



FALLING
WALLS
FOUNDATION

FALLING WALLS FUTURE LEARNING REPORT 2020

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The SARS-CoV2 pandemic has given a great push towards digital education and has spurred innovation in the way we teach and learn. This was clearly echoed by the great worldwide response to the new category “Future Learning” included by the Falling Walls conference in its Breakthroughs of the Year 2020 competition. Though new, this category received the highest number of nominations from 35 countries across all continents.

The past year taught us a lot about the possibilities as well as the limits of digital education. It has put the issue of quality of teaching in the spotlight and has underlined the need to improve both the technical basis for digital education and the need for a continued discussion about successful teaching formats, best practice examples, and the legal frameworks they are embedded in.



Photo: Carolin Weßkopf

We should learn from our experience and work together with institutions from all over the world to identify innovative and successful models of how we teach and learn. And we should continue using the advantages they offer for students and faculties once we have overcome the pandemic and return to our campuses.

Falling Walls Future Learning aims at identifying and connecting initiatives and technologies that break the wall towards a better future for learners and educators and builds an inclusive network of innovators, educators and learners from around the globe. In February 2021, Falling Walls hosted the digital event “Future Education” in collaboration with Hochschulforum Digitalisierung. Through this, they have brought together stakeholders from Berlin, Germany and over ten other countries to learn about and build synergies for the universities of tomorrow.

With Falling Walls Future Learning, Berlin becomes an open place for the world to meet and foster dialogue, debate, and knowledge exchange about the learning experiences of tomorrow. We believe that our institutions can learn from each other and jointly build the future of learning.

A handwritten signature in dark ink, reading "Steffen Krach".

STEFFEN KRACH

*Permanent Secretary for Higher Education
and Research of the Federal State of Berlin*

SCIENTIFIC ADVISORS



BEN JANSSEN

OpenEd Consult, Netherlands



Ben Janssen is the director of the independent consultancy and research firm OpenEd Consult in the Netherlands. His work focusses on social, economic, ethical and inclusive aspects of the digitalisation of education and learning. He has advised governmental and non-governmental institutions, organizations and companies in technical vocational and higher education, nationally and internationally.

He helps design, implement and evaluate educational strategy and policy, with a focus on open education.

Ben is affiliated researcher to the UNESCO OER chair at the Dutch Fontys University of Applied Sciences ICT, and senior expert at the German Research Institute for the Economics of Education and Social Affairs FiBS.



DOMINIC ORR

atingi at GIZ, University of Nova Gorica



Dr. Dominic Orr is adjunct professor for educational management at the University of Nova Gorica, Slovenia, team lead at GIZ for a digital learning platform called atingi.org and, until recently, research lead at the learning platform Kiron Open Higher Education.

He follows and shapes educational reform through his work. In 2020 a publication he co-authored on the future of higher education in 2030 was published by Springer. He has worked as an external consultant for the OECD, UNESCO and the World Bank.

EXECUTIVE SUMMARY

DIGITAL EDUCATION: A NEW THEME FOR FALLING WALLS

On November 9th, the Falling Walls Foundation stages one of the most important annual science gatherings in the world. The COVID 19 pandemic made 2020 into an exceptional year, which we used as a chance to broaden our themes and audiences for the digital edition of the Falling Walls Conference. We sent out an international call to universities, academies, scientific institutions, companies, foundations, as well as scientists across the globe to nominate scientific breakthroughs that have the potential to change the world. We invited expert juries to select 10 Winners and one Breakthrough in ten categories that promised to hold the biggest innovations of the year.

One of these categories was a newcomer to the Falling Walls portfolio: 'Digital Education'. We expected digital education to be one of the fields of innovation in which the COVID-19 pandemic would generate substantial cultural change. We thus saw it as a category, which transported the notion of "crisis as a chance" and anticipated that ideas and solutions that were hitherto used on a smaller scale would have the unexpected opportunity to become innovations and breakthroughs by scaling up.

IMPRESSIVE REACH: MORE THAN 100 NOMINATIONS FROM ALL AROUND THE GLOBE

We received an impressive more than 100 projects, from 35 countries across all continents, as nominations for this competition. After a pre-selection, 60 nominees remained who were asked to submit a video presentation of their project. Based on this, we finally shortlisted 25 nominations and presented them to an international jury.

The 60 projects cover a wide range of innovations in digital education, from intelligent ways of enhancing content to experiential ways of interacting with knowledge and data (VR, AR, AI). They give great insights into the broad spectrum of technical, conceptual and cultural developments of digital learning and teaching. However, they also showed us that there is a potential for innovation beyond – but not excluding – the realm of the digital: A potential for reimagining the **FUTURE OF LEARNING** as a whole.

THE FUTURE OF FALLING WALLS FUTURE LEARNING: HORIZON-SCANNING, FUTURE LAB AND PEER LEARNING

Falling Walls Future Learning has the potential to create a vibrant, inclusive community of practitioners and visionaries around the future of education. To achieve this, we have identified three functions this new theme will provide:

1. **Horizon Scanning:**
Capturing significant developments in the area of digital education across the globe.
2. **Future Lab:**
Identifying key initiatives that can influence and inspire others.
3. **Peer Learning and Discussion:**
Fostering dialogue, debate, and knowledge exchange about the future of education.

FALLING WALLS FUTURE LEARNING AT A GLANCE

At Falling Walls Future Learning we showcase and connect initiatives and technologies that break the wall towards a better future for learners and educators. We build an inclusive network of innovators from science, business, administration and society, and initiate dialogue between them. This way, we hope to spread best practice examples of digital teaching and learning, foster collaboration and inspire.

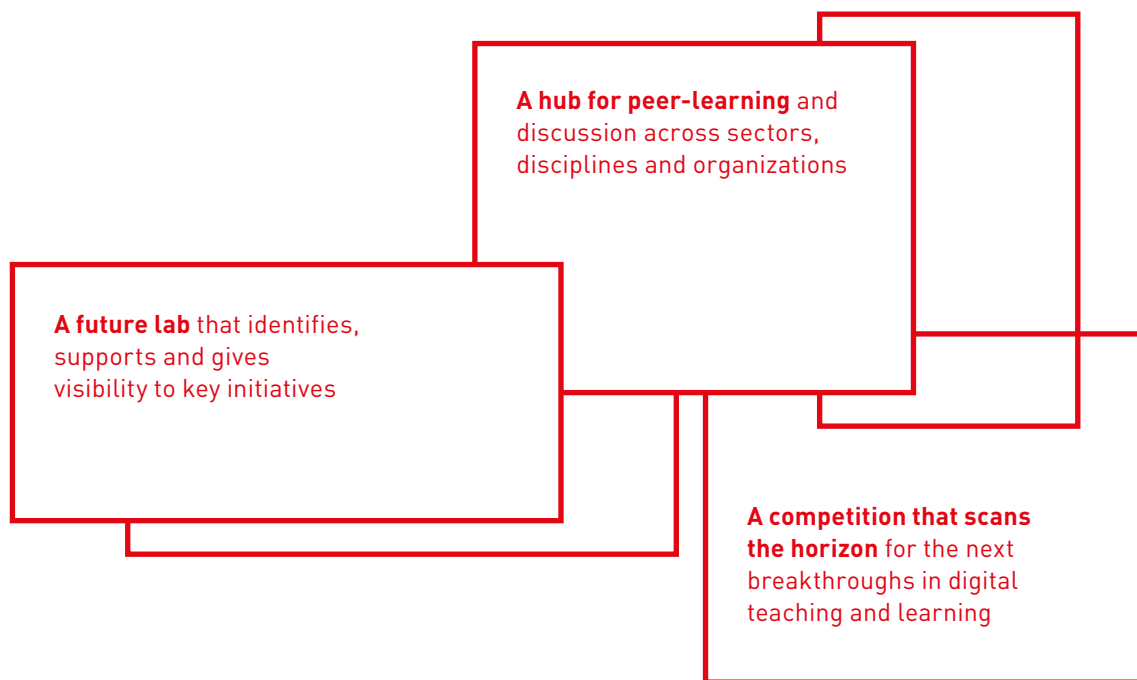


Fig.1

Falling Walls Future Learning is ...

FALLING WALLS DIGITAL LEARNING AT THE WORLD SCIENCE SUMMIT 2020



101

NOMINEES

From 40 nations



60

FINALISTS

From 17 different fields of innovation*



10

WINNERS

from 4 nations and 6 fields of innovation



15

JURORS

from 7 different nations
with a gender balance of 8 male, 7 female
representing leading institutions:



Fig.2 Falling Walls Future Learning at the World Science Summit 2020

OUR IMPACT IN THE LANDSCAPE OF FUTURE LEARNING

BROAD COVERAGE IN THE INNOVATION FIELD OF FUTURE LEARNING

In 2020, Falling Walls Future Learning curated projects in 17 different areas of focus across 8 different fields of innovation in the Global Learning Landscape. With a focus on higher education and lifelong learning, we position ourselves as advocates for the enablers of science and continued innovation beyond K-12.



Fig 3

2021 Global Learning Landscape

An open source taxonomy for the future of education. Mapping the learning and talent innovation landscape.

Source: <https://www.globallearninglandscape.org/>

WE SHOWCASE THE FUTURE OF FUTURE LEARNING

With the help of the SAMR Model, we pay special attention to the impact that the nominated projects potentially generate. In doing so, we strive for a coverage across all levels of impact, but particularly recognize initiatives that belong to category R and thus redefine the way learning environments operate – and break walls towards new ways of learning and teaching.

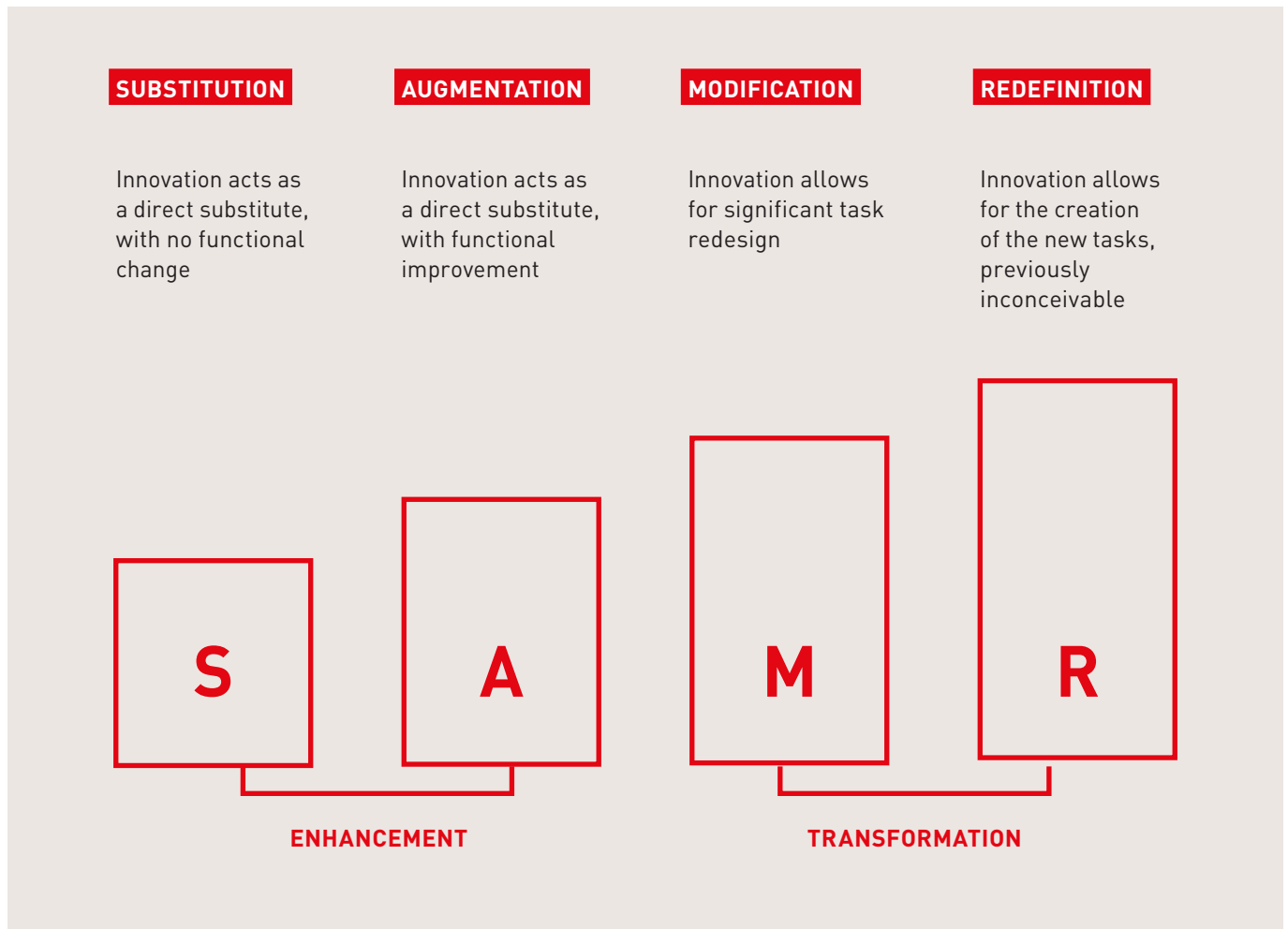


Fig 4

SAMR Model, Source:

➤ <https://www.edutopia.org/article/powerful-model-understanding-good-tech-integration>

10 EXTRAORDINARY WINNER INITIATIVES



BREAKING THE WALL TO ACCESS TO POST SECONDARY EDUCATION FOR REFUGEES

CHRYSTINA RUSSELL

*Southern New Hampshire University,
United States of America*



The Global Education Movement (GEM) provides learners affected by conflict and economic disinvestment the opportunity to earn accredited bachelor's degrees and pathways to meaningful employment. With a curriculum focused on building marketable skills for 21st century employment, GEM is unlocking the potential of a new generation of leaders that can take on intractable problems – from poverty and famine to conflict and disease – that once were significant barriers to their success.



BREAKING THE WALL OF THE LACK OF PUBLIC HEALTH IN SCHOOLS

TODD BROWN

*Broad Institute of MIT and HARVARD,
United States of America*



Operation Outbreak (OO) is a Bluetooth-based simulation platform that teaches students how pathogens spread and the impact of interventions, thereby facilitating the safe reopening of schools. OO also generates data to inform

epidemiological models and prevent future outbreaks. Before SARS-CoV-2 was reported, they repeatedly simulated a virus with similar features, correctly predicting many human behaviors later observed during the pandemic.



BREAKING THE WALL OF CONNECTIVITY

STEPHANE COILLET-MATILLON

*Kiwix,
Switzerland*



Kiwix is the default solution for millions around the world that have no connectivity or cannot pay for data. It allows people to browse Wikipedia, watch TED talks or any web content by storing a copy locally on their phone or computer. It works

on all platforms, is free, open-source, content-agnostic, and available in 100+ languages: as such it allows dozens of organisations around the world to bring digital education to people in rural areas, refugee camps, or even prisons.



BREAKING THE WALL TO SCIENCE EXPERIMENTS FROM HOME

ARTURO DOMINGUEZ

*Princeton Plasma Physics Laboratory,
United States of America*



Arturo has developed an open platform for remote control of scientific equipment with live video for desktop and mobile devices. Supporting material guides the students through the lab at various levels, up to graduate students. The platform

currently focuses on plasma physics but can be easily adapted for other fields. Relevant to the current remote learning environment, this democratizes access to laboratory equipment to institutions typically underserved.



BREAKING THE WALL TO HELP TEENS BUILD HAPPIER AND HEALTHIER LIVES FOR THEMSELVES

LYNN FIELLIN

*Yale University School of Medicine,
United States of America*



Over the past decade, the play2PREVENT Lab, using components of social and emotional learning and character development, has developed novel and ground-breaking methods and systems for developing and evaluating videogame interventions, with the input of adolescents at every step of the process, demonstrating significant engagement

and impact in the areas of social education and a number of critical health outcome related to the overall well-being of adolescents. We have broken through the barrier, or helped to make the wall fall, around adolescent voices being heard about the challenges they face and how best to address them through digital health and education.



BREAKING THE WALL OF DIGITAL EDUCATION

KEITH KOSTRZEWSKI

*Curriki,
United States of America*



The challenge facing education worldwide is the lack of high quality easy to use tools for educators to create truly engaging digital learning experiences. For too long, the technologies required to build and publish Next Generation learning experiences have been out of reach for many educators, preventing Innovative Educators from creating the type of learning experiences that 21st century learners respond to. Curriki Studio has

changed that. CurrikiStudio is a free authoring software that leverages over 50 Open Source learning tools, ranging from interactive video and images, games, virtual tours, and more. It enables education content creators to convert and create engaging content, and publish to major Learning Management Systems, content platforms, and other web-enabled platforms.



BREAKING THE WALL TO GIZA 3D: VISUALIZING THE PYRAMIDS

PETER MANUELIAN

*Harvard University,
United States of America*



Imagine 50 or even 50,000 students, anywhere the world, using a VR device to stand together with the instructor virtually, in real time, at the famous Pyramids at Giza, Egypt. The Giza Project at Harvard University assembles information about all the archaeological activity at the Giza Pyramids. Using digital archaeology, the

Project unites diverse documentation to produce powerful online and traditional academic research and educational tools and new teaching technologies. It presents academic information about Giza at all levels of expertise and provides a model of archaeological information management.



BREAKING THE WALL TO WHERE EVERYONE CAN TEACH YOU SOMETHING

DEEPAK RAMOLA

*Project FUEL,
India*



Project FUEL documents, designs and passes on human wisdom from all ages and backgrounds across the world; using the tools of education, art, media and events. Their methodology has

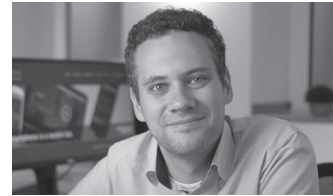
been recognised as one of the world's top 100 innovations in education by Finland based organisation HundrED and recently adopted by the City Education Board of Antwerp, Belgium.



BREAKING THE WALL TO WIDELY AVAILABLE DATA ACQUISITION IN SCIENCE EDUCATION

SEBASTIAN STAACKS

*2nd Institute of Physics, RWTH Aachen,
Germany*



With the free and open source app phyphox many sensors (even present in old and cheap smartphones) become accessible for students and turns their smartphones in mobile physics labs. Phyphox offers tools and instructions from school to university level and from individual labs with

household items during Covid19 lockdown to global experiments to determine Earth's axial tilt. The app, downloaded over 1.5 million and translated in 17 languages, makes science education worldwide more attractive.



BREAKING THE WALL TO REMOVING ARTIFICIAL K12 TO COLLEGE LEARNING BOUNDARIES

JULIE YOUNG

*Arizona State University,
United States of America*



ASU Prep Digital is Arizona State University's innovative K-12 digital strategy for impacting learning outcomes at scale. Unique to online learning programs, ASU Prep Digital is deeply integrated with the university. More than 200 pathways into the disciplines offer direct access to university faculty and major-level courses, enabling students to deepen and clarify career interests. By eliminating boundaries between high school and

university, we are pulling down silos that determine advancement by age or grade level versus learning readiness. Throughout their K-12 experience, students also become part of a college-going and college-attending community, thus providing familiarity, confidence, and an affordable pathway to pursue a college degree.

HOW WE FIND VISIONARIES AND SELECT THE BREAKTHROUGHS

THE GLOBAL CALL FOR NOMINATIONS: FUTURE LEARNING NOMINEES IN 2020

Every year, Falling Walls spreads a global call for nominations to find the most promising and innovative initiatives in the field of Future Learning. The global call is supported and shared by the many academic and corporate institutions that form the Falling Walls network and reach out to nominating organizations all around the globe.

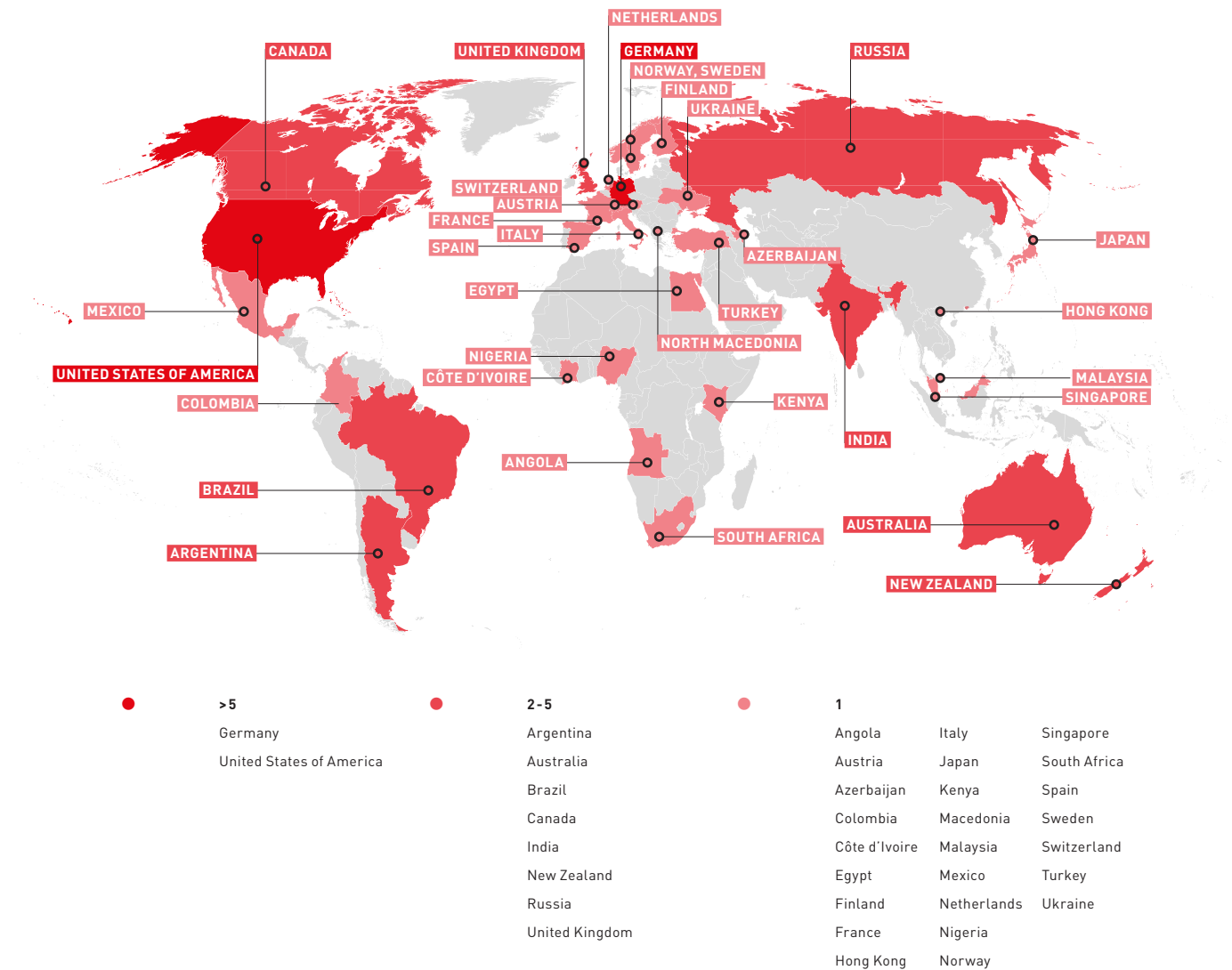


Fig 5

Global Distribution of 101 Nominies

QUALIFICATION CRITERIA FOR THE FINALISTS

All our nominations meet the following qualification criteria:

- Proposals fit the definition of Future Learning;
- Proposals can explain how they are a meaningful improvement, modification, augmentation or substitution of /in parts of a learning ecosystem.
- Proposals meet requirements of (emerging) evidence for impact and scalability. The idea must have at least one year of being implemented with its intended users.

SELECTION CRITERIA FOR THE TEN WINNERS

Our winners are selected through a peer-review process and subsequent selection by high-calibre jury. We evaluate according to the following criteria:

IMPACT

The nominee should clearly demonstrate identification of the problem the idea solves, for whom the solution applies and the levels of expected and real impact. The transformative potential is assessed according to the SAMR model.

SUSTAINABILITY

The nominee should clearly demonstrate how the sustainability of the initiative is assured socially, ecologically, and economically.

ACCESSIBILITY

The nominee should clearly demonstrate how the initiative contributes to ease of access and inclusion (e.g. in terms of openness of activities, resources, technology and infrastructure used) and for whom.

SCALABILITY AND LIKELIHOOD OF REPLICATION

The nominee should clearly demonstrate the (perhaps first) insights into the initiative's potential to scale and the likelihood of replication. Does it have a high degree of transferability to new contexts for others to adopt?

FUTURE LEARNING FINALISTS 2020

FALLING WALLS GIVES INITIATIVES IN THE FUTURE OF LEARNING VISIBILITY

In 2020 we celebrated the Falling Walls Winners and the Breakthrough on a large virtual stage. We curated videos of all Finalists that now constitute a digital library of inspiring initiatives and best practice examples for educators, administrators and learners to be inspired.



[<https://falling-walls.com/remote2020/finalists/filters/digital-education/>]

Prof. Simon Backhouse*Deakin University***Kiri Reihana***Manaaki Whenua Landcare Research***Prof. Michele Jacobsen***University of Calgary***Prof. Katharina Klemt-Albert***Leibniz University Hannover***Brian Moynihan***Lenovo***Alefiya Master***MAD-learn***Dr Thomas Bartoschek***Reedo GmbH & Co. KG***Dr Gabriela Marques-Schäfer***University of the State of Rio de Janeiro (UERJ)***Prof. Atsushi Shimada***Faculty of Information Science and Electrical Engineering, Kyushu University***Dr. Nantha Kumar Subramaniam***Open University Malaysia***Dr George Hanshaw***Los Angeles Pacific University***Daniela Salinas***Interacpedia***Katharina Bach***Techlabs e.V.***Prof. Edward A. Snyder***Yale School of Management***Dr. Maribell Reyes***Tecnologico de Monterrey***Christian Ritschel***Enlighten Sciences GmbH***Dr. Lev Horodyskyj***University of the Virgin Islands / Blue Marble Space Institute of Science***Ricardo Pilartes da Silva***Instituto Superior Politécnico De Tecnologias E Ciências - ISPTEC***Johannes Pohlmann***GIZ GmbH***Prof. Richard Baraniuk***William Marsh Rice University***Sandy Agbottah***Impact Hub Accra, Siemens Stiftung***Tara Hein-Phillips***Sundance Institute***Matt Jenner***FutureLearn***Hedi Schaefer***Innovationgym***Dr. Sanjaya Mishra***Commonwealth of Learning***Amanda Obidike***STEMi Makers Africa***Ravi Srinivasan***Botho University***Farida Nzilani***Shujaaz Inc.***Prof. Fabian Hemmert***University of Wuppertal***Prof. Luigia Palumbo***Polytechnic University of Bari***Dr. Andreas Matt***IMAGINARY GGMBH***Clemens Sagmeister***snipedy***Dr. Joaquín Cochero***Consejo Nacional de Investigaciones Científicas y Técnicas***Maia Gould***3A Institute at the Australian National University***Dr. Charlotte von Essen***FOME/insendi***Scott Cardwell***ImmerseMe***Stephen Downes***Digital Technology Research Centre***Dr. Vishal Punwani***Sophya***Christine Bussian***CAU Kiel***Manuel Dolderer***CODE University of Applied Sciences***Dr. Robin DeRosa***Plymouth State University***Dr. Tobias Ernst***Kiron***Sean Hobson***EdPlus at Arizona State University***Mary Mulcahy***CSIRO***Grace Collins***Liminal Esports***Prof Rocky S. Tuan***The Chinese University of Hong Kong***Prof Sonny Ben Rosenthal***Nanyang Technological University***Prof Sian Bayne***University of Edinburgh***Prof Iyad Rahwan***Max Planck Institute for Human Development (MPI für Bildungsforschung)***Alison Phillips***Staffordshire University*

OUR INTERNATIONAL HIGH-CALIBER JURY



DEBORAH QUAZZO

*Jury Chair
Managing Partner,
GSV Ventures*



BHARAT ANAND

*Vice Provost for
Advances in Learning,
Harvard University*



ANNA MARIA BRAUN

*CEO,
B. Braun*



JOY CHEN

*US Chief Investment Officer,
TAL Education Group*



**MARIETTE
DICHIRSTINA-GEROSA**

*Dean,
College of Communication
at Boston University*



MONIKA GROSS

*Vice President for
Digitalisation and Acade-
mic Continuing Education,
German Rector's Conference*

**BARBARA ISCHINGER**

*Vice President of the Board,
Goettingen University*

**PRAMATH SINHA**

*Founder & Chairman,
Harappa Foundation*

**JULIAN OEI**

*CEO,
Holtzbrinck Digital*

**MIKE SMITH**

*John H. Finley,
Jr. Professor of Engineering
and Applied Sciences,
Harvard University*

**DOMINIC ORR**

*Adjunct Professor,
University of Nova Gorica*

**HILLIGJE VAN'T LAND**

*Secretary General,
International Association
of Universities (IAU)*

**PHILIP REGIER**

*University Dean for
Educational Initiatives and
CEO of EdPlus,
Arizona State University*

**NORIHISA WADA**

*Executive Vice President &
Co-Chief Operating Officer,
EduLab*

**BROR SAXBERG**

*Vice President,
Learning Science,
Chan Zuckerberg Initiative*

OUR CONTRIBUTION TO THE FUTURE OF LEARNING

We work with visionary minds in learning innovation and use state-of-the-art evaluation models to identify the most urgent challenges and the most impactful drivers of breakthrough transformation. Together we build a shared vision of a world in which empowered learners have equal access to high-quality education and engaging learning experiences.

The future of learning can only be built collaboratively. We create events to involve inspiring actors and organizations across sectors and disciplines to build supportive networks that help breakthrough initiatives to grow and create impact.

Implementing new technologies and concepts of learning requires sustainable models and broad awareness of opportunities and best practices. Falling Walls Future Learning creates visibility for innovative learning solutions to foster dialogue around them and inspire others to support the initiatives or adapt their technologies and concepts to their own work.

HORIZON-SCANNING

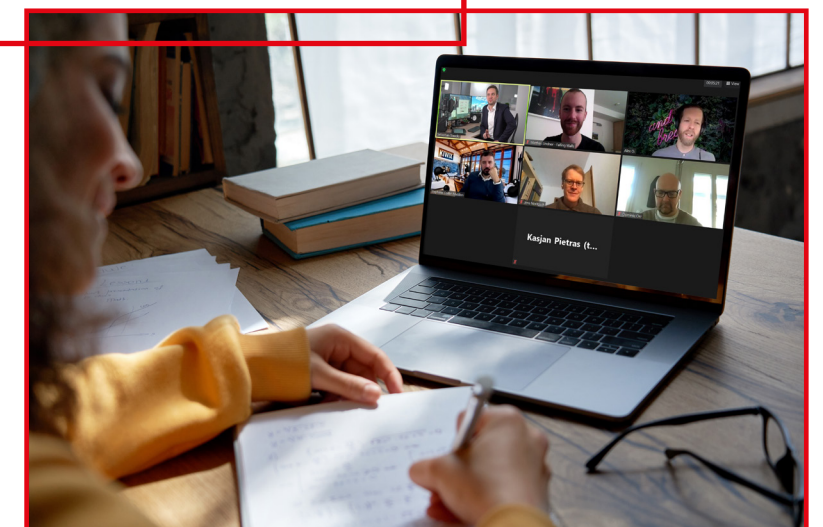
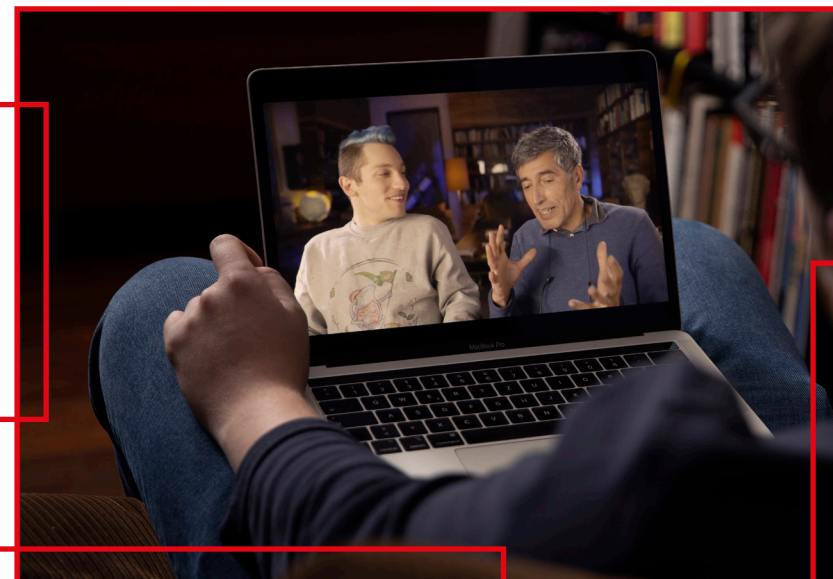
Capturing significant developments in the area of learning and education across the globe.

FUTURE LAB

Identifying key initiatives that can influence and inspire others.

PEER-LEARNING AND DISCUSSION

Fostering dialogue, debate and knowledge exchange about the future of education



YOUR CONTRIBUTION TO THE FUTURE OF LEARNING

**“THE FUTURE IS ALREADY HERE —
IT’S JUST NOT VERY EVENLY DISTRIBUTED.”**

WILLIAM GIBSON

We invite you to work with us on building the future of learning: Share our global call for nominations, take part in our events and conversations, support our selection processes, nominate your innovators to present on our stages, and help us find the visionaries of digital learning innovation all around the globe. We create visibility and positive impact not only for the breakthrough initiatives we curate, but also for our partners and stakeholders. We invite you to become a partner, supporter and member of the Falling Walls Future Learning network.

Let us build a better future for learners and educators all around the globe and enable the breakthrough problem-solvers of tomorrow!



JÜRGEN MLYNEK

Chairman

Former President,

Helmholtz Association

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