire, to make mistakes, to fall, stand up, fall again, stand up again."
Judith Polgar

Learning self-criticism and to make mistakes

Educators are well aware of learners' psychological aversion to failure, which can have negative consequences in education, holding back students from reaching their full potential. All too frequently, losing is directly linked to academic measures and grades, which can set up a negative relationship between taking risks and learning.

"I think we have to learn from children because adults are afraid to make mistakes when we play the game. Teachers and family have to lose their fear, and use video games in the classroom, like Minecraft for example, because children learn a lot. There are plenty of girls in Minecraft working on different subjects, history, mathematics, science."
Patricia Heredia

The importance of learning to fail has been highlighted as being key to building innovation cultures; and self-criticism is an essential skill in science. Games are not just about winning but also about learning to lose and finding new solutions and strategies to win. Gamification makes failure something not to be ashamed of.

Children are not afraid to make mistakes when they learn games, adults are.

Gamification of learning creates safe spaces for mistakes to be made, for students to take bigger risks, experiment and explore—this leads to greater growth and emotional stability, and mitigating the fear of failing.

NEW TOOLS FOR LEARNING

NEW TOOLS FOR LEARNING

Learning without noticing it

In a game, learning happens seamlessly, without conscious perception. During meaningful play, the mind swims in a sea of knowledge, drawing on prior experience to build new understanding and connections. When games are designed to be open-ended, there are multiple ways to connect the dots. Games like chess immerse learners in skills ranging from mathematical thinking to social interaction and decision-making, without recourse to rote learning.

Games encourage us to adapt our thinking to address challenges set in front of us, to be flexible, to think outside the box. We learn to debate, to plan and to challenge ourselves. Skills gained through gaming can spill over into other areas of life and can be applied immediately.

Games as a tool to create inclusion

Games are an important foundation in the development of our society in 2021 and beyond through their ability to support inclusion. On the flipside, their content can inadvertently introduce biases into education, as games are not immune to cultural prejudices and inequities.

Introducing gamification into the education system might be more feasible in wealthier schools and districts than in those with fewer resources. The digital gap and inequities across education systems may determine the types and quality of games that are feasible—some may require more sophisticated hardware and high-speed connectivity to be effectively integrated into the classroom.

Gender

Today, in many countries giving a doll as a present to a boy, is prob-ably as strange as giving a chess set to a girl. Chess has been la-belled as masculine. This actually makes a difference in adoles-cence. Introducing chess as part of the education, makes it normal for girls to engage in the game. Most of primary school teachers are women and thye use chess combined with music and dancing, it makes it completely normal for both genders.

Stereotypes

Games have the ability to remove stereotypes but also to reinforce them. It is important to start thinking cross-culturally about games to ensure they are inclusive. We need to become more aware of games from a wider net of cultures to help support teaching methods. For instance, the competitive nature of games might go against cultures that value collaboration and social cohesion.

One challenge is that many games have pre-specified rules rather than players developing their own— the game is dominated by the designer's imagination and their subjective universe. The result is that the biases of designers might frame the premise of the game: To win, a player might be expected to be more aggressive against particular groups of people or to not support values we cherish in society.

There is also a perception that the game of chess is considered too intellectual. The challenge is how to overcome these stereotypical views so that its educational benefits can be available to more people.

Expo 2020 Dubai's World Majlis on Digital Minds, Digital Morality suggested that one solution is to encourage inclusivity in the de-sign of technology. By making teams more diverse, different per-spectives, values, and collaborative practices can shape the de-sign of games. Online gaming platforms are also effective at con-necting communities across generations to teach heritage, cultural skills and languages.

NEW TOOLS FOR LEARNING

NEW TOOLS FOR LEARNING

"What we beg our youth to do is not to plan their lives. We beg them to discover their lives. There are so many changing variables. There is no way that your future state is going to the planned state, is going to be the same as reality. So as far as we're concerned, we want them to discover the opportunities."
Aymen Tawfeeq AlMoayed

Developing the confidence to create the future

Traditionally, education was connected to planning one's life. Today, education systems should encourage students – in a personalised and lifelong framework – to discover their lives and the opportunities that are available to them. This takes into account the many changing variables of our world, where it is increasingly hard to plan the future.

Before even addressing employability, it is essential to create the foundations for resilience and ensure that students and young people have the support they need to prepare for an uncertain future.

For Bahrain, supporting this ability to discover and prepare for the future is based on five aspects which are essential to reach self-expression: feeling safe, seen, supported, wanted, trusted, hopeful. The latter being perhaps the most important.

Bahrain uses hackathons between youths and ministers as a tool to help build the sense of hope.

"So, we bring in all of the ministers, sit them all down. We bring in a group of kids. They all sit with them. Each one of them decides on one really annoying thing that they think should change, and they work it out with the ministers, and they change. It's just making that little thing, sort of shows them that they can make the change."

– Aymen Tawfeeq AlMoayed

"Together with Valerie, we saw in our channel all of these platforms, we have a lot of fun when we're programming. We upload videos teaching how to program or build robots. And I think the best thing about what we publish is the fun we have, and that we show it. Because some girls don't try technology because they think it's boring or that they won't have fun. And if they see what we do, I think they can realise that technology is also for them."
Patricia Heredia,Valerie Corrales

Artificial Intelligence

Technology, including Artificial Intelligence, can be as important to education as the printing press. It's ushering in this fourth education revolution age.

Learning programming languages and designing robots has an impact on other subjects such as mathematics as well as creativity. These subject help thinking in multiple dimensions while designing or 3D printing objects. Interestingly it can also help break gender barriers as well as cultural ones.

Tools such as Minecraft make children very familiar with augmented and mixed reality, while also providing the potential to share this knowledge with the older generations.

NEW TOOLS FOR LEARNING

"It wasn't until we started working in augmented reality where I saw the true potential for Minecraft Education Edition, to bring our tribal communities together, to bring old people into the classroom, to share cultural knowledge, our language and our law, and work with the young people and the teachers, to build out this cultural landscape in Minecraft Education Edition. To have the kids explain and recreate what the elders have told them about the oldest living culture in the world."

– Mikaela Jade

NEW TOOLS FOR LEARNING

The power of game design skills

Gamers have always been at the forefront of technological developments. The thinking that has come from playing computer games and growing up with computer games are now being realized in emerging platforms like the metaverse, cyber-physical systems, and drones.

The future of gamification includes emerging technologies such as artificial intelligence, virtual and augmented reality, and brain-machine interfacing. As the physical and virtual merge, the gaming industry is leading the design of a hyperreal future fuelled by computing power, processing speed, and machine learning.

Recent advances in deep learning have demonstrated the power of digital neural networks, enabling computers to play against the greatest human chess and Go (weiqi) masters. These open new possibilities for human-machine collaboration and the future of what is possible with gaming in education.

There is much we are not acknowledging that has a game foundation in the development of our society in 2022 and beyond. As technology design becomes more inclusive and less stigmatized, the possibility for creating games that enable learners to reach their full potential comes closer to reality.

NEW TOOLS FOR LEARNING

NEW TOOLS FOR LEARNING

Sustainability

Sustainability is one of the existential imperatives of our century and the environment should be at the very heart of our education system.

Hands on learning about the natural world and how food can grow is effective and can address both academic content (science, biology, history, language, etc.) as well as healthy nutritional habits. More importantly it teaches children the provenance of food, what it takes to grow food or look after animals, providing opportunities to talk about food waste, soil, resource management, and so on.

Learning to farm

The Edible Schoolyard is a programme that was started by chef Alice Waters at Berkeley and it is about to start at KAUST. It is a program where children learn about sustainable agriculture by growing some of their own food at school, and also gather food from local producers. The goal of the Edible Schoolyard program is a free, sustainable lunch for all K through 12 students in the state of California, which is about the same population as Saudi Arabia, which is now funding the same programme at KAUST. The university is working with the Ministry of Education and of Economic Planning to address the connection between diabetes, poverty and obesity. It aims to teach children the importance of eating locally and improve their diets substantially. At the same time, they can learn anything from language and culture to computer science and chemistry and genetics by studying plants.

"Most biology programs in elementary school are about frogs, humans, worms. Plants do the same thing. They all have DNA and they're very exciting. One reason why I got into plant biology, I wanted to be a physician."

– Rod A. Wing [1]

1   *Rod A. Wing, Professor, Plant Science Director, Center for Desert Agriculture, King Abdullah University of Science and Technology, KSA, during the World Majlis "Farms of the Future."*

NEW TOOLS FOR LEARNING

NEW TOOLS FOR LEARNING

● **Report Excerpt**

What is Gen Z and why is it important?

WRITER
Dr. Colin Kennedy

PUBLISHED
2022

"The true impact of COVID on markets, economies, communities and individuals will not be known for decades, but the immediate consequences are starting to become clear - and this is increasingly observable in our younger generations. Gen Z - which is defined here as the cohort born between 1995 - 2010 - is calculated to make up 32% of the global population with a disposable income valued at US$360 billion.

This generation straddles young professionals and students, which is exacerbating the pandemic's impact. On one hand, we are witnessing the biggest disruption to education since the Second World War with UNESCO estimating that 825 million (47% of currently active students) students have been affected by school closures.

On the other hand, the 'sacrificed generation' (as a recent article 3 termed it) is acutely aware that it will have to pay higher taxes and carry greater levels of debt - which is hard to swallow when young workers are the least likely group to have received financial support for lost jobs during the pandemic.

The same article revealed the results of a survey that looked at how Gen Z has been affected across Europe: ongoing lockdowns and uncertainty has destabilised mental wellbeing (with many expressing profound anxiety about their future); brought about the largest educational disruption in modern history; and triggered a massive surge in unemployment."

This might explain why 96% of respondents believe that innovation should be taught in secondary schools.

While innovation is clearly identified in different sectors depending on where people live (e.g. Chinese respondents frequently mentioned high-speed rail and online payment options, while those from Vanuatu focused more on community good), the environment, wellbeing and COVID response strategies are currently front of mind for many of this age group.

Innovation is a positive, progressive concept around the world for those surveyed and one that is observed and understood at small (local) and large (global) scales. While predominantly thought about in terms of technology, it is also frequently spoken about at the scale of the individual and community.

In the midst of this volatility, further compounded by existing uncertainty over what the Future of Work could look like, we need our younger generations to have hope: to see opportunities and a way forward. It is this complex context that sparked this research on how Gen Z understands innovation, its importance in a COVID world and its place within education.

I surveyed 150 12-24 year olds in 20 countries, across 6 continents and 50 different cities and towns. 24% of them were aged between 12-15; 41% were 16-19 and the remaining 35% were between 20 and 24. Six out of ten participants identified as female and most of the remainder as male.

The majority (73%) were students, with the rest in work (23%) or training. The respondents were a truly global spread: Asia - 19%; Europe - 13%; North America - 10%; Latin America - 14%; Middle East & Africa - 15% and Oceania - 29%. A high-level overview of the findings show that: While 89% of respondents believe innovation to be crucial to making the world around them better (rising to 94% in a COVID world), only 77% consider themselves innovative.

NEW TOOLS FOR LEARNING

Best practice

ART AS A DRIVER OF INCLUSIVITY

Gamification at Hamdan Bin Mohamed Smart University

Hamdan Bin Mohamed Smart University offers courses based on games and is also integrating gamification as a holistic approach of the university. Whoever enters the university, until graduation also enters the game. There is a dashboard that keeps track of points, and students can see where do they stand. The trophy will not go to those people who have the highest GPA, but to those who have also developed life skills and demonstrate they are contributing to the country and to society overall.

Book Bug

The National Library board in Singapore embrace technology and games to keep the joy of reading alive in children while also supporting the development of many new skills. Book Bugs is a bug-themed collectible card game, and each card contains a bug that is inspired by book characters. In order to hook children into reading and transform the perspective of libraries, Book Bug creates a book bug's universe with cute characters and a call to action to all children to collect as many cards as they can to help save the books. Second, gamification and technology are key to program the redemption system. Each book gives children one point, and they need four points to get one card. They then use their points to redeem the cards from the Book Bug card dispenser. Thirdly, there are organized play-offs for children to play competitively for prizes or to engage with one another in friendly play. This motivates children to collect cards with higher game points and stronger effects to help defeat their opponent.

Book Bugs empowers children to problem solve, take charge of their progress in the game, and make decisions on-the-spot to outwit their opponent. They learn to devise creative strategies to ace the gameplay and demonstrate good sportsmanship. It also helps develop emotional intelligence, as many of them made new friends, widened their social circle, and grew in self-confidence when they approached other children to trade cards to complete their collection. They pick up negotiation skills as they try to convince others to exchange their prized cards with them. There were children who displayed great empathy when they noticed others missing certain cards and they voluntarily gave up their duplicate cards to them.

ART AS A DRIVER OF INCLUSIVITY

The Bahrain Hope Fund – "a hope meter"

Bahrain has created the Hope Fund. It is a dashboard that gets updated every month, and asks 10,000 youth at a time, whether they feel that today is better than yesterday, and whether tomorrow is going to be better than today. The government looks at it from a very scientific perspective. All of the programmes are targeted to young people feeling safe, seen, supported, wanted, trusted, hopeful. When the hope meter was low on the dashboard the government organised policy hackathons bringing together ministers and youth to discuss the changes that are need.

Judit Polgar Chess Foundation

Chess is excellent for fostering education and lifelong learning. The Judit Polgar Chess Foundation, set up by Judit Polgar, the Hungarian chess grandmaster generally considered the strongest female chess player of all time, is dedicated to achieving this goal. The Foundation promotes creativity and competence in Hungary and around the world by focusing on talent and skill development, and social integration. Since 2013 the Foundation has been working with schools to teach them life skills and critical and strategic thinking skills through chess. Rather than promote young players to become chess masters, it leverages the 64 squares of the chess board and the 32 pieces, each with their own unique values and moves, as valuable instruments for learning.

Real Madrid Foundation - Gamifying games

The Real Madrid Foundation's social sports schools focus on supporting the education and holistic development of minors living in vulnerable situations around the globe. The Foundation is a firm believer in gamification as a way to teach values and critical life skills to young players. The Foundation started out with a few initiatives around the world and now has more than 600 schools throughout the world participating in gamification through football and basketball. Coaches support players with their self-development and self-learning, by incorporating gamification into their games of football and basketball.

Best practice

ART AS A DRIVER OF INCLUSIVITY

Teaching indigenous cultural education though gamification

Founded in 2014, Indigital is Australia's first Indigenous edutech company specialising in technology development and digital skills training. The aim of Indigital is to empower First Nations Australians in the use of digital technologies, and to share the ancient cultural knowledge and history of Australia with audiences in new and engaging ways. The organisation has worked with more than 7,000 Australian children both Indigenous and non-Indigenous, to integrate gaming into cultural skills instruction, with the result that pupils are returning to school in high numbers. Getting First Nations children to school is a significant problem.

"So, when we introduce gamification through Minecraft Education Edition, the children turn up at 7:30 in the morning and they don't leave school till six p.m. at night. And this is unheard of in our communities."

Mikaela Jade

**Emerging questions
for future conversations**

How do we balance the skills
provided by digital games with
their often addictive nature?

It is the game or the device
which is addictive?

ART AS A DRIVER OF INCLUSIVITY

Building information literacy

Educating children, but also adults, about the nature of information is an essential form of literacy. Information is literally 'food for thought' and just like we have an understanding of what we feed our bodies and how that impacts our overall health, so we need to gain a similar understanding of how our brain consumes information and its impact on our decisions and beliefs. This is a key literacy skill for the 21st century.

Critical thinking and the importance of questioning

To be successful in the 21st century, educators must instil the value of critical thinking in their students. Every day, we put our critical thinking skills to support our decision-making and problem-solving. Critical thinking also makes use of other crucial life skills, such as establishing relationships, gaining new perspectives, and communicating effectively.

"So much new learning science about the way that we learn is not integrated into the dull exam systems that we have."
Sir Anthony Seldon

Critical thinking is also important to help students develop the capacity to assess the reliability of online information, especially in light of the large volumes of fake news, misinformation and disinformation as well as influence campaigns on the internet.

As we all become more immersed and engulfed in the new information reality, how we interact with it is more important than ever. The ability to understand the information environment is the next big challenge as we overcome the digital divide.

The ability to interact with electronic information will define literacy versus illiteracy, specifically being able to distinguish between what is true and false. The inability to understand the nature of information and how it affects us is itself a form of illiteracy, which everyone has the responsibility to address: schools, information platforms, governments as well as families.

BUILDING INFORMATION LITERACY

"If you're able not to distinguish between what's right and wrong and true and false, it's a form of illiteracy. To me, it becomes an essential part of education. Platforms have a part, governments have a part. But ultimately, if I look at my kids, I want them to be ready beyond what anybody else can give them."

– Fares Akkad

BUILDING INFORMATION LITERACY

"When you see something that emotionally aggravates you, and if you just press forward, that is impulsive behavior. Suggestions like "think about where it's coming from", "ask the right questions". And then maybe if you sleep over it, would you still be forwarding that content to another person? If your answer is no, you shouldn't be forwarding it."
Dr. Sumaiya Shaikh

The information environment
Misinformation, disinformation, 'information pollution' have been around since the beginning of time. Every time a new technology is introduced, it changes how we engage, process and share information. Every new source of information – the virtual world or the upcoming metaverse - has the potential to provide misinformation and disinformation.

Disinformation is going to be found wherever people are accessing information, and this includes actors who are trying to manipulate the information ecosystem to meet their objectives.

Different actors start to use it in different ways, but also to pursue malicious intent by engaging information consumers in a manner that gets them to actually believe false information, and in turn, become themselves new sources of false information.
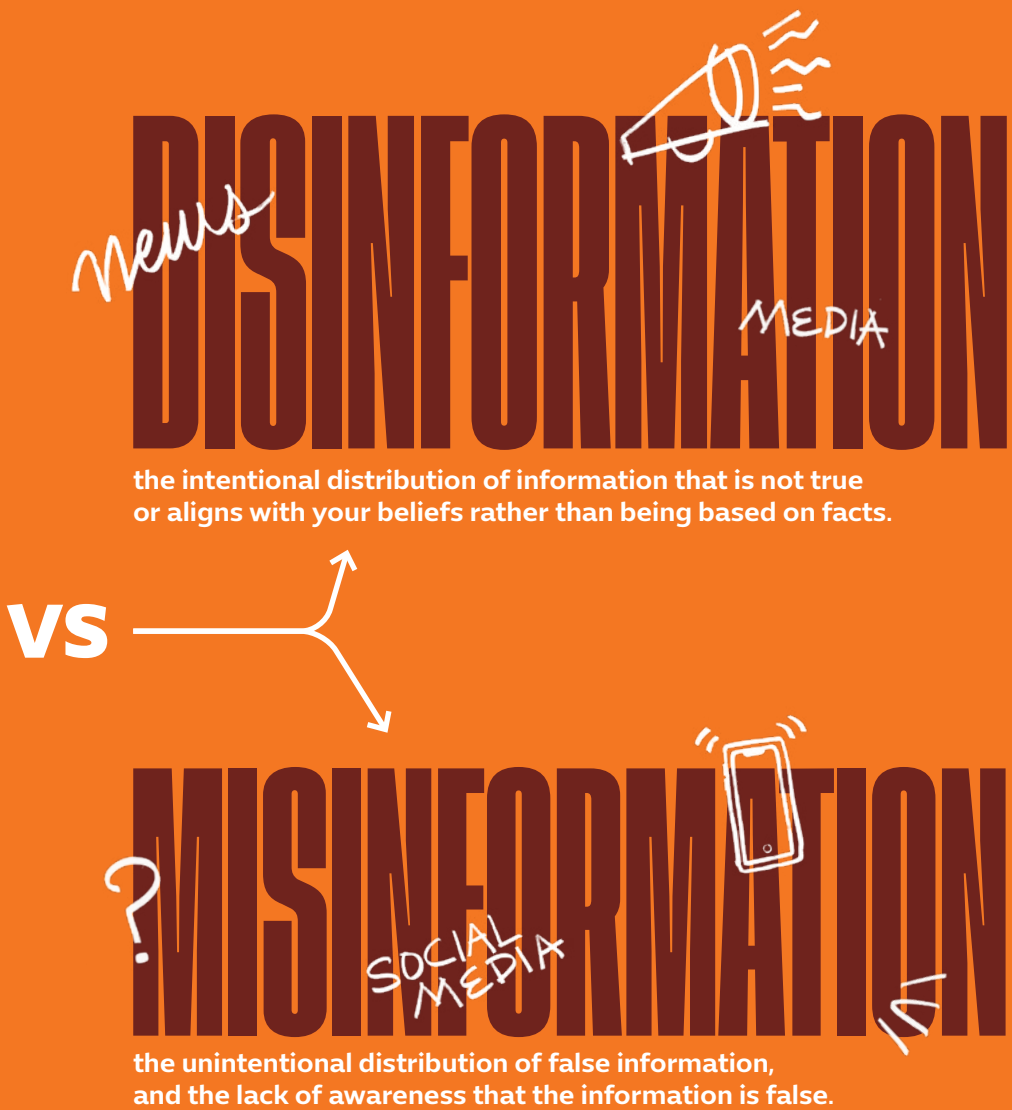
Since many of these sources and features are designed to stimulate the prefrontal cortex, the parts of the brain which are linked to impulsivity, they have a great deal of potential to negatively affect people's mental and emotional well-being.

BUILDING INFORMATION LITERACY

BUILDING INFORMATION LITERACY

Understanding the information cycle

The information environment is a powerful system and we need to understand how it spreads and how are brains process information.

Information that starts from social media can be picked up in a blog, diffused by influencers, and then on to mainstream media.

DISINFORMATION

the intentional distribution of information that is not true or aligns with your beliefs rather than being based on facts.

VS

MISINFORMATION

the unintentional distribution of false information, and the lack of awareness that the information is false.

BUILDING INFORMATION LITERACY

Gaps in understanding the information environment
There is still a lot of work to be done to fully understand the information environment:

1. Fully understanding how information flows through the information environment.

2. Develop greater knowledge about the effects of things like influence operations and disinformation, particularly through social and digital media platforms.

3. Understand the impact of interventions, including putting alternative perspectives in front of users.

BUILDING INFORMATION LITERACY

The (neuro)science of disinformation and misinformation

While it is hugely important to develop critical thinking to navigate the current information environment, it is equally important to understand how our brains process information and how the different ways in which information is absorbed can affect our behaviour, our relationships and our choices.

The neuroscience of language studies how our brains construct meaning from the language that we encounter. It explores the question of what is disinformation to our brain.
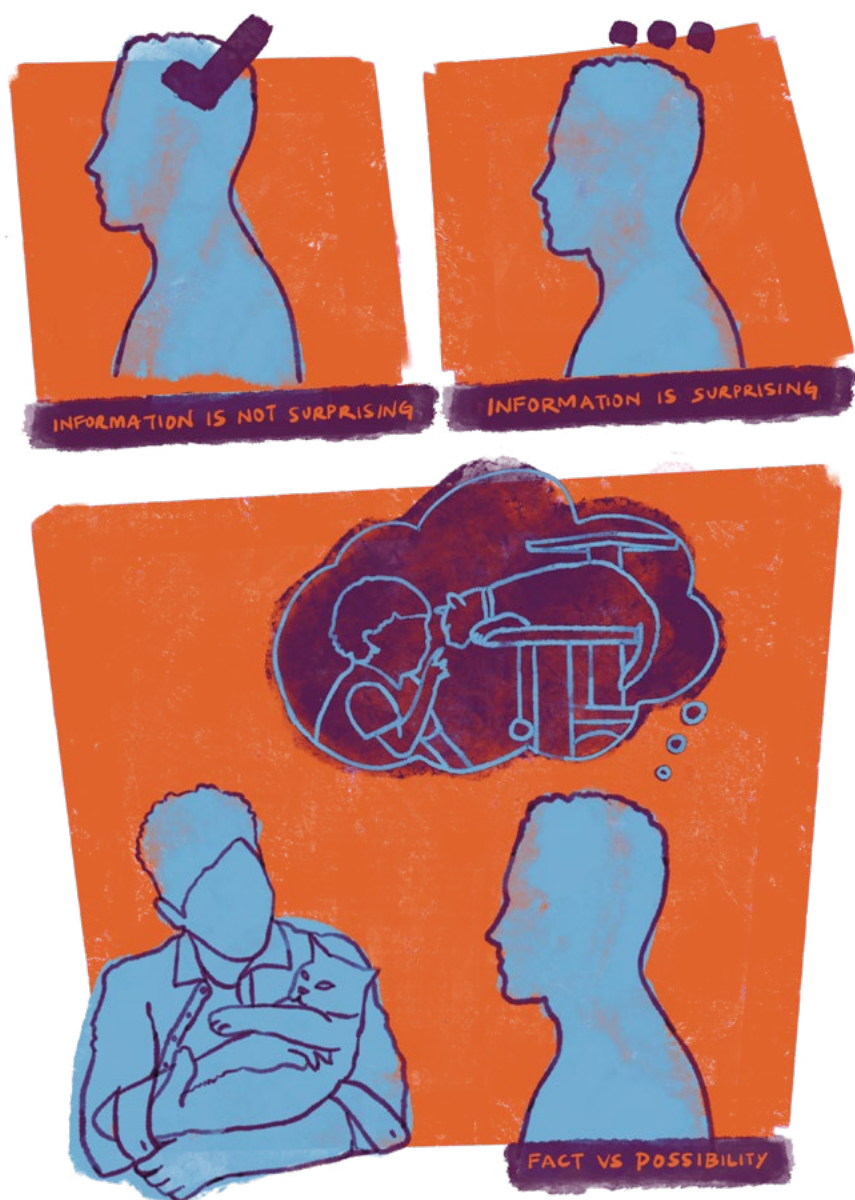
How does information get processed by our brains

When processing (understanding) language our brain matches new information it receives with what we already know. Studies show that our brain behaves differently if information is consistent with our existing knowledge or if it is inconsistent with it or it is new. Small variations in the words that are used in a sentence are also consistent with this observation.

1. *The information is surprising* – the brain works harder when there's some surprising value in the new information and it tries to accommodate a new fact. The surprise can be of many different kinds, including misinformation when it contradicts previous knowledge.

2. *The information is not surprising* – the brain does not do much when information is not surprising. It is as if it puts a tick mark and stores that away

3. *Possibility versus fact* – a newly identified variable[1] has recently been discovered to have a big effect on brain activity: whether something is presented as a fact or as a possibility, which involves a slight change in language.

    **I have a cat and my neighbour <u>does</u> too.
    (I am stating a fact)**

    **I have a cat and my neighbour <u>may</u> too.
    (I am stating a possibility)**

    Within two hundred milliseconds, a very large distributed brain network that is in your prefrontal cortex responds very strongly to the fact, but it's very quiet for the possibility. This is very relevant in understanding disinformation because it shows how quickly our brains completely unconsciously will integrate something that you're packaging as a fact, whether it's true or false.

Disinformation, i.e. something that is not possible, would count as something that is surprising or not consistent with established knowledge. However, if we do not want this to be questioned, misinformation can be packaged as something we know already.

BUILDING INFORMATION LITERACY

1   Tulling M, Law R, Cournane A, Pylkkänen L. Neural Correlates of Modal Displacement and Discourse-Updating under (un)Certainty. eNeuro. 2020. doi:10.1523/ENEURO.0290-20.2020

BUILDING INFORMATION LITERACY

Conclusive versus suggestive evidence

Suggestive evidence is based on information that seems to be related to what we know and that sounds good. This can easily turn out to be wrong.

Conclusive evidence is based on reasoning: "if x is true then y follows". Strengthening the reasoning muscle is a really important skill instead of memorising.

Example: Prof. Liina Pylkkänen observed that in multiple choice questions, critical thinking fails quickly when the wrong answer has a lot of the right words. The answer sounds good but it is actually wrong. Following that observation she changed her testing approach shifting to conclusive evidence, which helps train reasoning skills, and asked question such as: *is statement A evidence for B?*

How does disinformation stick?

The neuroscientists explained that when disinformation comes to us, what really matters for our brains is how surprising it is. For disinformation to stick, it has to slip into our knowledge base disguised as an unsurprising fact, consistent with what we know already. Language is the vehicle for it.

Open areas of research include whether repetition would make information less surprising and makes it easy to absorb as knowledge.

The opposite is also true: an increasing number of headlines on online media or other social media will try to grab your attention by packaging something known into something that is surprising, to encourage clicking. Increasingly news organisations are using 'sensationalist' titles to attract attention to their stories.

One of the open areas of research in neuroscience is whether the source matters or if it's an unreliable or reliable source.

"The disinformation will enter, slip into our knowledge base the easiest, if it's not that surprising, if there are a lot of words that sound right. The information is still false but your brain will say 'Okay, that's cool'. There's no algorithm for truth or falsity."

Liina Pylkkänen

BUILDING INFORMATION LITERACY

BUILDING INFORMATION LITERACY

Information is like food for the brain

Should we think about caring for brain health in the same way we care about our body through what we eat? Is information consumption like food for the brain?

While the science behind the brain and language can appear highly complex, ultimately information is like "food for thought": we need to understand how the information we consume affects our brain and the beliefs that we develop.

There is a lot of value that comes from digital engagement, yet there is also the risk of "overconsumption'. Just like we understand the ingredients and the sugar content of cupcakes and how eating too many may impacts our body, we should also be aware of the nature of information we are 'ingesting' as well as the impact of words and images on our brain and emotions in the short and long term.

"For me it boils down to people caring about brain health, the way they care about the health of their other body parts. This digital attention that you might get from "like", retweeting and forward, is like bad behavior. If I have three cupcakes today, I know that I should not have cupcakes tomorrow. Similarly, if I've been scrolling on Twitter for an hour and then I should be like, 'Oh, that was like three cupcakes, I really need to give it some distance'. The neural pathways that feed that attention network don't get nourishment."

— Liina Pylkkänen

BUILDING INFORMATION LITERACY

BUILDING INFORMATION LITERACY

"We have to teach people how to find information and actively engage in the learning process, and it starts with the kids. And if an adult doesn't do it for a few good years of the early part of life, then it is very difficult for the adult to get into it. If you just give out a fact check or a statement that is true to people, it is less likely to stick with them. Whereas if we evoke a question in them and then they go out and seek the answer for it"
Dr. Sumaiya Shaikh

The next generation of content creators and co-creators

In the current information environment, with everyone having the potential to be a content creator in every profession, there has to be significant emphasis on training and educating everyone to develop, package and distribute content.

One of the biggest responsibilities of the education system and other relevant institutions is to ensure that we are raising and educating the next generation of sources. Gamification and the values that games teach can perhaps play a role in this journey.

"I think something very important with games and gamification is fair play. In chess, I think in every game, they are generally about how to behave, how to treat the other one, how not to cheat, or cheat, what is the consequences of that?"

– Judit Polgar

BUILDING INFORMATION LITERACY

"We've been trying to test for the longest time whether fact checking is actually working or not. I'm a fact checker myself, and we have been providing the information and we've been seeing that people generally only trust one portal or the other. And even if we just give out the information, give out the fact check, not everybody will believe that. There's a lot of effort that goes into fact checking it, specifically, science fact checking, I mean, reading, 20, 30 odd papers and then producing a fact check based on expertise. And then, by that time, the original piece of misinformation or disinformation is already gone across."

– Dr. Sumaiya Shaikh

BUILDING INFORMATION LITERACY

"I think today, we're having to reskill and upskill, which we shouldn't be doing. I think if we could really integrate this earlier, as early as 13, to make sure that people reach 18 and they're already aware. But I think there certainly needs to be some changes to continue that education so that by the time people are in the golden age, they need to be super, super strong when it comes to anything to do with digital."
Rashid Al Awadhi

Fact checking the sources

Historically, people tended to be aware of the bias of information sources and would therefore gain a full picture by looking at different media. Today, the evidence seems to suggest that people tend to trust one source.

In parallel, significant effort goes into fact checking and specifically science fact checking. However, given the speed at which information travels, fact checking is not always the solution.

Meta (formerly Facebook) funds a network of fact checkers—seasoned journalists who are independent as well as fact checkers certified by the International Fact-Checking Network (IFCN), the body that certifies fact checkers. Users can report problematic or contentious content. The organisations then fact check it and can either provide information about it or flag it, depending on their findings. Alternatively, they can deprecate it, which means they reduce its distribution by 80%, or in extreme cases remove it completely. The company also has an oversight board, effectively like its Supreme Court, made up of Nobel Prize winners, philosophers and academics, where appeals to those decisions are heard.

A "supreme court" of a technology company can, however, raise new questions regarding what norms are applied, how these norms become part of society and who oversees their application..

The challenge is that there is a lot of information that is not harmful per se, but may be misleading and may have negative consequences if someone believes, for instance, that drinking tea and honey can cure a serious disease.

There is also the risk that fact checkers are biased by their own ideology, and they may not even be aware of this. As a way to manage bias, Facebook ensures that all their fact checkers are certified by the relevant fact checking organisations.

While fact checking is extremely important, many individuals do not actually question the information shared by major influencers and other sources that can spread harmful information.

Impact of initiatives to counter misinformation/disinformation

The Partnership for Countering Influence Operations at the Carnegie Endowment for International Peace has carried out a number of studies to understand what are the existing initiatives and activities to manage misinformation and disinformation. This also requires access to public data from technology platforms to understand how changes in algorithms impact the way users are engaging with them. Unfortunately, there is still very little public information about the impact of these measures which can include changing an algorithm to downgrade bad content, redirecting users to other types of information that may be better.

Currently, the vast majority of research in academic literature tends to focus on fact checking, prebunking or disclosure, because of the lack of access to the data around social media interventions to counter influence operations.

"We need to create great storytellers that are able to tell valuable stories and that is based on research."
Rashid Al Awadhi

Regulating influencers

By definition "influencers" shape opinions, beliefs and choices. Should there be a form of regulation for influencers? Does an influencer need a license to operate?

Content Creators

Today, more and more people in every profession are creating content, but do not have the necessary training or skills. The training for content creators must start with research and the ability to create followed by understanding distribution and engagement and ultimately analysing the impact.

"*The vast majority of research that we have is based on experiments. It replicates or pretends to recreate a social media environment that is not necessarily what it's like in real life, how people are engaging with it. So we have some serious gaps there.*"

– Alicia Wanless

BUILDING INFORMATION LITERACY

"Irrespective of their great reputation, this notion of certain media being the 'arbiters of truth' should be questioned."
Omar Saif Ghobash

"For example, on twitter, a paper gets published and this happens very fast. Every day I forward papers to my students.We collectively consume the literature. but people will tweet and say 'here's an interesting publication. looks interesting. I haven't read it'. Then the next person says: oh, 'I haven't read it either, but blah blah blah blah blah.' and soon there's a whole thread and twenty people contribute. None has read the paper. This can be within an hour of somebody posting it one a science archive where you have unreviewed science.
Liina Pylkkänen

Truth and other values

Defining what is true from what is false is not simple and ultimately probably a matter of philosophical debate. If things are so much more complex, is the finding the truth the ultimate goal or is it something else?

On the one hand, science may question the 'truth' behind religious or other beliefs, yet they play an important role in bringing people together and carrying values across generation. On the other hand, science itself is not immune to disinformation or misinformation.

There is also a view of certain Western press acting as arbiters of truth. Newspapers with good reputation are held as arbiters of truth, a notion that should be questioned. Increasingly, trusted news organisations use sensationalist headlines to attract readership.

When discussing truth, there is a bigger question of values such as solidarity, social cohesion, sense of community that have the power to bring people together. Some of these may not be founded in a pure idea of 'truth' but are equally valuable to society.

These are philosophical discussions that need a consensus in society. Just like culture, they call for an agreed upon set of rules in which everyone operates. Private companies, educators, content creators themselves are not in a position to develop these rules. Regulators and governments have the responsibility to do so, starting from a position where there is a true understanding of how the information environment is evolving and its power to shape choices and society.

" *A society advances quickly when both human needs - belief and knowledge - are met. In other words, we thrive when facts and beliefs coexist side by side, but neither dominate our existence.* "

– Rebecca Costa [1]

1   Rebecca Costa, The Watchman's Rattle, Virgin Books, 2010.

"

I WONDER WHETHER SOMETIMES TRUTH IS A FIGMENT OF OUR IMAGINATION. WHEN WE'RE TALKING ABOUT A SEQUENCE OF EVENTS THAT NEED TO BE REPRESENTED AS A FACT, WHICH IS, ACTUALLY BASED ON A SELECTION OF EVENTS, IT GETS A LITTLE MORE DIFFICULT. AND ALSO, WHAT MIGHT BE MORE IMPORTANT THAN TRUTH IS SOLIDARITY, SOCIAL COHESION, A SENSE OF COMMUNITY, EVEN AROUND STUFF THAT IS NOT PARTICULARLY TRUE OR INTERESTING, BUT ACTUALLY BINDS PEOPLE TOGETHER.

– Omar Saif Ghobash

BUILDING INFORMATION LITERACY

BUILDING INFORMATION LITERACY

● *From the New York Times...*

The Rise of Big Tech May Just Be Starting [1]

OPINION
Farhad Manjoo

PUBLISHED
Feb. 16, 2022

Amazon, Apple, Google and Microsoft — the four American companies now worth more than a trillion dollars each (actually, Microsoft is above $2 trillion, and Apple nearly $3 trillion) — reported enviable growth in 2021. Even Facebook's disappointing earnings were relative: The company's profits grew by 35 percent in 2021, down from nearly 60 percent growth in 2020.

(...) Apple's revenue grew by more than $90 billion in 2021, about a third more than its revenue in 2020 — and this despite a global shortage of computer chips. Amazon's sales in 2021 were 67 percent larger than in 2019, the year before the pandemic; Google's 2021 revenue was nearly 60 percent greater than in 2019.

What's driving tech giants' stupefying growth? It's not just that the pandemic drove a lot more usage of tech. A bigger deal, I think, is that the pandemic illustrated how much room there still is in our lives for adding even more tech — for our screens to become the primary portal through which a handful of companies capture a slice of everything we do.

(...) Dan Ives and John Katsingris, analysts at the investment firm Wedbush Securities, wrote in a recent report that what we are seeing now is only the beginning of a long-term explosion in tech earnings. They estimated that companies would spend a trillion dollars on cloud services over the coming years, meaning that there is a lot more room for tech companies to keep growing and growing and growing.

---

1   Farhad Manjoo, "The Rise of Big Tech May Just Be Starting", The New York Times, Feb. 16, 2022

Emerging questions for future conversations

What curricula changes need to take place to help students truly master information and language science?

Are there novel community-based platforms that can certify sources?

How do we balance truth versus social cohesion and solidarity?

What makes a source trustworthy?

Is fact checking a solution if we cannot keep up with the speed of information spread?

BUILDING INFORMATION LITERACY

THE WORLD IS A CLASSROOM

The World is a Classroom

Before compulsory education became the norm, learning took place informally and outside the classrooms. People and places - nature, elders, community, storytelling, artisans and artists, to name but a few - have been the teachers above and beyond the classroom. This world is just expanding.

There is great power in schools and classrooms, and great strides in education have been made with the introduction of compulsory education for all children across nations. In parallel to the world inside the schools, there are a growing number of opportunities for education beyond those walls, which are enabled by technologies as well as by the evolving missions of different cultural institutions.

An ecosystem approach focuses on more immersive learning experiences in a variety of settings, including museums, parks, and the city—as well as through games—where students learn in ways that are dynamic, interdisciplinary, engaging, and personally meaningful. This way of learning also provides students with strong problem-solving skills and an unrivalled, first-hand grasp of the world they will be a part of shaping.

The World Expo is a global classroom

The very purpose of a World Expo is to 'educate' everyone who takes part in it. The approach is not meant to be didactic, but in the true sense of the word – 'to lead out' – it immerses everyone in an environment that connects people with innovation and cultures, encourages interaction and invites to discovery.

An exhibition is a display which, whatever its title, has as its principal purpose the education of the public: it may exhibit the means at man's disposal for meeting the needs of civilisation, or demonstrate the progress achieved in one or more branches of human endeavour, or show prospects for the future.

Article 1 of the BIE Convention on International Exhibitions, Paris 1928.

The Majlis is a community classroom

In the Arab world, the 'majlis' have been traditionally places for learning, one of the schools for the children. They provided the place where young people would sit, listen and interact, where knowledge was passed on from one generation to another, where cultural practices were lived and learnt.

"In Arabic, we say Majalises are our schools. And I think when we're rethinking education, I honestly don't think that we should have any sort of limits to what is open for reassessment. And the only reason I say that is that there is so much dogma."

– HE Aymen Tawfeeq AlMoayed

Exhibitions are inspirational classrooms

Education is one of the main purposes of museums and exhibitions and each Pavilion in a World Expo aims to achieve a similar goal of sharing knowledge and inspiration about particular themes, moments in history, innovation and so on.

"This was a great opportunity for us to rethink how we were going to be educating people about very difficult subjects, and the way that we approached it. We looked at ourselves as comple-mentors to the education system. In Terra the exhi-bition is based on fundamental science, but the way that we deliver the message to inspire the future generation, to really make them change makers, that was our key performance indicator."

– Marjan Faraidooni

THE WORLD IS A CLASSROOM

Libraries are timeless classrooms

Libraries have been housing knowledge for centuries and have the potential to become real lifelong learning centers for all generations.

THE WORLD IS A CLASSROOM

Encounters with people are classrooms

"*When my brother and I started thinking about the power of a community that is well-informed we came up with the idea of traveling the world, wearing the Kandura because we said every time we look on TV, Arabs are represented negatively, for the most part. And so, we created this TV show about two Emirati Arabs. We chose the Kandura because it's the easiest way to know that you're an Arab. We traveled the world and we connected with change makers, and we started to talk about things that we have in common, which is everything. We talked about Kanye West. We talked about art. We talked about, you name it, we talked about it. And it's amazing because we would film this show in a way where the person that we're meeting would only see us the first time we turn on the camera, so they look on their face when they first see us. You know, everybody's just like that. There's a shock factor. But then once we start talking, people are like, wow, you know, we're so similar.*"

– Rashid Al Awadhi

The story of the kindergarten

"One hundred and forty-five years ago, during the 1876 Expo in Philadelphia in the US, the Women's Pavilion, the first of only three that there are ever officially been at World Expos, hosted a little room with 18 orphans. It was a prototype kindergarten where the children were playing games, singing songs, and learning. Kindergarten had come to America by the 1850s, through a German immigrant named Margareth Meyer Schurz. She taught the German community in the state of Wisconsin. But she was a foreigner. Her ideas were foreign, but, by 1876, advocates of kindergarten thought: what better place to advocate this innovative idea in education than an Expo? So they held the kindergarten three times a week for three hours a day. Within a generation, kindergartens became the norm."

– Charles Pappas

Notes from the Teachers and Parents of Tomorrow

Selected quotes from the
Next Gen World Majlis.

THE WORLD IS A CLASSROOM

"
I feel like the school system, in a sense, is outdated. For example, if you were to compare a car from 50 years ago to a car, nowadays we see immense improvement. We see green energy being used and we even see how cars don't need petroleum anymore. Whereas if you look at the school system from a 100 years ago and as a school system from today, it looks exactly the same. We still have desks, chairs, a teacher teaching a board. So in a way, the school system has not changed.

– Marwa Al Ali
"

"
Back in the 19th century and they created a system that in the third industrial revolution was very necessary. We needed people who could do things efficiently and without mistake. That is how we thrived back in the day. However, now that we're moving towards the fourth industrial revolution or we are already in, it's in the midst of it. We have machines. We don't need people to be machines anymore. There's no there's no real purpose behind people being scared of making mistakes. I think that's one of the biggest issues that we have today in our educational systems. We teach people to be afraid of making mistakes, and that's also what squanders creativity.

– Isabel-Juliana Mewald
"

"

Λnd someone was considered as the father of education. Very great, John Dewey. He said. And I'm paraphrasing him here. It's only when you face problems that you learn to think. But I think in today's world of education, this entire future of education. You're not being given the right problem. The problem start matter to the world and the problems that are relevant to you as a person. So and these problems can be vast when we talk about exams, for instance, exam culture isn't really the right thing right now because it's squandering people's creativity, like you said before, and you're judging students based on a yardstick that isn't right, is what I would like to see.

— Nityaansh Parekh

"

"

School always thinks that there's one method only this method to answer the question and always in math. I'm very good at math that I find other methods, other tricks to solve the question faster than other people.

— Abdullah Al Baluchi

"

THE WORLD IS A CLASSROOM

THE WORLD IS A CLASSROOM

" I wanted to say that school thinks that failure and mistakes are one of the worst things that could happen to you. One of the worst things that you could do. But come on. I mean, we all have failed and tried again and actually reached success. I mean, we need to do mistakes. We need to learn because I honestly could not learn anything without making mistakes, like in math. I learned with mistakes. I still am better math, but I'm still learning. "

— Helia Fazeli

" We're not learning the actual basic future skills that we need determination, execution of our ideas and collaboration leadership. These are all basic skills we need. Instead, we just look at a book, remember the syllabus, answer the questions, and we can see this in standardized testing. It's basically the most major thing that causes stress upon high school students is standardized testing. That's because we don't get to bring in our own ideas again, only one solution and one answer. "

— Amna Almansoori

THE WORLD IS A CLASSROOM

"

I'm still in ninth grade. We have this thing. It's a project and every single cause in the world. We have like breast cancer awareness or just a simple day. We have a project which is like a market. So we have a market and all these small children, where the primaries they come and sell their product. And it's really good because imagine all those small children trying to sell you something and it's not something they bought. It's something they bring from home, whether it's food or used dolls, and all the money goes to the problems or the causes. And it's really exciting to think that these children actually care about the people that are in their worst conditions right now.

— Helia Fazeli

"