IAFeS Edition

Education & Research During COVID19

International Reports & Essays

IAFeS - International Association for eScience

Volume 9

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International Association for eScience

Imprint

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Publisher: IAFeS – International Association for eScience
The association, whose activity is not directed towards profit, aims to:

- promote the development, education and research in the area of eScience: Information and communications technology (ICT), telecommunications, e-learning, emedia, e-commerce, e-government, e-democracy, e-culture, e-health
- promote young researchers in these areas
- offer an exchange platform for experts
- offer an international co-operation platform

IAFeS
Biberstrasse 4/4
A 1010 Vienna
Austria

Print: druck.at
ISBN 978-3-9503983-9-7

Editor: Johann GÜNTHER

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Preface

Radu VASIU

The International Association for eScience (IAFeS) was founded in December 2013 in Vienna by members from Great Britain, Greece, Romania, Finland and Austria. Since that moment, new institutional and individual members joined each year. They are all working together in order to achieve the aims of the association: to promote development, education and research in all areas of eScience and, especially, to encourage young researchers in these areas by offering an exchange platform for international co-operation.

Each year, the association organizes a conference called NETTIES (Networking Entities). The first edition was organized in 1994 in Vienna, Austria, under the umbrella of EATA (European Association for Telematics Applications). As a continuator of that association, IAFES continued to organise the NETTIES conference.

The 18th edition NETTIES 2020 conference was planned to take place in September 2020, in Vienna. Unfortunately, due to the global crisis caused by COVID-19, the conference had to be postponed to 2021.

The pandemic disrupted economic, social, educational and cultural activities globally. Education worldwide had to adapt quickly to the restrictions and to move totally or partially online. It was a big challenge especially for preuniversity teachers and students. But nobody could afford to take a decision to stop education for a whole generation! At the university level things adapted easier, with different experience in different countries and for different fields of study. The research activities also had to go on. Some conferences and workshops have moved totally or partially online, making use of different digital tools. The videoconferencing traffic increased substantially and connected actors from the educational and research sectors, but also people working from home in different companies. New business models have been developed on this occasion, and it is expected that many of them will still be in place after going out from the crisis situation.

This book intends to collect different experiences in different parts of the work, thus giving the possibility to compare different solutions and experiences. This should be one of the strengths of IAFeS as a global organisation, by allowing its members to exchange ideas and to learn from each other experiences.

We hope that the book will inspire the readers to better understand the global changes coming with the pandemic

Radu Vasiu, PhD
Professor Politehnica University of Timisoara, Romania
President of IAFeS – International Association for eScience

Preface

Johann GÜNTHER

IAFeS is a global organization. Globalization is very important for science and research in order to be able to exchange ideas internationally and to get results faster. The phenomenon of COVID19 was closely linked to globalization. The virus spread very quickly internationally and partially paralyzed the entire globe.

Humanity has lived in uncertainty for some time, with uncertainty being a general part of life. Nothing is really certain. In this pandemic, science had to take note of this.

The NETTIES conference 2020 had to be canceled due to the COVID19 pandemic. We have therefore decided to come together virtually and face the topic of the pandemic. All members of our organization and experts were invited to write an essay or a status report.

As a reader, you will find reports from many countries here:

USA, Indonesia, Oman, Romania, Poland, Austria, Canada, Greece, Spain, Germany, Finland, Russia, Belgium, Sweden, China, Italy ...

A wide variety of disciplines have their say: Philosophers, economists, theologians, educators, politicians, musicians, migration researchers, computer scientists, artists, medical professionals, health scientists, ...

IAFeS does not want to provide further input, but the present volume of the IAFeS Edition is intended to record various perspectives for posterity as documentation.

Johann Günther

Secretary General of IAFeS

Introduction

Johann GÜNTHER
Jianghan University, Wuhan, China

Although everyone was affected by the COVID19 pandemic, they had experienced the crisis in very different ways. Those affected by the virus themselves or relatives / friends of those affected, medical staff, priests. It was annoying for family members with and without children. It was difficult at work.

Many individual experiences, which then became a common destiny society that had no limits.COVID19 meant an abrupt break in known lifestyle habits. It affected private life and public society.

The situation was discussed and explained publicly from different perspectives and by different scientific disciplines. Camps had formed. Supporters and opponents of various theories. Economists, social scientists, philosophers, theologians, educators, technicians and psychologists came up with possible solutions. Self-proclaimed experts appeared on social media.

Many different technologies have been used to maintain communication. Video conferencing for meetings and lectures and the exchange of electronic documents. But the real reference was missing and created longing.

During the pandemic, there were 2 Billion high school and university students in a digital classroom worldwide. 90 percent of all schools and universities were closed.

Our knowledge society will not regress after the pandemic. The trend towards online learning will continue to grow. Learning has acquired a new status, which is above all in line with the rapidly decreasing half-life of our knowledge.

Learning and teaching will play a different role in our society in the future. The international situation and cooperation will also have changed. During the time of the pandemic, tools were developed that will certainly continue to be used in the future. In that sense there will be a change.

The Rector of the University of Bologna Francesco Ubertini on whose shoulders the responsibility of leading the response of that university had fallen adapted his university to the new situation. The lessons which he shared included the importance of transparency and honesty for building trust with the whole university community and the importance of direct communications. He had written tot he entire community on a daily basis to build that trust. This university had developed resilience, had become more flexible and needed to maintain energy throughout the different stages of their response.[1]

The pandemic has given politics more influence on society. Special ordinances and laws made things possible that under normal circumstances would not have been enforceable in democracies.

Today - under pressure from legal regulations - services such as home office and video conferencing, e-commerce and online shops are increasingly used. New digital products and new digital business models are emerging. That has become a reality in a short time and is developing dynamically - now it is simply possible.

Product groups change faster. The car industry decline is only accelerating now, but is not a new trend. The following generations are no longer "owners". They are a "user". An "On Demand Generation". They no longer have their own CDs, but listen to music from the Internet whenever they feel like it and need it. They no longer have their own car, but rent it if necessary.

[1] UBERTINI, Francesco: „What lessons are we learning from Covid-19?“, Webinar, 18th September 2020, Magna Charta

Corona gives this trend an additional boost. The trend itself existed before that. Even furniture will no longer be owned, but only rented. Rent for the time they are needed. People who wear glasses will no longer own their own glasses, they will only have "rented" them and so can switch to a new model at any time - following a new fashion trend.

For decades, eLearning and distance learning have been referred to in educational institutions. Now it had to be done and was implemented in a very short time. Many people were not prepared for this. Employees were ordered to work from home and had a 20-year-old PC at home or a poor Internet connection.

Countries reacted differently to the pandemic. Some have scaled back and paralyzed the entire professional and private life of the residents. They have put people's health first and the economy second. There are fewer deaths from an economy shutdown, but there is a large economic loss. Other countries gave priority to the economy and accepted that more people would get sick and more died. But since it is mainly the elderly who die, this also has an impact on the state economy. Pension recipients fall away. They are not a service provider for the state and only benefit recipients.

This political decision was described by Thomas More 500 years ago in his book "Utopia". If the sick are incurable, suicide is recommended: “Meanwhile, if the disease is not only incurable, but also torments and tortures the sick constantly, then the priests and authorities encourage him to consider that he is no longer able to cope with all the professional duties of his life to be a burden to others and difficult to bear for oneself and thus already survive one's own death; therefore he should not insist on nourishing the epidemic and contagion and not hesitate to go to his death ... "[2] Thomas More goes even further in his description of the ideal state and recommends that old people generally from a certain age and when they no longer make a contribution to society should be sacrificed to the vultures.

The first variant shown here of how politics reacts to the pandemic creates a complete re-parsing of our monetary system. With the enacted disease rights, the money cycle is not only inflated, but vice versa. A global transformation process like never before has been set in motion. A reversal of the polarity of money that has never been seen in our western culture. Until now, money has been made through work. It was passed upwards - to the state and its administration - via taxes and duties. It was partly used for administration and partly redistributed downwards. The distribution key was determined by politics. A social state managed, for example, a redistribution from the rich to the poor.

A colleague defined the change as follows: “The new money economy seems to be running differently from now on. If you believe the politicians, the money will soon be generated by the government in the central bank and distributed to the citizens through distribution organizations (ministries, banks, chambers, NGOs, state-affiliated corporations, etc.). The "flow direction" of the money tilts in the other direction. From bottom-up to top-down."[3]

By “prioritizing people over business” there will be fewer dying and sick people, but there will be “dying companies”. Perhaps this is also a reorganization of our society. New businesses with new orientations and a (perhaps) new culture can emerge. The pandemic has revealed weaknesses that will (perhaps) be eliminated.

"Never waste a good crisis!"

[2] MORUS, Thomas: „Utopia“, Munich 1997, page 129
[3] KOTAUCZEK, Peter, Institut for Human Informatics, Vienna

1 The eLearning Centre of the Politehnica University of Timisoara, Romania, During the Pandemic Crisis

Diana ANDONE
University Timisoara, Romania
Radu VASIU
President of Senat, University Timisoara, Romania

1.1 Introduction

Within the year 2020, during times of uncertainty due to Coronavirus COVID-19, in Romania, as in other countries, face-to-face educational functions and activities were moved online, using applications, platforms and various tools and working methods for distance education. Most teachers were struggling to adapt to working and teaching online, especially those who have always taught in a traditional classroom, and were now required to regroup quickly and prepare for a longer period of educational “social distancing”. Where does one begin? How does one manage the process? What can we all learn from our experiences?

The following paper is based on the experience, practices and actions done by the eLearning Centre (CeL) and the Politehnica University of Timisoara (UPT) as institution in order to make education working during those difficult times, to maintain the quality of teaching, to support teachers and students to adapt to this new reality, to make the educational ecosystem aware of the changes and acting for quicker reactions for the adaptation to the future “new normal”.

1.2 The eLearning Centre

Since its establishment, in 1998, as the Distance Education Centre, the eLearning Centre is at the forefront of developing online and digital education in the University.

CeL initiates, promotes and manages distance education in the university, has created and manages the **UPT Virtual Campus** and advances research and development in digital education and engineering education. CeL was the first center to introduce a digital education ecosystem in Romania by integrating eLearning and blended learning, mobile learning with open education and the use and creation of Open Educational Resources (OER), and **UniCampus** as the first Romanian MOOC (Massive Open Online Courses).

The UPT Virtual Campus is the core of educational digitisation, built as a single digital entry point for administration, academics and students, an open-source platform in use since 2000 as an in-house platform and based on Moodle since 2006. It includes the Academic management (LMS Learning Management System): interface for degree and curriculum management, for managing students, academics, exams, results, attendance etc; Academic learning support (Course management and curation system): online courses, online or electronic laboratory materials, podcasts, multimedia resources, Academic learning experience and communication with web 2.0 and social media tools (forum, blog, wiki, messaging, interactive resources, collaborative and external tools, etc).

Specializations delivered as distance education:

- **Undergraduate degrees**: Informatics, Telecommunications Technologies and Systems, Communication and Public Relations, Manufacturing Engineering
- **Postgraduate courses**: Technology, Systems and Applications for eActivities,

eBusiness, eMedia, eGovernment, eHealth; Creative Entrepreneurship; Digital Competences; Training in blended-learning and modern educational technologies at university level.

Over the years, CeL has been involved in over 25 projects funded by the European Commission, is partner in international associations (EDEN, IEEE, IAFeS, ASLERD) and co-operates with similar centres from universities from all over the world. CeL is constantly running dozens of free workshops and webinars, is involved in research and development activities in the fields of open education, digital education, digital students, digital skills, advanced web technologies including augmented and virtual reality, blockchain for education, virtual campuses, virtual mobilities, open badges and microcredentials.

More information can be found at:

https://elearning.upt.ro, https://cv.upt.ro and https://unicampus.ro/

1.3 Digital education ecosystem in UPT

UPT has developed a true digital education ecosystem initiated more than 20 years ago, based on a strategy with clear objectives, developed in three stages: digitization - digitalization - digital transformation, which allowed that during 2020, innovation in digital education to have an impact both in the university and in the community.

The digitization stage of UPT began in 1999 with the development of an online educational platform, integrated at university level since 2006, when the e-Learning Center developed the UPT Virtual Campus (https://cv.upt.ro/), an online educational environment of academic support, based on the open-source platform Moodle, flexible, interactive, with innovative elements of communication, laboratories and virtual classrooms. The development of CVUPT with the elements of analysis of digital activities, of the UNICAMPUS platform dedicated to open, online MOOC courses, accessible to all (www.unicampus.ro), of the web page http://www.elearning.upt.ro represented the essence of digital education in UPT and allowed the transition to the stage of digitization of education.

In March 2020, UPT already benefited from a modern infrastructure dedicated to digital education, CVUPT having as users over 700 teachers and 10,000 students with over 1,600 courses managed through the platform. The evolution of the number of users of the CVUPT during the digitization phase in UPT is shown in Fig. 1.

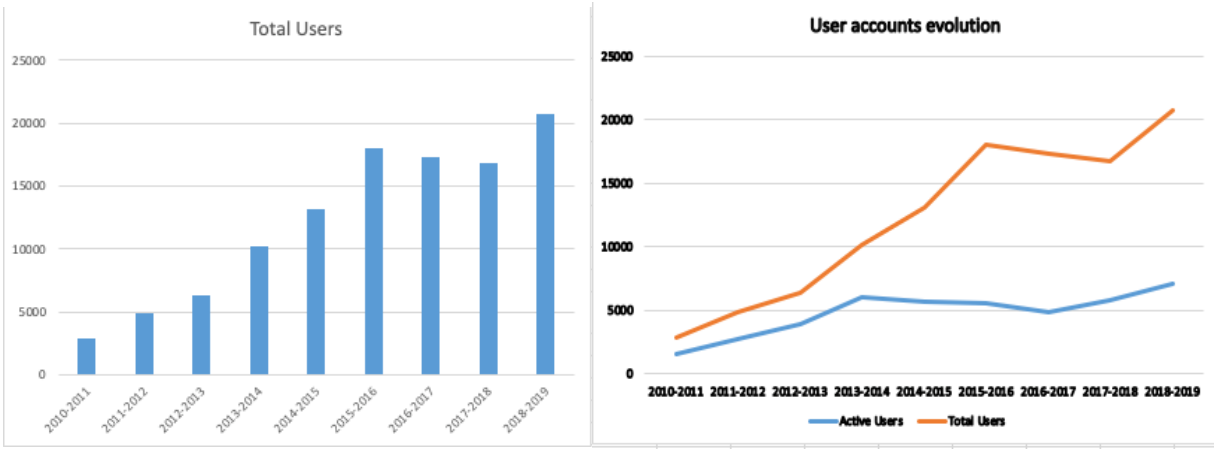

Figure 1: Evolution of the number of users during the digitization phase

On March 11, 2020, when all teaching activities went exclusively online, the integration of new courses and online support was achieved quickly, structured and integrated. Between March and September 2020, the activity on CVUPT increased to over 13,000 active users, with almost 4,000 courses managed through the platform.

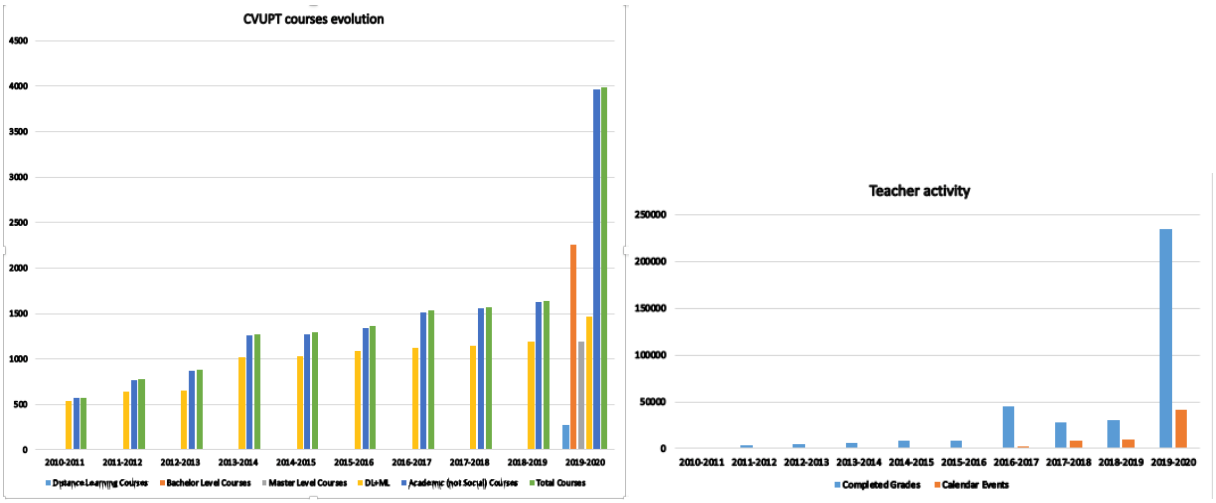

Figure 2: Evolution of the number of courses and teacher activity due to COVID-19

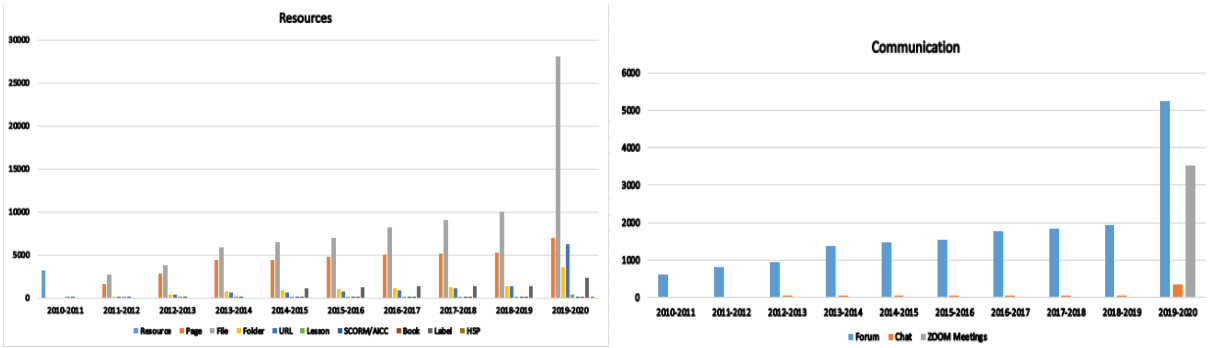

Figure 3: Evolution of the number of course resources and communication needs generated by COVID-19

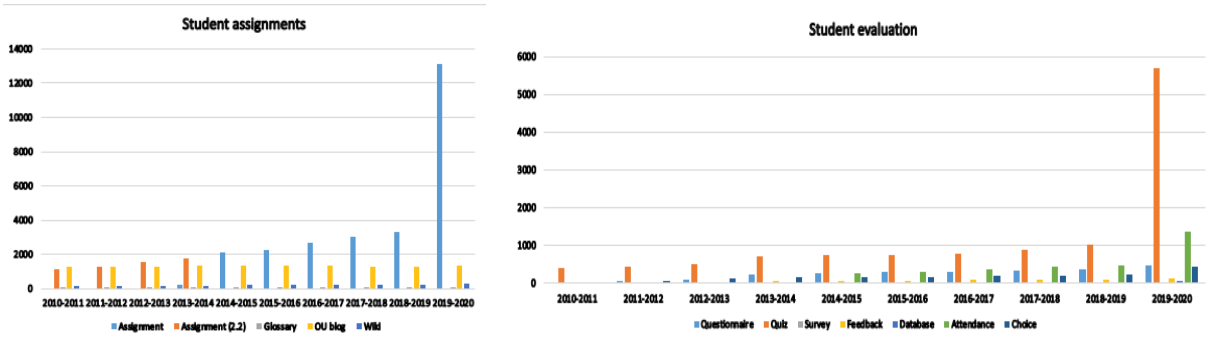

Figure 4: Evolution of the number of student assignments and evaluation generated by COVID-19

The increase of the number of courses and students managed through the CVUPT platform also generated an increased demand of communication tools, especially forum communication with students and video-conferencing tools. The university opted for Zoom, and the CeL team developed a plug-in that allowed Zoom meetings to be generated directly from the CVUPT platform and to be announced directly though the Forum. Figures 2, 3 and 4 are showing the evolution of the number of resources allocated as a consequence of the pandemic crisis. It has to be underlined that UPT behaved very well under those circumstances compared to other European universities, as it has already prepared for digital education, and had only to rapidly scale the number of resources.

1.4 Support for UPT teachers and staff for going online digitally

Continuous support was provided through 38 webinars dedicated to teachers and students, available online (https://elearning.upt.ro/campus-virtual/), free of charge and communication was streamlined by introducing a new academic support tool - Education Support digital and ID / IFR UPT (https://suport.elearning.upt.ro), available to teachers, students and online candidates from UPT.

Figure 5: Tutorials for teachers and students on the CeL site

A number of tutorials have been prepared, presented to the UPT teachers and students, both experienced or beginners on CVUPT, during a series of webinars, including sessions of questions and answers. All the recordings of those tutorials are available for teachers and students enrolled with the UPT Virtual Campus, in order to be accessed according to their availability. Support can also be asked from the e-Learning Centre team.

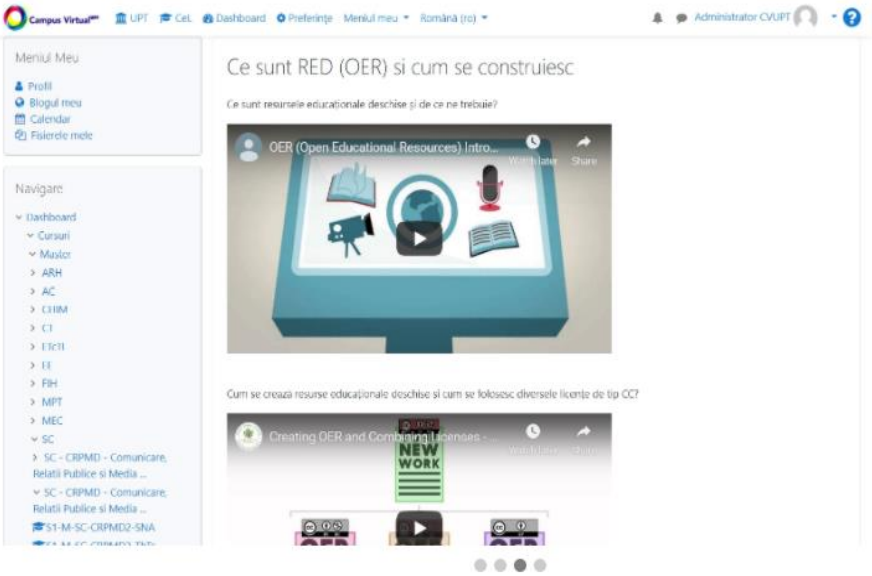

Figure 6: Example of tutorial on what are and how Open Educational Resources (OER) can be

developed

Tutorials prepared and presented during training sessions by the CeL team are including:

- General guide on how to use CVUPT
- Guide on setting and using Zoom videoconferencing directly from CVUPT
- Guide on how to add an educational resource on the CVUPT
- Guide on how to insert a video resource into a course text
- Guide on adding interactive H5P content in a course
- Guide on organizing course resources
- Guide on writing forum announcements
- Guide on auto-enrolling into CVUPT
- Guide on changing your profile in CVUPT
- Guide on using the Calendar from CVUPT
- Guide on how to use blogs
- Guide on how to create student assignments
- Guide on online examination tools
- Guide on preparing student testing
- Guide on how to create quizzes, multiple choice quizzes and other assessment tools
- Guide on preparing a database with assessment questions
- Guide on setting and using the Grades module on the Virtual Campus
- Guide on changing or resetting your CVUPT access password
- Guide on what are and how OER can be developed
- Guide on what are MOOC courses
- Guide on how to integrate MOOC resources in your course
- Guide on how to ask for online help

Support for the educational community to switch to online education. Together online in education. The #onlinetogether webinar series – supporting teachers in Romania with online education during the pandemic

UPT's vision of digital transformation and support for digital education were also transferred to the community, CeL launched on April 15, 2020 a series of practical webinars on online education and experience during this period. The Together Online Webinars took place weekly, bringing together over 7,000 participants and dozens of partner institutions from academia, pre-university and other stakeholders. (www.elearning.upt.ro/ro/impreuna-online). CeL joined the Timis School Inspectorate, the AntiCovidTM Platform and TVR Timișoara, also coming to the aid of pre-university teachers by launching a guide with good practice recommendations and webinars dedicated to teachers from Timisoara schools and beyond. All webinars are also accessible online on YouTube (https://bit.ly/3e7DMrt).

In April 2020, the eLearning Centre within the Politehnica University of Timișoara, together with IEEE Romania and EDEN Association, launched a series of practical and interactive webinars starting (first in 15 April 2020), aiming to support teachers and students from all over Romania with the challenges of online education during the pandemic. The #onlinetogether webinar series took place online weekly, gathering dozens of partner institutions represented mostly by teachers and students within the academic environment, but also some of the school environment and interested parties from the private sectors. More than 10 partner institutions responded to the #onlinetogether initiative and joined as presenters and moderators, gathering over 4.800 participants – teachers, students and interested parties.

Figure: 7. #Together Online webinars

Attendees to the #TogetherOnline webinars were granted Open Digital Badges, issued by the eLearning Centre to all participants, based on the level of involvement: attendee, presenter or moderator. In total, over 9,500 badges have been granted. The list of Open Badges issued for each of the 23 webinars can be found at: https://elearning.upt.ro/en/open-badges-certificate-digitale-deschise-impreuna-online/.

Figure 7 illustrates the subject of the first two webinars and the number of badges granted during the first webinars. More information can be found on https://elearning.upt.ro/ro/open-badges-certificate-digitale-deschise-impreuna-online/.

During the #onlinetogether webinars, we were able to share unique opinions and experiences from different perspectives, encouraging collaborative work, both between teachers and students and the national academic environment, and thus we believe we have significantly helped their performance of online and open learning.

The topics presented in the webinars focused on the daily challenges of everyone from the education sector in this period, being designed in the spirit of open education and free access to knowledge. The presenters addressed various topics and perspectives on online education, open educational resources, and shared ideas, experiences, strategies and solutions, which they tried to implement in the current context. Some of the topics that raised the highest interest were:

From on-site education to online education - https://elearning.upt.ro/en/comunitate/noutati-comunitate/de-la-educatia-in-campus-la-cea-online/

Perception of teachers and students regarding online education: opportunities and challenges - https://elearning.upt.ro/en/comunitate/noutati-comunitate/webinar-impreunaonline-perceptia-cadrelor-didactice-si-a-studentilor-privind-educatia-online-oportunitati-si-provocari/

Using OERs, MOOCs in Education - https://elearning.upt.ro/en/comunitate/noutati-comunitate/webinar-impreunaonline-utilizare-oers-moocs-in-educatie/

The impact of online technologies in the training of engineers -

https://elearning.upt.ro/en/comunitate/noutati-comunitate/webinar-impreunaonline-impactul-tehnologiilor-online-in-formarea-inginerilor/

Practical use of Open Educational Resources. UNESCO recommendations - https://elearning.upt.ro/en/comunitate/webinar-impreunaonline-utilizarea-practica-a-resurselor-educationale-deschise-recomandarile-unesco/

As the challenges for all education systems continued, in September 2020 the webinar serries continued, attracting even more diverse participants.

The webinar series was a real success, gathering over 9,500 participants, 87 presenters and 28 moderators, representing over 16 partner institutions which responded to the #onlinetogether initiative and joined as presenters and moderators, resulting in more than 50 hours of live presentations and discussions, between March 2020 and February 2021.

The full list of webinars can be found here: https://elearning.upt.ro/en/impreuna-online/.

The list of partner institutions who joined the #onlinetogether webinar series includes: Politehnica University of Timisoara, West University of Timisoara, Ioan Slavici University of Timisoara, Technical University of Cluj-Napoca, University of Medicine and Pharmacy "Victor Babeș" from Timișoara, Technical University "Gheorghe Asachi" from Iaşi, Polytechnic University of Bucharest, Babeș-Bolyai University from Cluj-Napoca, University of Agricultural Sciences and Veterinary Medicine of Banat "King Mihai I of Romania" Timișoara and the National Alliance of Student Organizations in Romania.

With hundreds of participants weekly, the webinars were designed to be interactive, each webinar being followed by a Q&A session, where participants were able to ask the most pressing questions and raise various issues they faced online.

Recordings of all webinars in the #onlinetogether series are available on Youtube: (https://bit.ly/3bJ2HjT), as well as on the Instagram profile (elearning_upt) in IG TV.

After each webinar, an evaluation questionnaire was run, with interesting results – figure 1 shows how the participants rated the webinars, in a combined graph. We are now finalizing the results of a more comprehensive and integrated questionnaire which was sent to all participants as to evaluate the impact the webinar series had on their teaching methods, the tools and technologies used on education and what are their future needs for training. We also investigated on their use of their university online learning environment, how engineering education is supported and integrated in the new normal, online or hybrid education.

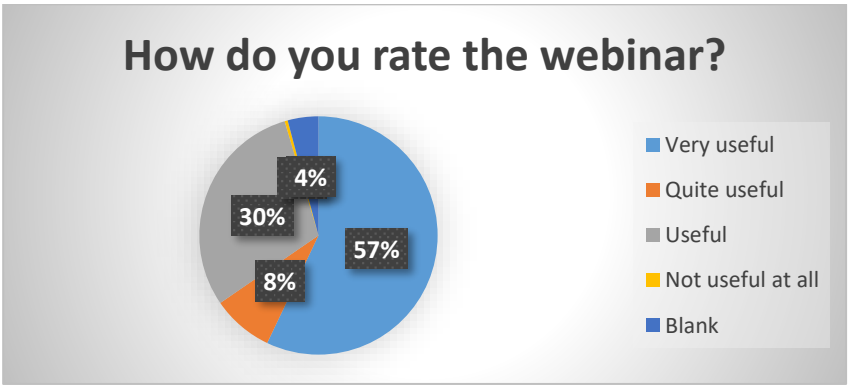

Figure 8: Results on rating the webinars

Support for other educational activities running online after the pandemic crisis. Online courses of mathematics for UPT candidates

Every year, Politehnica University of Timisoara comes to the support of high school students,

offering them free mathematics training courses, useful both for those who want to attend one of the faculties of UPT, and for preparing for the baccalaureate exam. Even if they are addressed especially to its potential students, regardless of the faculty for which they opt and regardless of the form of admission competition, course participants are not required to make any commitment to UPT.

The courses are traditionally organized by the Department of Mathematics of UPT. However, this year the courses could no longer take place, as in previous years, in the traditional "face to face" system, but in the online environment, to reduce the risk of spreading the COVID-19 virus.

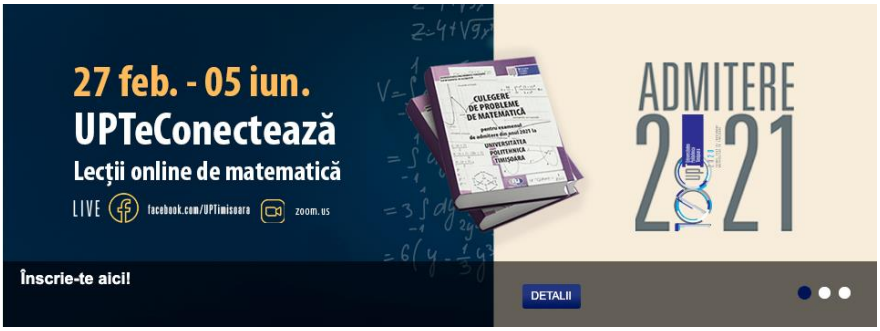

Figure 9: Results on rating the webinars

Mathematics lessons are organized between February 27th - June 5th, 2021, every Saturday, starting with 10:00, online on Zoom and live on the official Facebook page of the Polytechnic University of Timisoara, with the technical support of the Centre for e-Learning in UPT.

To register, students are invited to use the form available on the institution's website: https://upt-ro.zoom.us/webinar/register/WN_pVMs1O9PSKyyhZjA-5_dtw. After completing the form, they receive the connection link to the Zoom platform.

The lessons can be followed online on the Facebook page of the Politehnica University of Timisoara, at: https://www.facebook.com/UPTimisoara.

The debated topics follow the content of the Collection of Mathematical Problems for the 2021 admission exam at UPT, published by the Politehnica Publishing House, which is also made available free of charge to those interested, in electronic format.

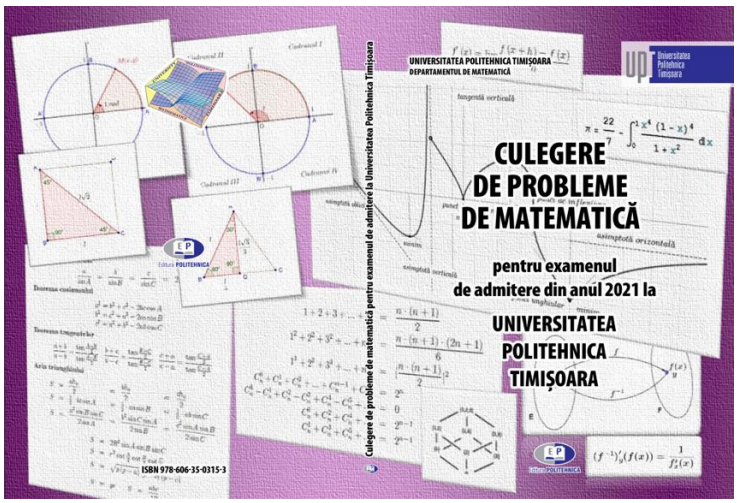

Figure 10. Mathematical Problems Collection for 2021 UPT candidates

Support for other educational or research activities after the pandemic crisis. Other online events

The year 2020 was supposed to be a very important one for the Politehnica University of Timisoara, as on 11 November 2020 the university had to celebrate 100 years of existence. Founded in 1920 through a Royal Decree signed on 11 November, the university established herself as the most important technical university in the west of Romania and as one of the most renowned in Central and Eastern Europe. Unfortunately, due to the pandemic crisis, the planned festivities had to be postponed.

However, the university had to go on and demonstrated to be able to properly respond to the challenge of moving online. Subsequently, a lot of events have been just redesigned in order to take place mostly online, or with a restricted physical presence under the conditions of respecting the social distance asked by the health security issues.

We just list some of the events organised online with the technical support from CeL:

- Politehnica University of Timisoara is fully online! (11 March 2020).
- The free math courses offered by UPT to pre-university students are moving online (13 March 2020)
- ONLINE psychological counseling for UPT students (21 March 2020)
- The national mathematics competition "Valeriu Alaci" continues with the online qualification stage (24 March 2020) – over 500 participants
- Online admission competition 2020 at UPT (16 April 2020) – announcement and approved methodology
- 16th edition of the Career Days - online, at UPT (13-15 May 2020) – 50 companies presented themselves
- All final exams can be taken online at UPT (18 May 2020) – announcement and approved methodology
- UPT, consistent participation in EuroInvent 2020 online (21-23 May 2020) – 20 inventions presented, 8 gold medals, 7 silver medals, 2 bronze medals (http://www.upt.ro/Informatii-utile_salba-de-medalii-pentru-upt-la-salonul-international-euroinv_523_ro.html)
- Students' scientific papers presented online during the pandemic (21 May 2020)

Figure 11. Insert from students' presentation of their master researches

- 100 years since the first philatelic exhibition of Greater Romania, organised at the Lloyd Palace, in the actual UPT Senate Room (22 May 2020). Romfilatelia launched the philatelic series with the theme "Politehnica University of Timișoara, a century of education and innovation".

Figure 12. The philatelic series "UPT, a century of education and innovation"

- UPT experience in the UNESCO guide on open education (25 May 2020) – Chapter on Romania written by Diana Andone, Carmen Holotescu and Gabriela Grosseck https://iite.unesco.org/news/iite-inruled-new-guidance-on-open-educational-practices-during-covid-19/

Figure 13. UNESCO Guide: Guidance on Open Educational Practices during School Closures

- A glass of champagne online, at 40 years after graduating from the Faculty of Mechanical Engineering (23 May 2020)
- The "Coriolan Drăgulescu" Chemistry Contest continues - 11th edition (29 May 2020)
- The final stage of the "Hans Fackelmann" architecture competition (30 May 2020)
- The final of the EcoSmarTim contest, on the World Environment Day (5 June 2020)
- Youth and food safety – PolySafeFood at its first edition (12 June 2020)
- Online summer school at the Faculty of Mechanical Engineering, in cooperation with the Polytechnic Institute in Grenoble, France (8-19 July 2020)
- 29th Annual International Conference EDEN 2020 "Human and artificial intelligence for the society of the future", organised virtually by the Centre for e-Learning in UPT (22-24 June 2020) – 90 scientific papers, 10 workshops, 8 keynote speakers and social events, details and recordings at https://www.eden-online.org/2020_timisoara/

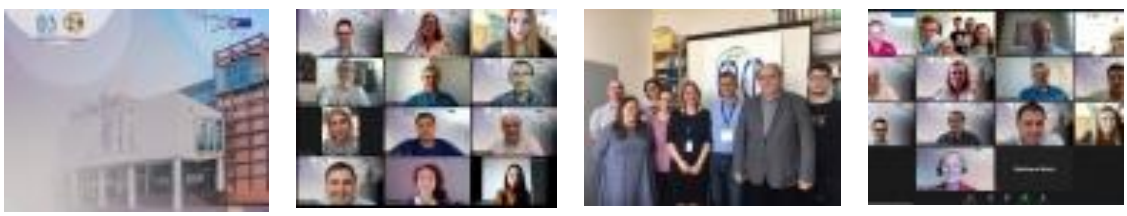

Figure 14. 26th EDEN Annual Conference, virtually in Timisoara

- Admission exam at UPT, in maximum safety conditions (18-20 July 2020)
- UPT participation in the INVENTICA 2020 International Salon with 27 projects (29-31 July 2020)
- 2020 Graduates Generation of UPT, ceremony at Stiinta Stadium, with streaming online (20 September 2020)

Figure 15. 2020 Graduation Ceremony

- Traian Vuia Invention Salon (13-15 October 2020) – 34 medals, 8 special awards and 11 diplomas of excellence
- Career Days, online at UPT (28-29 October 2020)
- UPT Centenary Anniversary, for now only "in the family" (11 November 2020)

Figure 16. UPT Centenary

- Prof. Hermann Rohling, Doctor Honoris Causa of the Politehnica University of Timișoara (12 November 2020)
- Virtual opening of the exhibition: "Spotlight Heritage", part of the cultural program Timisoara European Capital of Culture 2021 (13 November 2020) – details at https://spotlight-timisoara.eu/

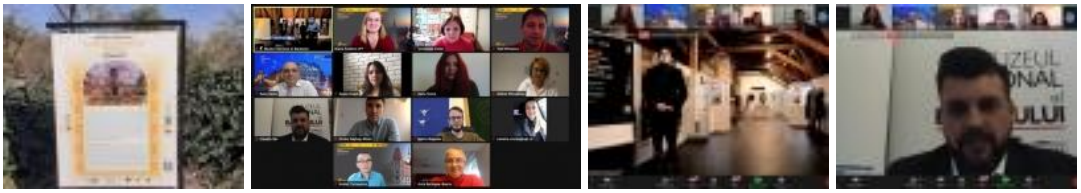

Figure 17. Spotlight Heritage exhibition virtual opening

- Prof. Daniela Rus, from MIT, Honorary Professor at the Politehnica University of Timișoara (18 November 2020)
- The Faculty of Engineering in Hunedoara celebrated 50 years since its establishment (25 November 2020)
- UPT launches the Interactive Digital Museum of Information Science and Technology (5 December 2020) – details at https://muzeu.upt.ro/
- 50 years of Architecture in Timisoara (11 December 2020)
- Politehnica University of Timisoara awarded excellence (15 December 2020) – CeL receives the award “Excellence in Digitalization”

Figure 18. Excellence Awards 2020

- 50 years of Electronics and Telecommunications in Timisoara (16 December 2020)
- Winter School „Trends on Additive Manufacturing for Engineering Applications" (24-28 January 2021)
- Women with a career in science celebrated in UPT, on the International Day of Girls and Women in STEM (11 February 2021)
- Professor and academician Toma Dordea, honored on the 100th anniversary of his birth (11 February 2021)

1.5 Conclusions

The year 2020 will remain for quite a long period of time as a very disrupting year, not only for the educational system, but for the whole society. The pandemic crisis forced everybody to move online with many sectors: education, culture, administration and many businesses.

It was a difficult year and many people and businesses suffered a lot. Many restrictions have been imposed by the crisis. But, as already said in different situations, limitations and restrictions are stimulating creativity. Many businesses reinvented themselves and found not only ways to survive, but sometimes even to grow.

At a broader level, digitalization of the whole society has been pushed forward and made in about six months progresses that wouldn't have been possible otherwise in less than a couple of years. And this is certainly a positive result!

From the point of view of the education, the challenges of the crisis have raised some conclusions:

- There is still a gap between urban and rural areas in terms of IT and communication infrastructure
- There is a lack of digital skills to many teaching staff, that are not able to work comfortable with the new digital platforms and equipment
- Students are more adapted to the use of new technologies in education
- There is still a need of increasing the security and authentication on different IT applications able to allow safe transfer of knowledge and safe student evaluation
- Generally, the preuniversity education is not prepared for online teaching
- There are reasonable concerns regarding the role of the teacher as characters formator if he acts online
- Not all universities are prepared for online teaching
- Many universities are ready to accept blended learning as a solution for the future
- There is a need of further developing Virtual and Augmented Reality, as well as Artificial Intelligence tools in education
- There are still many legislative obstacles for adopting blended learning as a solution

Next period will certainly know many debates o the future of education and especially of the Universities of the Future. We are sure that some of the trends established during the crisis could not be ignored, and they will bring some serious changes in our educational system.

2 The Trajectory of Globalization During the Covid-19 Pandemic

Steven ALTMANN
Phillip BASTIAN
New York University Stern School of Business, USA[4]

The Coronavirus pandemic that swept the world in 2020 has put greater distance between nations, firms, and individuals. Social distancing has been essential for public health. But we have also witnessed how a pandemic can exacerbate geopolitical and societal fault lines, compounding the challenges of controlling the virus and keeping economies functioning.

The passage of time creates another kind of distance, enabling us to start putting this tumultuous year into perspective. As this report shows, globalization did not collapse in 2020, but the pandemic did transform—at least temporarily—how countries connect. Travel plummeted, but digital flows surged. International trade and investment took strong hits at the beginning of the pandemic and then started to recover.

Our hope is that the Covid-19 jolt to globalization will, with due reflection, focus minds on how to strengthen our connections to foster a healthier, more prosperous, and more resilient future. The pandemic has demonstrated both the danger of a world where critical linkages break down and the urgent need for more effective cooperation in the face of global challenges.

The world is in crisis again, with geopolitical tensions compounding the toll of the worst pandemic in a century. Borders have been closed to curb the spread of Covid-19, hitting the pause button on global travel and disrupting global supply chains. Some have questioned whether globalization will survive the crisis. The evidence in this report shows that globalization is far from dead, with most international flows proving more resilient in 2020 than many expected.

The DHL Global Connectedness Index measures globalization based on international flows of trade, capital, information, and people. Predictably, people flows have suffered an unprecedented collapse in 2020. All other types of flows have held up surprisingly well, though. Trade and capital flows plunged at the onset of the pandemic but have already started to recover. And digital information flows have surged as people and companies have rushed to stay connected online.

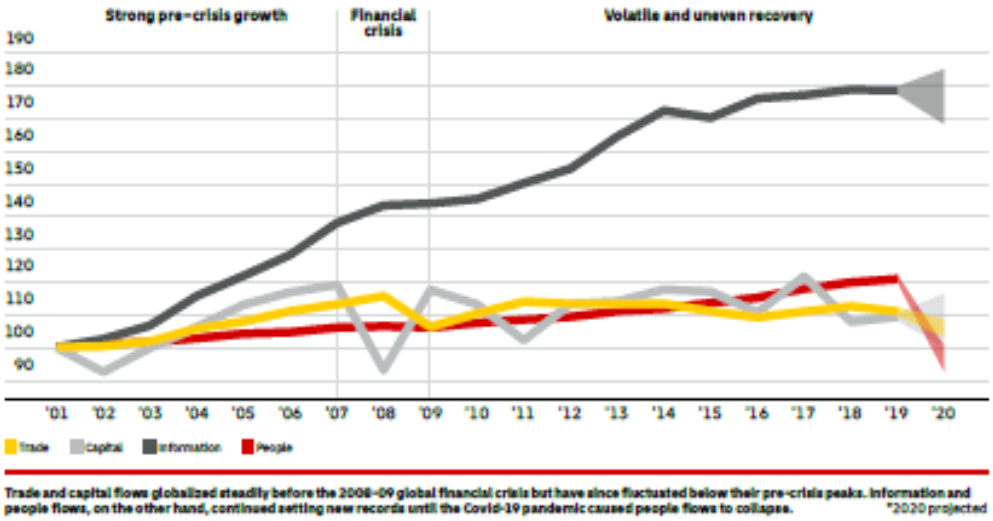

Figure 1: Four pillars of global connectedness, 2001 – 2020

[4] Excerpted from Steven A. Altman and Phillip Bastian, "DHL Global Connectedness Index 2020: The State of Globalization in a Distancing World," Deutsche Post DHL Group, 2020.

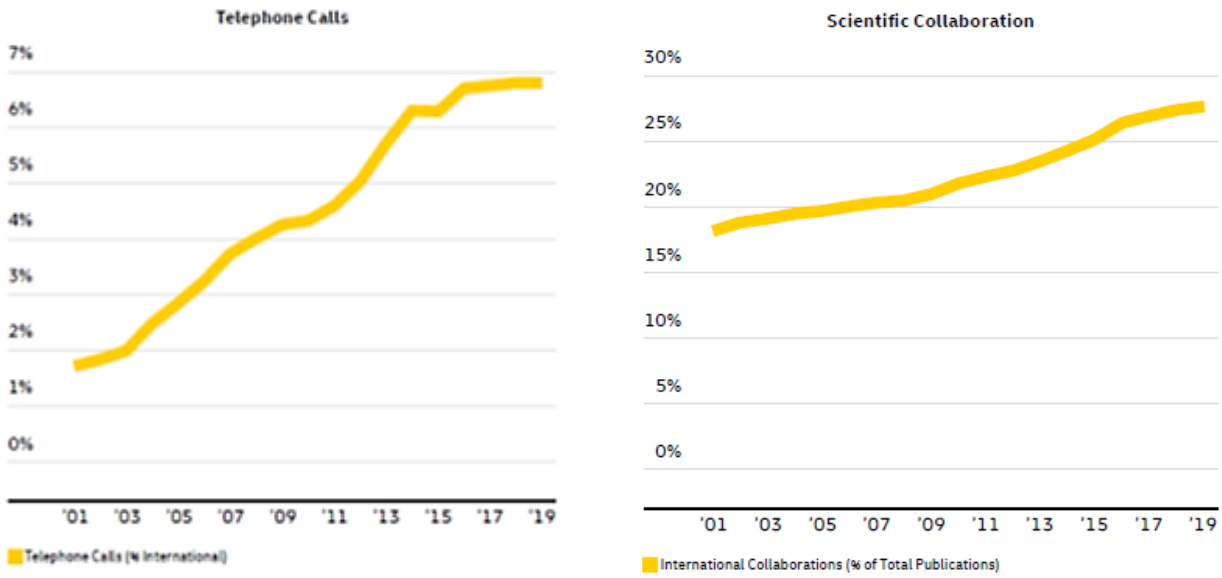

Figure 2: International telephone calls and collaborations, 2001 – 2019

All in all, the DHL Global Connectedness Index is set to decline in 2020, but it is unlikely to fall below where it stood during the 2008-09 global financial crisis, based on our analysis of preliminary data and forecasts. Covid-19 has disrupted business and life around the world, but it has not severed the fundamental links that connect us across national borders. Our report shows a world of people, companies, and countries still prepared to join up and do business with each other. That's good news because a more connected world still offers the best prospects to restore health and prosperity.

The rebound of world trade after a sharp contraction in March and April has been particularly striking. By August, trade in goods had already recovered more than three-quarters of its drop and stood just 3-4% below its pre-pandemic level.[5] As a result, the proportion of real global output crossing national borders will only decline modestly in 2020.

Moreover, despite export bans implemented at the height of the pandemic, trade provided a vital lifeline for economies and healthcare systems. Global exports of personal protective equipment (PPE), for example, soared 92% during the second quarter of 2020[6].

Capital flows have been hit harder than trade. Foreign direct investment (FDI) flows, which reflect companies buying, building, or reinvesting in operations abroad, could fall 30 – 40% in 2020.[7] However, such a decline would not be unprecedented. FDI fell 43% in 2001 and 35% from 2007 to 2009. Moreover, as FDI flows are set to remain positive, they continue to add to rather than subtract from global business activity. And while the crisis prompted record withdrawals of portfolio equity from emerging markets, those flows stabilized after governments and central banks stepped in to support economies and financial markets.

Before the pandemic, there were signs of a slowdown in the globalization of information flows. But their growth accelerated as the pandemic sent work, play, and education online. International internet traffic soared 48% from mid-2019 to mid-2020,[8] and international telephone call minutes rose 20% in March versus the same month last year.[9] However, as

[5] CPB World Trade Monitor, October 2020
[6] World Trade Organization (WTO) Press Release, "Trade shows signs of rebound from COVID-19, recovery still uncertain," October 6, 2020.
[7] UNCTAD, World Investment Report 2020.
[8] Paul Brodsky, "Internet Traffic and Capacity in Covid-Adjusted Terms," Telegeography Blog, August 27, 2020.
[9] "Lockdowns and quarantines cause a 20% spike in international voice traffic, according to I3Forum Insights," i3 Forum, May 28, 2020.

domestic data and calls also increased, we cannot say yet whether these types of activity have become more—or less—global. Meanwhile, global collaboration in scientific research—as measured by international co-authorship of articles in scholarly journals—continued a steady upward trend in 2020. While trade, capital, and information flows all had positive roles to play in the pandemic response, personal mobility was restricted to curb transmission of the virus, causing this year's unprecedented decline in people flows. The number of people traveling to foreign countries is on track to fall 70% in 2020. International tourism is not likely to return to its prepandemic level before 2023.[10] Additionally, millions of migrant workers have returned to their origin countries, and many students have deferred or cancelled plans to study abroad.

Looking beyond the turbulence of the closing year, the measures in this report indicate that the world is less globalized in absolute terms than many presume. Surveys consistently show that people believe international flows are larger than they really are, and that such misperceptions exacerbate fears about globalization.[11] In fact, only a small share of global flows crosses borders. Roughly 21%[12] of global economic output is exported, foreign direct investment flows equal 7% of global gross fixed capital formation, about 7% of phone call minutes (including calls over the internet) are international, and only 3.5% of people live outside the countries where they were born.

Distance and cross-country differences continue to constrain international flows. Most flows take place within rather than between major world regions, and an increasingly multipolar world with fraying relations between the world's largest economies could lead to even more regionalization.

For now, though, actual data do not show strong evidence of the world economy fracturing along regional lines. While US-China decoupling has accelerated over the past year, the world's two largest economies are still deeply intertwined. Similarly, the share of the UK's trade taking place with the European Union has remained fairly steady since the Brexit referendum.[13]

This edition of the DHL Global Connectedness Index has employed more than 3.5 million data points to track the globalization of 169 countries over the period from 2001 to 2019. The most recent data show that the Netherlands, Singapore, Belgium, the United Arab Emirates, Ireland, Switzerland, Luxembourg, the United Kingdom, Denmark, and Malta lead the ranking of the world's most globally connected countries. Eight of the top 10 countries are in Europe, the world's most globally connected region. Europe tops the index for trade and people flows, while North America ranks second overall and leads in terms of capital and information flows.

The DHL Global Connectedness Index measures each country's global connectedness based both on the size of its international flows relative to the size of its domestic economy (what we call 'depth') and the extent to which ist international flows are distributed globally or more narrowly focused (what we call 'breadth'). The depth leaders, i.e. the economies with the highest proportions of flows crossing national borders, are Singapore, Hong Kong SAR (China), Belgium, the Netherlands, and Estonia. The breadth champions, i.e. the countries with the most global flow patterns, are the United Kingdom, the United States, the Netherlands, Israel, and the Republic of Korea.

Three country characteristics—GDP per capita, population, and distance from foreign markets—explain 73% of the variation across countries' levels of global connectedness.

Since policymakers cannot directly control these factors, we also rank countries according to how much they "punch above their weight" in terms of their global linkages. In other words, we

[10] United Nations World *Tourism Organization*, World Tourism Barometer, October 2020.
[11] Pankaj Ghemawat, The New Global Road Map: Enduring Strategies for Turbulent Times, Harvard Business Review Press, 2018.
[12] Gross exports of goods and services equaled 29% of world GDP in 2019, but adjusting for exports that cross national borders more than once in multicountry supply chains brings the proportion of value-added that is exported down to about 21%.
[13] Matthew Ward, "Statistics on UK-EU Trade," House of Commons Library Briefing Paper Number 7581, June 17, 2020.

analyze the extent to which countries' connectedness exceeds or falls short of expectations based on their economic strength, size and location. The top scorers in this respect are Cambodia, Singapore, Viet Nam, Malaysia, and the Netherlands. Regional supply chains help explain why four of the top five outperformers are in Southeast Asia.

In these uncertain times, policymakers and business leaders can use the measures in this report to navigate a very turbulent global environment. Depth measures help identify which countries are most exposed to threats to specific types of flows, and breadth data can help determine whether that exposure is global or more narrowly focused. This year, with the world economy in its deepest recession in decades, research on the relationship between globalization and growth is especially salient. Most studies indicate that economies that are more open to international flows tend to grow faster.[14] Populist backlashes against globalization in many countries, however, mean that calls for deeper global connectedness to accelerate the world's recovery from Covid-19 are bound to encounter opposition. Nonetheless, recent public opinion polls suggest that the pandemic has not, at least thus far, prompted a new wave of opposition to globalization. Instead, there are signs of a yearning in various countries for more effective international cooperation.[15] Moreover, major new trade agreements, including the Regional Comprehensive Economic Partnership (RCEP) in Asia-Pacific, signal continued government support for market integration in much of the world.

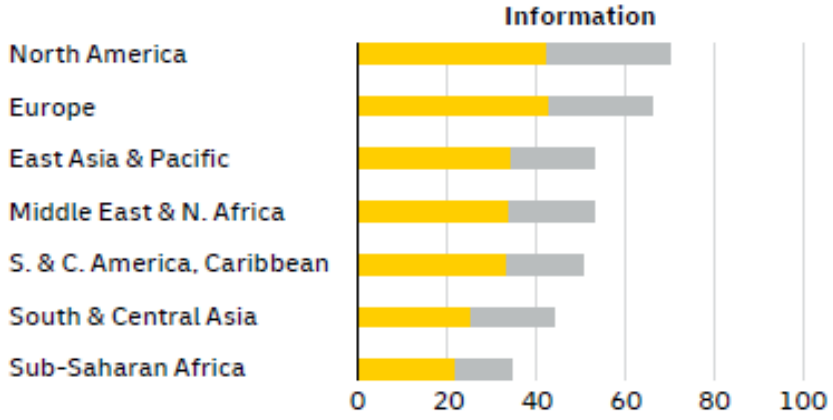

Figure 3: Average infornation pillar by region, 2019

The Covid-19 pandemic has not ended globalization. But rising geopolitical tensions pose a real threat to a connected world. All four categories of flows covered in our report face strong resistance. Trade conflicts continue to fester, barriers to foreign corporate takeovers are rising, data localization laws have proliferated, and immigration is still a divisive issue in many countries.

As debates about the merits of international openness continue, sound business and public policy decisions depend on accurate measures of globalization. The DHL Global Connectedness Index aims to be a go-to resource for this purpose. This report tracks global trends and ranks countries and regions on their levels of global connectedness.

The full report can be downloaded here: https://www.dhl.com/gci

[14] For discussion of the relationship between scores on the DHL Global Connectedness Index and economic growth, refer to Chapter 4 of the DHL Global Connectedness Index 2012 report. Additional evidence using other measures of globalization is reviewed in Niklas Potrafke, "The Evidence on Globalisation," *The World Economy*, 2015.

[15] See, for example, James Bell, Jacob Poushter, Moira Fagan, Nicholas Kent, and J.J. Moncus, "International Cooperation Welcomed Across 14 Advanced Economies," Pew Research Center, September 21, 2020.

3 What Do We Need to Know in the Face of Pandemic?

Anna BIJAK, Magdalena HALAPACZ
University of Silesia in Katowice, Poland

A summary of the extensive research carried out in Poland by a team of specialists together with significant remarks which are a result of a survey carried out in November-December 2020 in I Liceum Ogólnokształcące im Waleriana Łukasińskiego w Dąbrowie Górniczej

"Necessity is the mother of invention"

is an English-language proverb. It means, roughly, that the primary driving force for most new inventions is a need.

Whether we, as human species, have been in need and what kind of need it is and even more, what is the primary drive for it, will be under a close investigation for many years from now on. Still, after a year of abrupt shift in the lifestyle of majority of Earth's population, we are seeking the answer to the question "What lessons do we learn from Covid-19?" with the specific reference to education.

A vast research has been being carried out in Poland by a team of specialists including Professor Grzegorz Ptaszek, Maciej Dębski PhD in Social Sciences, Professor Jacek Pyżalski, social communication expert Magdalena Bigaj and Grzegoż Stunża PhD in Social Sciences, which was published online www.zdalnenauczanie.org, and which will serve as the basic material for the first part of the overview of the global pandemic impact on education in Poland. The provided scientific information will be completed by the coverage of the immediate outcome of the survey carried out in our high school I Liceum Ogólnokształcące im. Waleriana Łukasińskiego w Dąbrowie Górniczej, Poland in December 2020.

Importantly, not only did students and teachers participate in this extensive study but also parents, who in Poland constitute a significant part of educational process. The fields covered by the close investigation included:

1. the approach to distant learning of all the parties involved in the process
2. the change of the immediate use of ICT tools and Internet resources during distant teaching- learning process and comparison to their earlier engagement in education.
3. what kind of effort, whether cognitive, emotional, and even physical was involved in this very new situation.
4. what kind of competences were most necessary, whether technological only or organizational and both didactic and methodological, as well as social.
5. what emotional states accompanied all the participants
6. what kind of support was expected to be received and given
7. what types of solutions were sought and furthermore, provided

3.1 General mental and physical condition

According to the survey (www.zdalenauczanie.org) there has been an obvious rise in the time scope of the ICT usage and the range expanded from average 1 hour to 6 and more during the weekdays and at the weekend in the case of both students and teachers. This rise is considerable, and clearly visible if we compare the percentage. Before the closure of school facilities only about 6% of the respondents used to spend 6 hours and more before the screens of available devices and after closure it is 49,5% students and 51% teachers.

Obviously, this shift has simultaneously influenced the lifestyle of all the respondents resulting in chronic tiredness and information overload. Teachers point out the fact that they are in constant readiness to connect and are exhausted by the amount of time they spend sitting in front of the computer screen – 85% of teachers. Students emphasize the fact of suffering from the lack of sufficient time to sleep. The phenomenon of spending nights with the ICT tools has become a necessity within the group of teachers, which was characteristic for the group of students before the closure.

This in turn corresponds to another consequence shown by the scientists – the fact that almost half of all the respondents admit they feel much worse both mentally and physically than before the pandemic. What is more, we can read in the survey, that 1/3 of students declare they permanently feel sadness, loneliness, and depression.

The authors also point out an extraordinarily strong need of the respondents to be inaccessible for anybody, which the necessity was the highest within the group of teachers – 59,3% whereas students 34,3% and parents 24,6%.

Concluding, the given data clearly show that "the time of distant education is a tough time, not only because of a new classroom environment formula, but also because of the digital weariness" (www.zdalnenauczanie.org, www.zdalnenauczanie.org "Raport" Badanie_ zdalnenauczanie_org_prezentacja.pdf p.13), to which the lack of direct contact with peers greatly contributes.

3.2 SOLUTION

To find a solution the researchers refer back to the notion of digital hygiene, as the situation in which one maintains a balance between the online and offline activity.

In order to improve the situation, it is necessary to start honestly a discussion of the negative consequences involved with the abuse of new technologies. Behavior an adequate level of digital hygiene - in particular, in the period of distance education - is the key to improvement concentration, improvement of learning results and quality itself teaching. One of the necessary changes is working out clear guidelines for the time spent in front of the screen by specific age groups of students, and then adapting the tools used to them in remote learning, the essence of which should not entirely be based on constant contact between the student and the teacher over real time via the internet. Inclusion of traditional (not digital) teaching methods in the process of knowledge transfer, putting more emphasis on personal relationships, as well as educating students, parents, and teachers in terms of conscious rest from the screen and the Internet, which will allow to maintain a balance between the online and offline world. Selected results presented in this publication of our research, despite the ongoing in-depth analyzes of all the collected data are already clearly pointing to the fact that there is no responsible implementation of distance learning without taking digital hygiene into account, on maintaining of which not only does teaching quality depend, but most of all the students,' parents,' and teachers' mental and physical well-being. Skipping this one particular issue and focusing only on issues related to remote education tools will expose students, parents, and teachers to deepen the social trauma with which society still must face as the result to the long-term exposure to pandemic stress and social isolation (Augustyniak et al., 2020). (www.zdalnenauczanie.org "Raport" Badanie_zdalnenauczanie_org_prezentacja.pdf, pp13-14).

Summing up, the aforementioned study results point to the fact that we are still trying to map or imitate the model of offline or real-life educational environment onto the distant one with all the rules of social direct contact. Communication online, which has become known as intermediate communication (Polish: komunikacja zapośredniczona) because of the intermediary involvement is governed by different set of rules. Suddenly, we are deprived of body language in its full spectrum, educational context – school facility, rhythm of the day with its diversity and the physical proximity of those with whom we constitute a group of familiar

hunter-gatherers, as current-day neuropsychologist claim it is the undeniable inheritance from our ancestors, and should be taken into consideration during educational processes (e.g. https://www.psychologytoday.com/us/blog/the-athletes-way/201706/hunter-gatherer-ancestry-may-be-why-our-brains-need-exercise).

3.3 Learning How to Teach

As the report says “Effective distance education involves moving away from the traditional model of education towards the model constructivist, where the student himself produces knowledge on the basis of experiences and own individual activity or group and the teacher guides their students’ learning processes” (www.zdalnenauczanie.org p.16).

But this is only “mere” methodology. Sudden suspension of real-life education proves the fact that almost half of the teachers had to immediately acquire ICT skills, which they had not learnt so far. Additionally, lack of necessary equipment involving software and hardware as well as proper devices was a huge hindrance in fluent change from offline to online classes. As other studies show (Centrum Cyfrowe trans Digital Center, 2020) Pland digitalization had not been so advanced before the pandemic.

Referring to methodology, although the percentage of teachers involving group work, and quiz-based lessons rose. This result is believed to be still too little (about 4%) to declare that teachers use activating methods. Teachers has been using didactic instructional methods with the help of films, presentations, and blog publications.

Unfortunately, 50% of responding students evaluate online lessons as less interesting, probably resulting from the fact that a substantial number of teachers focused on simply sending material to be realized individually without any common work involved in real time with the use of digital tools.

3.4 What do we learn from it?

An extensive group of Teachers in Poland do not feel well prepared for the distant education. Furthermore, “It is therefore clear that in teacher training and preparation students to work in the teaching profession more emphasis should be laid on showing the relationship between digital tools and online resources and specific media, information and digital competences that can be used with them to shape, develop, or strengthen students.”

What do we miss from the before-pandemic period and how we should read these signals?

RELATIONSHIP

Real-life Relationship– described as “normal” versus “virtual” by all the respondents is the indispensable need we all have. We miss our daily discussion challenges, even arguments, simple observation, direct and real-life reactions to another person’s behavior.

Separating private life from professional life – blurring the boundaries between work and private life, which nowadays has been diminished in its quality.

According to the research there are a lot of side effects we were not expecting to occur, such as exceptional difficulties in work with disabled children, lack of workspace and home, lack of necessary electronic devices, which entails engagement of one’s private financial resources for work necessities, which in turn results in poor family relationships. (www.zdalnenauczanie.org p24).

Moreover, daily routines so much important for the healthy psyche and physique are disturbed. We do not care about the outfit; we tend to lose motivation to care about our general looks because we simply do not have any motivation any trigger to put us in motion to act.

More importantly, what the research has shown is the fact that teachers worry about the difficulty to react promptly enough when there is need to supply help.

The word cloud presented by the authors of the research below shows how frequently a given phrase was mentioned while answering the question what we miss most. It is in Polish but the largest inscription says direct contact, people, students, friends, work, children

Figure 1: Word cloud of most missing words in Polish: direct contact, people, students, friends, work, children.

IMMEDIATE reference TO THE INDIVIDUAL STUDY CARRIED OUT IN OUR SCHOOL I Liceum Ogólnokształcące im Waleriana Łukasińskiego w Dąbrowie Górniczej.

Many issues mentioned in the first part of the article were confirmed in the individual survey carried in December 2020 in our school. The survey focused also on general approach to strong and weak points. We can read the following outcomes from the results:

3.5 Troubleshooting

Almost all of the surveyed teachers indicated the lack of direct contact with students as a difficulty. The vast majority of them indicate the lack of certainty whether students perform tasks on their own, and a lot of time spent at the computer and related problems with the spine and eyesight. For more than half of the teachers, the problem is the time-consuming distance learning process, the realization of lessons at home and the lack of personal contact, almost half of responding teachers do not believe in the effectiveness of such teaching. Less than half of the respondents believe that the problem is computer freezing, overloading servers. Also, less than half indicate the students' hardware deficiencies, problems with the Internet connection and the ability to use computer programs. Three people point to their hardware deficiencies and one to the lack of tools for remote work. Nobody sees the problem with online safety, fear of information leakage or hacker attack.

3.6 Strengths

STRENGTHS OF REMOTE LEARNING • Most of the school community positively evaluates the level of remote school work • Almost all students and parents know about the possibility of using equipment on the school premises if necessary • The vast majority of students, parents and teachers do not report problems with the equipment and the Internet • Parents do well perceive the level of distance learning in our school. They have good contact with teachers. • All students have the option of connecting from home for lessons. They know they can use

computer equipment at school. • In the case of difficulties with increasing stress, students use the help of a psychologist and a pedagogue. • Teachers use a variety of methods in their work.

3.7 Weaknesses

WEAKNESSES OF REMOTE LEARNING • Too much time spent in front of the computer by both students and teachers • Lack of direct contact student-student, student-teacher, teacher-teacher, teacher-parents • No possibility to verify students' independent work • Excessive load of young people with homework • Too few lessons based on interaction - conversations, discussions, group work, problem solving • Students' problems with concentration and motivation to work • Many students use Smartphones to connect to lessons. This is certainly a big problem when editing longer statements. • The students pointed to the high workload that they also do on the phone or computer. • Almost half of the surveyed parents noticed a decrease in their child's mental condition. • Many teachers pointed to the problem of accurate and reliable assessment in distance learning.

3.8 Tips for improvements

CONCLUSIONS AND RECOMMENDATIONS • Do not submit papers for return at the weekend. • Limit the questioning in front of the camera as very stressful by the students. matura exam • Shorten the lessons in 3rd grade to 30 minutes, e.g., 2nd language, supplementary subjects, religion / ethics. • Reduce the volume of homework in basic subjects, especially in 4-year high school. • Encourage young people to discuss in the lesson. Don't ask, just talk to them • Don't make excessive use of online movies. • Use worksheets more often, do small projects. • If possible, leave notes in files for students • Individualize the work with the student, adapt it to the needs and possibilities of everyone with special educational needs, who are in special life situations through online contacts • Develop relationships through frequent contact and online conversations, remembering that students need direct contact with both peers and teachers, as shown by the surveys conducted both among students and parents • Contact students who irregularly log in to lessons in order to explain the reasons (students indicated in the surveys a lack of motivation for remote teaching) • Teachers should consult the scope and number of assignments to avoid overloading students with homework. • In class, aim for direct, visual contact with students, at least to the extent specified • Continue teacher improvement in remote teaching and assessment methods • Consult between teachers about the scope and number of assignments given to avoid overloading students with homework.

3.9 General overview

Since the beginning of pandemic, everybody hopes to get back to the previous state of education. We certainly have learned that direct relationships and contact with others is the major drive which gives motivation and triggers our readiness for any kind of action.

Still there are minor issues that should be worrying for the authorities and governments. There is a group of students coming from disadvantaged areas and abusive families. They noticeably disappear from the system of distant education in Poland. Mostly, these are primary school children.

Another issue is the use of cameras in Polish distant learning. Polish youth is claimed to show little acceptance of their own appearance and the situation in which they have to face their own image causes extremally traumatic experience. This in turn, distracts them to such an extent that they are unwilling to turn the cameras on even for a short period of time.

Taking all aspects into consideration, distant learning definitely showed us a lot about the value of learning in school facilities. It is a challenging time for all the nations and the needs

and approaches will differ with respect to culture, school curriculum, national restrictions with connection to pandemic. There is one factor that will remain. We, as humans, derive from our ancestors the need to gather, to be together and this very togetherness should be protected so that we overcome the adversities of life.

4 What Lessons are we Learning from COVID-19?

Eva EGRON-POLAK
Former Secretary General IAU, past Council Member, MCO, Canada

4.1 Introduction

The months that followed the outbreak of the COVID 19 pandemic, after the immediate urgent actions and policies were into place, were a highly fertile ground for reflection, scenario exploration and future imagining. The higher education sector was not left outside the scope of this process and webinars, blogs and papers began to be available with regular frequency. Each one was organized or sponsored by an institution or organization which wished to focus more or less on a particular aspect of higher education and research.

The following paper is based on a presentation I was invited to give by the Magna Charta Observatory, a global organization whose primary focus is the promotion and protection of fundamental university values such as academic freedom, institutional autonomy and increasingly, the responsibility of higher education towards society at large, locally and globally. My assignment for the presentation was to look at the broader picture and to reflect on the lessons we were learning from the pandemic. This makes the presentation highly time-sensitive (September 2020), as we continue to learn from a situation that continues to evolve around the globe.

4.2 A difficult time for learning

During this unprecedented health crisis, whose impact was felt almost immediately around the world, learning lessons has been difficult. The uncertainty that the pandemic brough affected individuals, communities, nations and institutions. At each level, all of us – decision makers, shopkeepers, academics, and students had to learn daily how to act and interact with others in ways that were both safe and allowed by the rules being implemented.

The multiplicity, not to say cacophony, of views and opinions about what to do, what solutions or responses to adopt was a constant with impact analysis and predictions for the future being disseminated in the traditional and social media alike. As these were often contradictory, at best partial and at times raised false hopes in the population, the level of uncertainty and anxiety was also a factor to contend with, making it difficult to draw lessons from what was taking place.

In this context, it is important to underline that my comments are personal, both optimistic and pessimistic, both hopeful and realistic rather than naïve.

4.3 Seeking a new normal

Though we are far from finding a ‘new normal’, which seems a frequent theme of discussion and pondering, we can observe and note many trends. The pandemic is shaking up our traditional schemas of dichotomies such as those between rich countries and poor countries - this emergency has been mishandled with disastrous consequences by the wealthiest nation in the world. It blurs the line between rich and poor people with infections and death, at least initially, appearing to disregarding economic status. In higher education, there were impacts felt and dilemmas to resolve in both student sending and student hosting nations.

In general, the pandemic raised questions about the established order of things, made many re-consider what is essential, what is valuable in society and whom we esteem and admire.

The respect for health care workers, bus and metro drivers as well as cashiers in our grocery store became something that was perhaps unprecedented and unexpected.

The responses and reactions to the pandemic differ on many levels. Important parameters in this regard are the health and health infrastructure conditions at the beginning. The presence and widespread use of technology in everyday life was also a determining factor in the response put in place and its subsequent effectiveness, especially in maintaining many operations of the socio-economic sectors.

What became quite striking were the ways in which value systems and various cultural norms and habits in different countries and among different groups came to play an important role in the reactions to the emergency and to the rules and regulations that were imposed. The initial shut down of Wuhan was at first deemed impossible and unimaginable to implement in Western nations where civil obedience to imposed rules is often contested and circumvented. Yet, the impossible did occur though became hotly debated and criticized loudly almost immediately in many countries.

4.4 COVID's Impact on Higher Education

Change in HE, as a result of the epidemic is inevitable and, in some respects, it will likely be long-lasting. However. Just as the impact has been varied, changes will not be the same everywhere, nor in all aspects of the higher education mission – teaching/learning, research, community outreach. The long-term impact on higher education values is an area that is of utmost interest, and is perhaps the least predictable.

In some respects, the pandemic served to blur many boundaries, including those between higher education and society. It served to lift the cover on huge socio-economic disparities within countries and major inequalities in education. The need to shift to online learning showed that capacities to do so successfully were uneven and dictated mainly by access to and readiness for use of technology. Inequities were exacerbated and revealed in society as well as in higher education. Other differences in approaches and understanding of issues such as individual rights and responsibilities, namely the right to privacy, collective vs individual rights and freedoms, the notion of personal space, respect of rules, etc. became important dimensions in the effectiveness of responses to the health crisis both in higher education and in society more generally.

In the speed of the spread of the epidemic as well as in its treatment exposed the strengths and weaknesses of different political and economic regimes and underlined in stark ways the risks and limits of economic and political globalization and its related interconnectedness of our lives. Very quickly, the concerns with local developments undermined trust in multilateral and regional institutions and even in bilateral relations when facing a threat. Borders closed and national policies and strategies prevailed above all others.

Such major upheavals in economic, political, cultural scientific relations impact on and cannot be ignored by the Higher Education and academic institutions cannot ignore these critical issues at home or in international cooperation.

4.5 Current realities for and in higher education

The rapid spread and the danger posed by the COVID 19 pandemic brought to light humanity's vulnerability despite the progress of modern science & technology. In many ways, it also showed the existence of tremendous resourcefulness and capacity for adjustment as almost overnight education was provided online to multitudes of higher education students. Communities also responded rapidly and with a strong sense of solidarity to cater to the most vulnerable in their midst.

Though all over the world science and research were at the center of the analysis of what was taking place and expected to bring answers and solutions to the crisis, there were leaders who displayed a undeniable and deep mistrust and disdain in scientific expertise and undermined the public's confidence in science. The complexity and unpredictability of the virus meant that there were, especially at the beginning of the crisis, no hard-fast truths and consensus among scientists was not always reached. This relatively frequent and acceptable state of affairs among members of the scientific community, where dialogue and disagreement offer paths to new discoveries was at times used to discredit scientific advice in several countries.

As international academic mobility of both faculty and students came to a sudden and complete stop, the high price of this aspect of internationalization, with its huge ecological footprint came under more scrutiny and questioning. The beneficial and positive aspects of the interconnectivity of higher education internationally ceased to be taken for granted and the discussion of various and necessary alternatives became far more frequent and taken more seriously.

However, more than any other impact and concern brought forth by the epidemic, it was the risks of exclusion of vulnerable groups. This was the case in terms of society at large, but also in the higher education sector, where many calls were issued to ensure that students with disabilities, international students, students without access to broad bandwidth or to computers to pursue their studies, not be forgotten as alternatives to face-to-face teaching were being put in place.

The relative success with which the transition to online teaching, management and communications in higher education took place in early and mid-2020, demonstrated how essential it was to have crisis management strategies in place and how such basic preparedness for crisis was in place in numerous universities around the globe.

The pandemic brought home the reality that universities and the higher education sector are deeply rooted locally – subject to local/national policies - despite their commitment to be global and/or international institutions. The crisis showed that both in the positive and in the negative sense, higher education institutions are essential for social and economic reasons locally. Their closing brought smaller, predominantly university towns to a near standstill socially and economically; their re-opening brought about the fear of and accelerated spread of the virus.

As every other sector, higher education has felt the economic impact of the pandemic and many universities have seen their bud gets decreased, even as the push for research to find a viable and effective vaccine has seen funds routed to the life and medical sciences. Universities that are highly dependent on international student fee revenues, have seen their finances crumble in several parts of the world. The systemic surplus capacity that has been built up to cater to international students may not be needed for several months if not years and constitutes a serious financial drain. And, of course, students who have paid high fees to study abroad feel unjustly treated when their classes move online and their international experience is reduced to an online link across the globe.

As the first wave of the pandemic was reaching its highest peak, uncertainties about re-opening raised even more difficult issues of the long-term impact on learning, socialization, mental health and international academic mobility. Working exclusively online increased isolation, levels of anxiety and stress as well as burnout, and these were being experienced by many among the students, staff and faculty members, requiring that universities pay attention to health risks that often needed to be treated, again, online.

In a nutshell, higher education leaders and their colleagues have a difficult balancing act on their hands, as depicted in the graphic below.

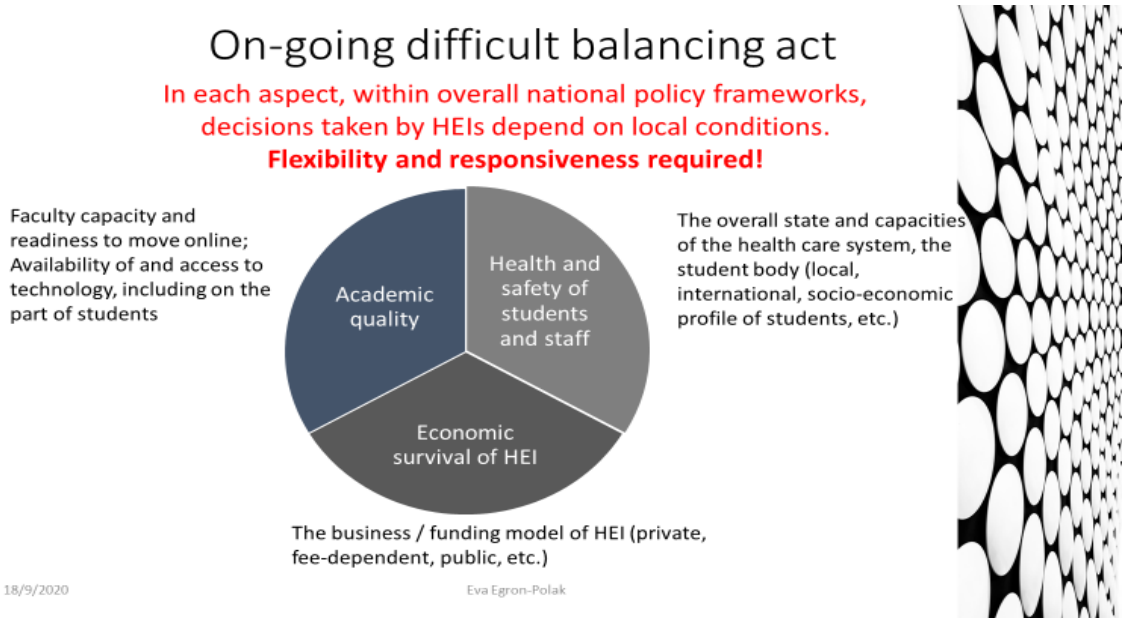

Figure 1: On-going difficult balancing act.

4.6 Importance of values revealed

These difficult months in 2020 also served to bring forth tremendous acts of kindness and solidarity expressed by citizens around the world first and foremost towards the health care providers, towards those who continued to work so that access to food and first necessities remained possible, to those who kept our daily lives as close to normal as possible. In urban centres and the countryside, the elderly living alone were catered to by their neighbors, people came together to share art and culture online, strangers became virtual friends and social media served to connect communities often for the benefit of the needy.

Values of solidarity, empathy and partnership were on everyone's lips, including among the leadership and faculty in higher education institutions who were deeply committed to ensuring that learners would not suffer unduly due to the health emergency.

Very quickly it became apparent how central transparency and honesty, on the part of decision-makers and those in charge, were to the trust in decisions made, to the acceptance of proposed measures that were taken and, in the rules to be obeyed. Unfortunately, there were instances when this trust was eroded or undermined because important information was not communicated fully or in a timely manner. The need for and efficacy of wearing masks, provides a case in point of such partial or even faulty information that was initially shared with the public (in many countries) at a time when masks were a rare commodity.

However, looking at reactions in different nations, the value of inter-cultural understanding about why and how individuals respond to and obey new rules and responsibilities also became evident. Even in the same country, not all groups responded in the same way and some of these differences have to do with cultural traditions.

Another value that became central in the race to find a vaccine is that of scientific integrity. The crisis stimulated scientific collaboration driven by a common cause and even if competition did not completely disappear, teams of researchers around the globe worked together and shared their insights in an effort to speed up the lengthy process of finding a vaccine against COVID 19. Unfortunately, as this goal neared achievement, competition was gearing up for both financial and prestige reasons. As well, people's distrust in the vaccine's efficacy and safety was being questioned by many. So, in addition to the value of scientific collaboration,

for the sake of transparency and thus trust, scientific integrity and honesty was underlined during the pandemic.

As mentioned earlier, this health emergency brought to light inequalities of intolerable and untenable proportions in many societies, including the wealthiest. So, the values of inclusion and equality were underlined in both political discourse but also in many universities where it became very obvious that different groups of students suffered to different degrees from the complete or even partial shift to online learning. The digital divide joined the other divides – socio-economic status, gender, ethnicity and race, as a key marker of inequity.

The rhetoric (and hopefully the commitment to) of the value of cooperation for finding and sharing solutions and innovation instead of competing for market share was strongly present as universities were adjusting to their new realities – insufficient expertise to shift courses online, poorly prepared academics and staff to adopt a virtual mode of delivering courses and communicating with students and colleagues, fewer international students, etc. But judging by the vast number of webinars and zoom conferences, there is a real thirst for sharing of lessons and a real commitment to improve online teaching, maintain academic quality and learn from the new research methodologies that have had to replace face-to-face research collaboration.

4.7 Learning for the future

There are few certainties in this experience of the COVID 19 pandemic. One that appears more and more likely though, is that a return to 'business as usual' in the near or even longer-term future is unlikely. For many it is also quite undesirable, given that in many parts of the world, reality, including in higher education, has been shown to be inequitable, ecologically unsustainable and financially not viable. The experience of the past 9-10 months has shown that it is imperative to invest in improving online teaching and learning. Though there are success stories and universities whose past engagement in online, open or blended learning has made them exemplars, these are few and far between. For most universities this will require an allocation of financial and human resources to these new tasks. Yet, the economic fall-out from the pandemic will be very serious and so allocating scarce resource will most likely mean reductions elsewhere, perhaps in the areas of international marketing and mobility.

The lockdowns and reductions in travel – both domestic and international, require that much more serious consideration be given to all the various ways of taking education to the learner, using blended learning for both domestic and international students, possibly growing more off-shore programs or campuses.

Certainly, at least for the foreseeable future, the way universities pursue internationalization will require an overhaul and perhaps the time has finally come for a veritable focus on internationalizing the curriculum and on deepening inter-cultural learning through activities at home. Though mobility will most likely resume eventually, it may not regain its 'mass' nature for quite some time. In the meantime, though, international education remains essential for all graduates if they are to understand the world around them and successfully navigate the complexities of modern life.

It is essential, however, to monitor the impacts of the changes being made, whether temporary or more long-lasting. A wholesale and even partial shift to virtual/online learning, for example, is not without drawbacks. Starting already, but especially in the months to come, systematic assessment of the benefits, risks and merits of this mode of education will need to be put in place. Similarly, examining the impact of the shift to virtual modes of for much of academic work – research, conferences, seminars meetings, etc. will become important, especially if higher education wishes to retain some of its benefits and remedy some of the less positive aspects.

Finally, as the root causes of this pandemic, and the predictions of others to follow are linked to the current unsustainable livelihoods and practices, the increasing engagement of higher education institutions in addressing the UN Sustainable Development Goals will most likely deepen in the future. Along with a stronger focus on redressing inequities based on socio-economic, gender, ethnic and racial status, universities may deepen their social responsibility as a result of the unprecedented developments in 2020.

4.8 Learning for the future beyond higher education

Deeper social responsibility means as well, that higher education must assume a more prominent role in inventing, predicting and planning for new socio-economic and geopolitical realities. In many respects, the pandemic changed the way decision-makers and citizens view globalization. All of a sudden, the idea of being dependent on others for necessities to our well-being is no longer acceptable. Higher education institutions will be called upon to prepare graduates for the adjustment to re-localisation, including in the efforts to build local production capacity to counter the current reliance on product provision from elsewhere. A similar trend may take place in higher education, with students seeking locally what they had beforehand sought elsewhere. Regional mobility may accompany this trend in parts of the world.

The past few months have demonstrated that society will need to plan for increased automation and new uses of technologies and most likely fewer and new jobs. University research and foresight will be required to prepare for these major changes. The economic impact of the pandemic will certainly be far-reaching and of long duration. In light of the different approaches that were adopted in various nations, the impact is likely to result in a shift in the importance of various world regions and to change, at least in the short-term, production and trading patterns. The relative success of China, South Korea and other Asian nations in controlling the spread of the virus can only mean a faster recovery whereas the continued failure of the USA to respond effectively will contribute to these geopolitical shifts and changes.

Other trends that began during the pandemic may become more perennial as the world moves forward. The exodus from large urban centres that was seen during after the lockdown in many European countries may continue as working remotely makes moving to smaller centres or into the country possible. Of course, this is not possible for everyone, and may in the long-run stratify society even further. However, shift in the balance between urban and rural populations may be one of the consequences of these past several months.

4.9 Concluding thoughts

2020 has witnessed a confluence of several crisis – the pandemic's disruption in all aspects of daily life, the globalization of the Black Lives Matter movement, a world-wide economic slowdown, a realization of the causal links between the arrival of the COVID 19 virus and the unsustainable nature of man's livelihoods and exploitation of resources among others. These will leave deep and on-going scars. It was also a real-time global experiment which mobilized scientists in all disciplines, in all parts of the world, all seeking the right response to stop the spread of the virus and viable prevention approaches to end the pandemic.

As we are all fond of stating frequently, challenges and crisis also offer opportunities. Judging from the numerous conferences, webinars, online meetings and discussions, higher education stakeholders are already assessing what lessons to learn from this harrowing experience and how to change the mission and ways of operating of universities, what trajectory to adopt for their institutional development. For many, the starting point will be the identification of what is truly important, what central purpose higher education serves and what values underpin this work. Certainly, higher education is learning valuable lessons; its future role in society and its international dimension will not be the same.

5 Demands beyond Quality Online Learning

Abdul Rasyid GHAZALI
Universitas Muhammadiyah Yogyakarta, Indonesia

5.1 Abstract

This research aims to reveal the students' perception towards the online learning occurs in a university in Indonesia. Precisely, this research is exploring whether the learning provided by the institution on an entirely online class has met their satisfaction. The indicators of quality learning are adopted from the Indonesia's Directorate of Education's Standards of Quality Instruction. This research includes survey and interviews as data collection. The survey questionnaire is developed from the Standards of Quality Instruction. Participants were 47 students of a university in Indonesia. The research suggests that, even though through online learning all components of quality learning have been met, students feel interaction and performance in physical class is direly needed. Thus, teachers should find –and perhaps redefine– new approach, design, and method to teaching.

5.2 BACKGROUND

Policy adjustments in the education sector during the Covid-19 pandemic affected policies in tertiary institutions. This can be seen from the circular of the Minister of Education and Culture Number 36962 / MPK.A / HK / 2020 dated March 17, 2020 on Online Learning and Working from Home (WFH), in the context of Preventing the Spread of Corona Virus Disease (COVID-19). Furthermore, the Directorate General of Higher Education Number 302 / E.E2 / KR / 2020 dated March 31, 2020 on the Learning Period for the Implementation of the Education Program states that all higher education leaders can monitor and assist students in learning from home (Directorate General of Higher Education, Ministry of Education and Culture, 2020).

Much universities across the country have enacted regulation following the State policies, practically on the online class. A nation-wide online class occurs not only at university level, but also in the primary and secondary education. This new phenomenon –the so called 'New Normal' by the President of the nation– is becoming more affordable with the development of information and communication technology. Online class are a learning process that utilizes information technology, in this case utilizing the internet as a method of delivery, interaction and facilitation.

Online learning in Indonesia is not a new term; it was initially introduced by the Ministry of Education and Culture in 2000s (Nizam, 2006). However, it was only conducted properly by very few high-ranks universities in the country (Purrohman, 2014). Now, as there is a pandemic and as all universities must follow state regulation regarding Covid-19 protocol, all universities abandon their physical classes and shifted to an online platform. The teaching in online learning in Indonesia is mostly conducted via application such as Zoom, Microsoft Teams, WhatsApp, and Google Meet (Saragih, Sebayang, Sinaga, Ridlo, 2020; Gultom & Sitanggang, 2020). In addition, some universities also developed their own online learning system using an open-source platform such as Moodle (Zhafira, Ertika, Chairayaton, 2020, Rahmatih, Fauzi, 2020).

Subsequently, many researches have sprout in the Indonesian context on the student perception of online class. Ahnusadar (2020), for example, tried to determine students' perceptions about online class, mainly the supporting factors and resistors factors in online classes. The study found that the majority of students prefer offline (face-to-face) class, due to lack of understanding towards the teachers' explanation. Even more, the Indonesian

Directorate General of Higher Education has published a report that 90% of students longed offline classes. In addition, the study reveals that internet connectivity and computer or ICT support is the main issue which hinders or support online learning. Such results are actually similar to online learning studies, prior to the pandemic, that connectivity and technological support is vital factor in online learning (Davis, Little, Stewart, 2008; Betts, 2009). Many studies also found similar, that students at numerous universities prefer physical learning than online ones (Saragih, et al, 2020; Gultom & Sitanggang, 2020; Zhafira et al., 2020; Rahmatih & Fauzi; Yodha, Abidin, Adi, 2020).

Even though learning is conducted virtually, quality education provided to the students must be assured (Shelton, 2015). Quality is a very broad, ambiguous term and have a lot of meaning in higher education (Harvey and Green, 1993). In the Indonesian context, quality education is evaluated through national and institutional mechanism and referring to certain standards (Ghazali, 2018). Specifically, the quality of teaching or classroom activity where the knowledge transfers mainly take place is also assured through certain indicators.

There are seven indicators, based on the Indonesian education assurance authorities, which needs to be assured in the process of learning in the class, including (1) student activities, that is all forms of student activities, both physical and non-physical; (2) the skills of the teacher in managing learning, that is the ability to carry out learning in order to achieve learning objectives; (3) student learning outcomes, that is changes in behavior after experiencing learning activities, (4) learning climate, refers to the interaction between learning components such as lecturers and students; (5) material, adjusted to the learning objectives and competencies that students must master; (6) learning media, which is a tool to provide learning experiences for students; and (7) the learning system in schools, that is processes that occur in schools. Fulfilling these indicators is obligatory to the higher education institutions, regardless the settings of the class.

Research on quality of online classes is abundant yet not addressing specifically in the Indonesian context and specifically during the very contagious virus pandemic. Most research only takes from students' perspective which end in the demand for offline class, e.g., a survey by Directorate General of Higher Education, 2020. Indeed, there needs to be a clear definition of quality and specified aspect of education or teaching and learning. This research, therefore, defines first the quality as conformation to standards (c.f. Harvey and Green, 1993), while teaching and learning is specifically defined as the learning process in the class –a situation where teacher and students meet in the class and knowledge is transferred through certain activities.

5.3 AIMS AND METHOD

This research aims to reveal the students' perception towards the online learning occurs in a university in Indonesia. Precisely, this research is exploring whether the learning given by teachers on a fully online class has met their satisfaction.

This research uses quantitative survey and qualitative interview as data collection technique. Participants in this research are 47 students in a private university in Indonesia. Meanwhile, only 5 students are selected for interview. All participants are selected randomly, and the means of data gathering is through online survey (via Google Form) and online interview (through WhatsApp video call) in January 2021. The survey questionnaires are developed from the seven standards of quality instruction and consists of 23 items. Meanwhile the interview digs deeper about the perception of the students on online learning. The interviewees' name is put anonymous and are written P1, P2, P3, P4, and P5 on this research. Readers must note that the Standards means the quality of teaching and learning. It means the quality of classroom situation, learning activity, and knowledge delivery, i.e., how students feel, think, and/or learn in the class. An online classroom should also fulfil these standards, as students must receive quality instruction process and knowledge delivery.

5.4 RESULTS AND DISCUSSION

5.4.1 Quality of Online Learning According to the Current Standards

Surprisingly, this research found that teaching and learning, or instruction process, in the university has mostly fulfilled the standards. Figure 1 below illustrate the perception of students towards the quality of instruction in the online learning.

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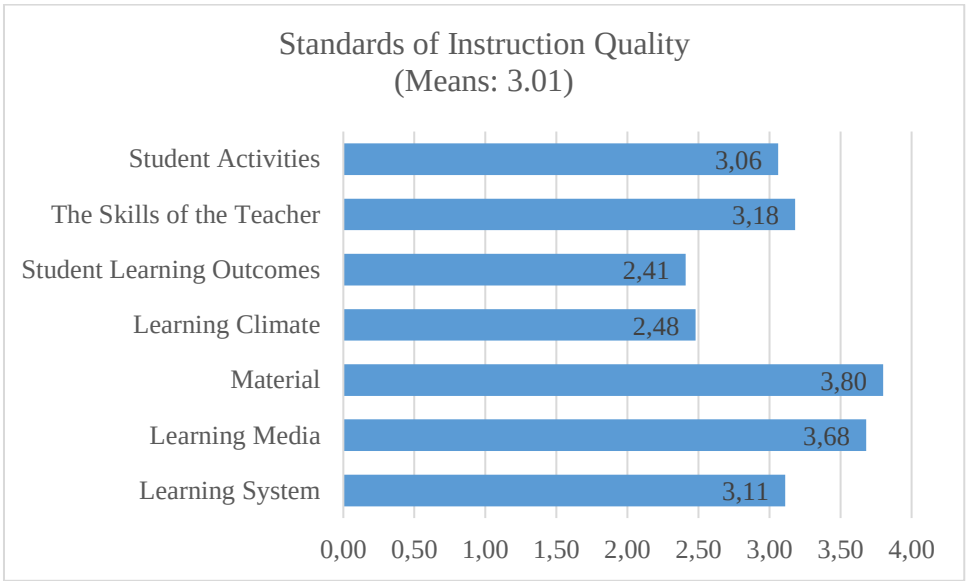

Figure 1: Standards of Instruction Quality

Figure 1 shows the value of each standards, from the range of 1 up to 4. Based on the figure, student perception towards learning system is considerably high, with a means of 3.10. Furthermore, the values of student's activities were 3.06, skills of the teachers were 3.18, student learning outcomes was 2.41, Learning Climate was 2.48, Material was 3.80, Learning Media was 3.68, and Learning System was 3.11.

The Figure indicates that online learning has support Student Activities. Students have considerably good (3.06 out of 4.00) perception towards student activities. This means, even though learning is conducted online, students could get both physical and non-physical activities. In a further interview, a student (P2) mentions that: "I think our teacher is very creative. Even though it is online, he manages to make activity for us such as debating, drawing, practice conversation with other students, and even make a group call with friends".

What P2 says about the Student Activities standard applies to the second standards, which is Teacher Skills. In fact, the Teacher Skills Standard, according to the students, is good, too, with the value of 3.12. This means, teachers are quite creative, accommodate proper discussions, and certainly have a knowledge and competencies in the discipline.

Student Learning Outcome is valued 2.41, which is relatively low. Learning outcome is defined as changes in behavior after experiencing learning activities. The low learning outcome in this context may resonates Nguyen (2017) and Abrami, Benard, Bures, Borokhovski, and Tamim (2009) who found that outcomes of students is not significantly impacted by online learning. Participant of the interview later mentioned that "I feel like I get nothing. I don't really understand" (P4).

Learning Climate is also relatively low, which is valued 2.48. This means, in online class, there is a low interaction between learning components such as lecturers and students. In fact, not only in Indonesia, this specific indicator and its finding has been the major complaints of online learning in around the world (see. Nguyen, 2017; Wu & Jin, 2020; Borup, Graham, West, Archambault, 2020; Andel, de Vreede, Spector, Pradmanabhan, Singh, De Vreede, 2020). The

interview also reveal that students do not really enjoy the whole meetings or classes, as said by P1, “I used to be sleepy and tired. I feel the class is very monotonous for most of the times. Even I can just turn off my video and mic and doing something else, instead of listening to the class” (P1).

Material and Learning Media standards, however, possess considerably high quality. This is seen from the score that is 3.80 and 3.68 respectively. Participant P1 mentioned, “Teacher gives us nice videos and readings. I think I learn from those YouTube videos explanation and some readings outside the class more than I do in the class”. Participant P5 also asserts, “we learn a lot with materials especially links to text books, websites, or videos online. But some teachers just give those things”.

Last but not least is the overall Learning System, which includes schedule, grading, content of learning, and other rules. The Directorate General of Higher Education defines, in the Indonesian context, learning system in schools is able to show its quality if the school accentuates its distinctive features, has the emphasis and specificity of its graduates. In this research, the students perceived that learning system in the online learning is good, which is valued 3.11. This means, the overall system has well support the teaching and learning process.

5.4.2 The Demands beyond Quality Instruction

This research found that the students perceived good quality of online teaching learning has been implemented at a university, with a value of 3.10. However, as the Indonesian Higher Education authorities claimed a huge percentage (90%) of the student demands offline classes, there needs to be explanation on what is lacking in the quality education that they have received.

Participation

The interviews conclude a very divergent factor that motivate students to learning: interaction. Although some indicators of the standard, especially Learning Climate Standard, have mentioned about this, there was no emphasis on in-person interaction and physical participation in the class. Not surprisingly, the value of Learning Climate Standard is low, according to this research survey. Lack or zero physical interaction and participation have been signposted in many universities in Indonesia (see. Saragih, et al, 2020; Gultom & Sitanggang, 2020; Zhafira et al., 2020; Rahmatih & Fauzi, 2020; Yodha et al., 2020) and rest of the world (see. Nguyen, 2017; Wu & Jin, 2020; Borup et al., 2020; Andel et al., 2020).

Interviews indicated that the relationship that currently occurs between teachers and students is often one-way, where students only listen to what the teacher says. When viewed from the learning pyramid, referring to De Wouw (2010), students will easily forget what they learned before when they only listen to the teacher's explanation because the percentage is only around 5%. De Wouw (2010 added that students would be able to remember and understand the material deeper and longer if they were able to explain the material to others. "Students' understanding and memory in explaining the content of the material to others reaches 90%” (De Wouw, 2010).

Interaction is also an important point in teaching and learning activities, because students would get the benefit such as increase in education performance and competence and the teachers would also get feedback or at least self-evaluation on the teaching method or material delivery (Hurst, 2013). For this reason, listening to students' experiences, especially regarding online learning, can be applied in the learning method before the teacher enters the theoretical explanation and after introductions.

Time management

Participants (P2, P3, and P5) mentioned that some teachers “changed the schedule to non-office hours”. This is in fact also happening in many universities in the world (see Tukan, 2020). P3 added, “I once got a class until evening” (P3). Such condition is deemed disastrous to students’ motivation and that the students expect a clear schedule. P5 said, “I understand that we have to switch the class online but it is better to stick to the schedule and don’t change it”.

Students hope the class is commenced and finished as scheduled. Also, the assignments are structured along with the gradual monitoring of lecturers so that the assignments given are not delayed or late and so they are more focused. This is in accordance with Elyas (2018) who states that formally giving tests or assignments must be carried out according to a specified schedule. This is intended so that the assigned task becomes effective and efficient to do.

Sense of belonging

Almost all fresh year university students, including the participants, have never been to their campus. They never met their teachers in person, not even their classmates. According to the participants, “seeing the campus, visiting some friends and teachers are very important” (P1). “Actually, if we have to watch a video learning is on YouTube, we wish that our teachers are the ones in the video. We want to know our campus” (P4). Based on the two participants, a sense of belonging is needed among students and teachers.

Sense of belonging to schools or campus according to Freeman (2007) is the belief of students that faculties in school care about their experience, especially in learning; that the teachers and faculties are thoughtful to them as individuals, and have high outlooks for education. Allen and Bowles (2012), furthermore, describes a sense of belonging to school as when students feel close, feel content at schools, feel that teachers do look after and treat them sincerely, get along well with teachers and other students, feel safe at school, and feel becoming the part of the school. The point is that students who have a sense of belonging to school will feel happy and comfortable when they are in the school environment. This sense of comfort arises because the people in the school environment care and respect them.

Sense of belonging is indeed proven to be able to increase students retention at university (O’Keeffe, 2013). In addition, Freeman, Anderman, Jensen (2007) also assert that sense of belonging would impact to students motivation which lead to their academic achievement. Sanchez, Colon, & Esparza (2005) found that a sense of belonging to school significantly predicted educational outcomes, influenced motivation, fighting power, and lower absenteeism.

In short, the psychological bond between teachers and students, and students and the campus are necessary aspect. The interviews in this research conclude that students demand activities, interaction, and participation, which lead to fostering their sense of belonging to the school. In online environment, however, raising the sense of belonging of the students is challenging. Research actually shows that “although the benefits offered by flexible, technologically-rich learning contexts often outweigh the problems associated with this type of learning, the confusion and disorientation sometimes felt by learners during online learning experiences, thus course designers are encouraged to construct a sense of belonging for individual students in the online environment early in the learning” (Northcote, 2008, p.676).

5.5 CONCLUDING REMARK

This research revealed that students experienced good instruction quality in the online class, specifically on the standards of learning media, learning material, and teachers’ skills. However, learning climate and learning outcome were found poor on the online interaction.

Students demands participations and interaction, as well as punctual time management and sense of belonging. According to this research, teachers' initiative to manage class, to design materials, and to find methods to teach are very important. Teachers should be able to facilitate all students to discussion in the class with other students. Student's satisfaction towards an education is now including the quality of their participations in the class.

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6 Experiencing Covid-19 in New York City

Mark-David JANUS
CSP., Ph.D., President and Publisher of Paulist Press, USA

This is my story of surviving the covid-19 virus. It is one story among many, each with different configurations of symptoms, bodily responses, access to medical care. There are hundreds of thousands of stories people have not lived to tell. Their stories must be told by the grieving loved ones left behind.

My story begins with Co-vid 19 virus attacking quickly, without warning, within hours rendering me helpless. Living in New York City, it should not have been unexpected. Ominous news reports warned the virus was coming, first China, then Europe, Seattle, and it was matter of time before New York City. People prepared as if a blizzard was coming, laying in extra groceries for a long weekend. More contagious than other viruses, even able to be transmitted by people without symptoms, people began to work from home. The New York's Saint Patrick's Day parade was cancelled. Sporting events, concerts, operas, ballet, even Broadway theaters went dark, all social events postponed until the storm passed.

I had a persistent cold, but went to bed unconcerned, relaxed, eager for tomorrow. Within a few hours I awoke with fever, chills, sweat, constant thirst. My rib cage, front and back ached, the top of my head hurt. I lost control of bodily functions. I lost track of time, days blended, exhaustion created confusion, and then delirium. I had no idea what day it was, I had no idea a week had passed, nor did I care. I cared only about finding a posture that would allow me to rest without hurting. My religious community[16] called a doctor who made a special house call to examine me. He was confident I had the virus, but I could not be tested because there were no tests to be had. There was no specific treatment, and since I wasn't gasping for breath and my blood pressure was reasonable, I would be treated at home, placed in absolute quarantine, and given medications to reduce my symptoms. If my breathing became more painful, I would need immediate hospitalization.

During the first week of my illness, I did not think about living or dying, nor did I think about getting better. I was too exhausted to be anxious. My body focused on escaping pain and coping with fever, it had no time for consciousness, or fear. Time was measured only by sensations of sickness, brief respites of sleepand the gift of delirium that allowed escape. I did not understand what my body was doing. There was no energy for prayer.

In the second week of the illness, I was fortunate. The medications provided enough symptom relief to allow me sleep. The virus began to work its way out of my body without the crushing shortness of breath that sent people to the hospital or grave. My religious community made it possible for me to devote the little energy I had to healing. I did not have to worry about providing for myself or my family. I did not have to worry about losing my job. The truly saintly religious sisters[17] at the rectory would call me at mealtimes, offer encouragement, prepare food my system could tolerate, and leave it outside my quarantined room.

As symptoms abated, my self-awareness grew, and with it, recognition that I was not alone. Increasingly I was aware of those protecting me. Through the sacrament of my cell phone, people anointed me with daily text messages, breaking the quarantine with care, concern, love, and always prayer-assurances, promises, guarantees of prayer. Emails transformed into the angelic announcement be not afraid! Since talking was difficult for me people texted and emailed: my sister several times a day, members of my religious community, friends, parishioners, all texting their love and prayers for me. Facebook friends prayed online for me.

[16] I am a member of the Missionary Society of St. Paul, known as the Paulist Fathers, the first religious order of men founded in the United States

[17] Oblate Sisters of Jesus the Priest dedicated to praying for and ministering to seminarians and priests.

When I could not pray for myself, all these people prayed for me. Their prayers breathed for me. They still do.

Gradually, the virus lessened its hold on me. It was not going to clog my lungs. It would let me sleep. It would let me be aware and for increasing moments, alert. I was weakened but going to survive. From the news I learned the virus created a worldwide community of the suffering, with me, among the most fortunate. I would hear a consistent wail of ambulance sirens carrying those sicker than I to an emergency room. They were part of me, so wordlessly, automatically, I prayed for us. The Latin chant for Easter, the Regina Coeli, came unbidden into my mind, and with inner music I had not summoned, I entrusted the sick-including me- to whatever God would do with us.

My first intentional prayer was watching Pope Francis pray in a desolate and deserted St. Peter's square. I don't remember anything he said, nor the words to any of the prayers, but I do remember the stark picture of him sitting in the rain, praying, for all those around the world, the dead, the grieving, the medical personnel, the recovering, for me. As I watched him sit there, an early childhood memory materialized. I remembered my father, on Holy Thursday, taking me by the hand for Holy Thursday Services at our parish of Holy Redeemer. The ceremonies were extravagant, choirs, processions, stripping the altar, the tabernacle gaping open with the reservation of the Blessed Sacrament in an elaborate altar of reservation. Neighborhood children plundered flowers from gardens to adorn the shrine. I did not know why we were sitting, kneeling before the side altar. "This is Jesus in jail after he was arrested, and we must keep him company" is how my father explained it to me. We walked to churches in neighborhoods I was forbidden to cross the street to visit: St. Michaels, St. Theresa, St. Josaphat, St. Mark, St. Henry, St. Stanislaus. We visited Jesus in his side altar jail in each church, saying a prayer, keeping him company. In St. Peter's Basilica, Pope Francis was sitting before the Blessed Sacrament, keeping all those imprisoned by the covid-19 virus company. I sat with him, Pope Francis in the rain, me in my armchair joining his prayer for so many.

That night, and the next morning, and everyday after that I would pray for the ill, those who cared for them, for the dead and their loved ones, for all those out of work-worried, anxious about housing, food, future. A question haunted me, and haunts me still, why me? Why am I recovering while so many are not? What does it mean? Do not misunderstand me, I do not believe God kills some people and saves favorites, we are loved equally in the eyes of the God who made us out of love for love; made, Jesus tells us, for life to the full. Perhaps there is no reason why I contracted a less virulent strain of the virus while more saintly and self-sacrificing souls contracted the more lethal version. I felt fear for the first time, fear of the fragility of life that spares some and strikes others down. This fear taught me that while I do not know why I am alive and others not, it is the responsibility of the living to pray for those who died and those they left behind.

Within a few days it would be Palm Sunday then Holy Week, a Holy Week unlike any other, a Holy Week so dangerous people could not go to Church to pray. Quarantine I could not go to Church. I did what I have never done in my 41 years of priesthood, celebrate a private Mass. A brother priest left a mass kit outside my door, and on Palm Sunday, I celebrated a Eucharist I will not soon forget. I was overwhelmed with a profound feeling of gratitude for the gift of my life, not simply that I survived but that I was alive at all! Thanksgiving poured thorough the readings, the passion, the words of the liturgy. The Mass went slowly, offered with deep gratitude for those whose prayers and love breathed for me, gratitude for those protecting and nursing my quarantine, praying for those suffering alone, dying alone, praying for those who could not see their dying loved ones, could not bury them nor hold each other in grief. Receiving the Eucharist, in communion with the Risen Lord, I was in communion with all those the crucified One loves and holds dear. The final blessing was God's blessing upon the city outside my bedroom window. I am a preacher. Capturing what I could of the Holy Spirit's whispers during that Eucharist, I posted my digital homily to my quarantined city.

„It happened so fast.
So very fast.

Sunday was well, happy, triumphant.
Thursday night, we gathered for Passover.
The next night, He was dead, buried by strangers.
Over and done in five short days.
It never struck me before -reading St. Matthew's passion-
As it strikes me now.
But now everything happens so fast.
People are sick and die, in less time.
The matriarch of a large Toms River Italian family
Dying without knowing two sons died before her.
Within the week, a New York physician dying in his husband's arms,
Nurses across the street making gowns of hefty bags,
Respiratory therapists asleep on their feet.
Everyone out of work-no rent, no food, no hugs, no future-
I went to work one Monday
Was sick by nightfall-and next I knew-or didn't know-
It was Sunday, which one?
It all happened within a week, to all of us
Milan, China, Spain, New York, everywhere.
No time to prepare, to react, to grieve, to think of any future.
The world ends quickly-even for Jesus.
This Sunday we wave no comforting Palms.
Comfort is found knowing the speed of disaster,
The speed of our surprise, suffering, grief,
Is shared by the swiftly Crucified
Who with dizzying speed raises us, as he was raised-
-into life with time only for love.
Amen. "[18]

The virus left behind a mere shell of vitality, which took longer to replenish than I anticipated. Recovery time was filled with anxiety by the world news penetrating my quarantine. The numbers of those who died in New York rapidly increased, day after day after day. Working from home and social distancing were luxuries many could not afford and the most vulnerable were disproportionately represented among the dead. Nursing homes could not protect their sick and elderly, and they too joined the torrential numbers of the dead. What was hidden in Wuhan was now manifest as the wingspan of this disease covered Europe, Great Britain, Ireland, Canada, and reached across to India and Pakistan. Infected, the world's economy was collapsing and hunger growing exponentially in Africa, South America, India, the Philippines. In the United States unemployment reached proportions not seen since the Great Depression in the 1930's. Helpless, I felt helpless not just about my body, but my country, and my world.

At the time of this writing, the virus is not under control. While diminishing in some locations, in others it flares into "hot spots." In my country testing is evasive and vaccine is an unrealized hope for perhaps years to come. It is apparent that we are not going to reopen as much as we must reinvent ourselves, beginning again, the parameters of our new life dictated by an enemy we have not conquered and whose reinvasion we fear.

Churches are closed. People cannot visit us; we cannot visit them. Digital efforts to broadcast the Mass and preach the gospel have intensified but are reaching only a fraction of our people. How can you be Catholic without community, without Eucharist? Yet, to do what we do best is infectious, a danger to the people of God. I am a priest ordained to Word, Sacrament and Service, and the structures of that ministry are unavailable and their future unknown. Helplessness becomes frustration and frustration becomes anger. The longer the pandemic continues, the more likely anger will accompany it, one more deadly by product of covid-19.

[18] Mark David Janus, CSP., Ph.D. Palm Sunday 2020

Frustration, grief and anger blind us, enveloped in their haze we are unable to recognize the Risen Lord. Easter is hard to believe much less celebrate. I realized, through these words of Cardinal Carlo Martini, that I had been looking for Easter in all the wrong places:

“God did not perform any miracles to save Jesus from death, God is always with Jesus, on his side, and validating him. Therefore, it is not through amazingly powerful miracles, but in being with each one of us in our trials, in keeping company even in the deep recesses of our loneliness, in being close to our distress with the hope of eternal life that God reveals to be the “God with us,” the God and father of our Lord Jesus. God is everywhere someone suffers like Jesus, wherever someone dies like Jesus, wherever someone lives and suffers for love, for truth, for justice, for the poor; God is there to lessen the suffering of the world: This is the God of Jesus who is proclaimed in Jesus’ resurrection.”

The virus has closed the structures of the church, it has not drained the life of the church that is the People of God. Every night, at 7:00 pm, people around the world come to their balconies, open their windows or come to their front door to applaud the sacrificial love of everyone who works in health care, doctors, nurses, respiratory therapists, orderlies, sanitation workers, ambulance drivers; their love and sacrifice is obvious. The Spirit of the Risen Lord breathes through them.

The Spirit breathes through actions of kindness and mercy that have risen with this pandemic. I think of the almost daily news stories of people who delivery groceries to neighbors. The owners of shuttered restaurants who now cook for those who can no longer afford to buy their own groceries. People who spend their quarantine sewing essential face masks for those without. Business owners who reconfigured their workshops to make needed hospital gowns, converted factories to make ventilators.

Ordinary actions are now heroic, with bus and subway drivers, grocery store clerks, truck drivers, police, and firefighters who daily risk contact with this contagious virus so everyone else can go to work, buy groceries, remain protected. Teachers who must now prepare new on-line lessons for students who cannot leave home. Parents quarantined with their children, spouses with one another, and roommates unable to get away from each other, demonstrate added patience, kindness, a willingness to forgive and give of themselves. Friends make special efforts to reach out to friends they cannot visit. In a grim fashion, the funeral directors, are now charged with the corporal work of mercy to bury the dead loved ones cannot. Pope Francis calls these actions, “everyday holiness.” They are everyday manifestations of the Risen Lord. People may not be able to go to Church, Synagogue or Mosque, but that has not prevented them from breathing holiness into a world chocked with virus.

My story of covid-19 concludes with a lesson. A virus invisible to the eye is teaching the world just how fragile and interconnected we truly are. This interconnection is not simply an occasion for sickness, it is an opportunity for communion. In the end, we are connected to God only by love. The Risen Lord Jesus remains connected to us by love, a love that connects us to each other through lives of service, mercy, and kindness. This is how we will defeat the virus and rebuild our world.

Excerpt from A Christian Response to COVID-19, Edited by Walter Kasper and George Augustin; Foreword by Pope Francis, With contributions by Thomas Söding, and Mark-David Janus.

7 Europe Under a Global Pandemic: Can we Consider Quality Education as a “Vaccine” Against Covid-19?

Konstantinos KALEMIS
National Centre for Public Administration and Local Government, Greece

Konstantina KALLINI
Immigrants Preschool Education, Greece

7.1 Abstract

In seeking the consequences of the pandemic one could refer to a specific aspect of it, one that is primarily its personal field of action and expertise. By attempting in this article a holistic approach to the consequences of the pandemic, in our knowledge that the greatest risk may be oversimplification, this venture, although risky, is a challenge for us (Barnett, 2020).

The most tragic consequence of the pandemic is the loss to date of nearly 1 million people worldwide. This staggering number of deaths essentially creates more than many living relatives who experience the tragedy of death with any psychological and other consequences for themselves (Goniewicz et al. 2020), but also a huge number of other citizens who experience fear in their own way, phenomena that will be the subject of social study and research in the years to come.

Keywords: pandemic, Covid-19, education, e-class, universities and Covid-19, economy.

7.2 The Consequences of the Pandemic: A Holistic Approach

The Covid-19 pandemic has highlighted, in many cases tragically, how important it is to have public health services capable of responding to the health care needs of the population even in exceptional circumstances such as those we are experiencing today and we will probably live in the years to come, as, it seems, the intensification, particularly of the industrial food complex, combined with the mass population movements, significantly increase the chances of new epidemics.

The modern pandemic highlighted the weaknesses of public health structures around the world. Even in countries with a rich tradition and a rich past of catholic public health systems, such as Britain and Sweden, their long-standing decline from neoliberal policies has had a decisive impact on their effectiveness. Similarly, the World Health Organisation finds it difficult to fulfil its role as a result of a long-term underfunding policy (Mirchi et al. 2020).

Another need highlighted by the modern epidemic is the importance of ensuring continuity in the care of diseases other than coronae. The exclusive focus on coronae sufferers, combined with the dismantling of public health services, and has led, internationally, to the dramatic deterioration of the care of other diseases. On the basis of this negative experience, it becomes clear that in the design of health services in view of new waves of the epidemic, it is also necessary to ensure the care of non-Coronae diseases.

The fear expressed by citizens is a consequence of the pandemic affecting themselves, their actions, their social environment, etc. Fear is linked either to a possible exposure to the virus or to the inability to have a proper hospitalization in their country or to the loss of life that the virus can cause at a time when the international medical community has not yet discovered any medicine or vaccine. Citizens' relief seems to be linked to the existence of medicines (Kato

et al. 2020). Until then it has been observed that even in countries where the pandemic is in recession or cases are few in relation to the population (e.g. China), people have not returned at the same rate to their usual activities, shopping, going out for fun, holidays, etc. (Jassi et al. 2020). In the USA the fear of pandemic, psychological stress and insecurity created by this situation has peaked the demand for telephone psychological support, which increased by 1000% compared to 2019, with experts expecting a large wave of suicides in the post-coronavirus era.

Figure 1: The Covid pandemic (source: Google Scholar)

In this situation, international health systems have been tested. No health system, however well organized, has been able to meet the demands of the large number of cases, checks, hospitalizations, treatments, the dead, etc. The response of health systems (public and private) seems to be fluctuating and dependent on the intensity of the pandemic in each country, the prior organisation and staffing, the capacity of beds and ICUs, the availability of medicines and sanitary material, etc. We have observed during this time tragic phenomena, such as patients being treated in tents, patients being treated in floating hospitals (new York case), patients being transported for hospitalization in other countries (case of Germany accepting French patients), patients who were hardly admitted to a country (case of cruise ship travelers who were finally admitted to Cuba), etc. as well as intractable burial issues in systems or hospitals that had to manage dozens or hundreds of daily losses (Hartley et al. 2020). Of course, if these were observed in developed countries, the effects of the pandemic on the rudimentary health systems of poor countries are incalculable and perhaps not recorded in any television lens that let us understand the tragedy of the people there, whether sick or related or even health workers.

The eventual consequence of the pandemic concerns the loss of jobs and the reduction of the individual and family income of citizens (and the collective income of countries), which with recent data published by the international publisher IGI Global concerns 1.6 billion employees worldwide. The consequences in this case are visible around the world where economies are shrinking and countries are looking for resources to meet their increased needs, businesses are closing down or at best operating with shrinking revenues, etc. In this respect, well-known scientific theories of economic growth, sustainability, forecasting, etc., had not incorporated such an unfavourable situation into their models because everything showed that humanity was walking on safe paths of prosperity and progress. What is certain is that the economic

consequences of the pandemic are already of concern to the research community in order to examine and investigate not only the consequences but also the transition to normality.

In this internationally developed environment, many human activities have been modified, not least the educational process that has faced the challenge of exploiting technological tools. In countries where the possibility of education providers existed or was systematically pursued and this challenge has been adopted by teachers, the results seem to be satisfactory and, in some cases, encouraging for the future of education carried out in electronic classrooms and amphitheaters', with electronic examinations and monitoring, and so on, for developed countries although the same is not true in countries where technology is a luxury. In other words, although the disparity in the use of technology in the global community is well known, however in developed societies where otherwise these technological solutions would not be beneficial and would be an "unclaimed" product, they ultimately contributed substantially to education, but also to many other activities such as the management of institutions and organizations, the cooperation of executives and partners, the provision of a range of electronic services to citizens. Etc. Also, work from home for professions that allow it peaked during this period through remote access to platforms and applications of businesses and organizations taking advantage of the high speeds of networks. Strengthening the transition to technology and highlighting the role it can play in such emergencies is already being studied and reflected as the challenge won in our societies in this unequal battle between man and the pandemic.

7.3 The economic impact of the pandemic on the new generation

Millions of young people around the world have been forced to return to their ancestral homes because of the coronavirus pandemic, the closure of universities and the dismissal of young workers. Although young people face less risk of being affected by heavy COVID-19, students and young workers suffer the most from the economic impact of the pandemic, which has reinforced other existing negative trends, such as low wages, labor market stagnation and soaring student debt (Hart et al. 2020).

A global survey by the Financial Times newspaper of 800 young people aged between 16 and 30 showed that these difficulties reinforce young people's dissatisfaction with previous generations, who are better off income and have greater political power. The survey showed that young people under the age of 25 are 2.5 more likely to be unemployed due to the pandemic than the 26-64 age groups, according to OECD data. Of those who continue to work, almost half reported a decline in income, with young women and the low-paid hit hardest. In the developing world, unemployment means the inability to provide financial support for two or more generations of relatives (Tomasini,2020).

Despite the fear of many respondents about the coronavirus, a significant proportion of young people take a relaxed attitude towards the pandemic (Haji, 2020). This laxity has been condemned by political leaders around the world, arguing that it is one of the causes of the resurgence of the pandemic in Europe and the US after the summer. Many respondents to the study from Europe and Asia argued, however, that it was the elderly who ignored health protection measures. Many young people said they had ceased to trust the political leadership of their countries, considering that pandemic management was inadequate. The phenomenon of young people losing confidence in governments dates back to 2016 in the developed world, according to previous OECD studies.

Mental health experts have warned that the psychological effects of the pandemic will last long, as millions of young people face depression, anxiety and a feeling of isolation. Studies in the US and UK have shown that stress levels among young people between the ages of 18 and 29 are much higher than in other age groups. Many respondents, however, said that the pandemic and its limitations offered an opportunity to reconnect with their family.

7.4 Pandemic and education

Education has two main peculiarities, which in the current crisis of the Covid - 19 pandemic acquire even more distinct content and therefore require special study and analysis.

a) Education is the most general and probably the only Universal institution in our society. It touches almost all Greek families through all its individual expressions (kindergarten, elementary, high school, high school, university, research). It is the main learning, educational, pedagogical, worthy fabric that runs through society. Protection measures are therefore of great importance.

b) Education includes the most sensitive sections of our population – from the age of 4-5 years to the equivalent of the most generalized postgraduate studies. Here there is the early childhood, in which the child takes his first steps of understanding his world and therefore new pedagogical approaches are needed in this extraordinary treaty that we are currently going through. Even deprivation or even shying in his games – in his own world – causes serious changes.

Figure 2: The Covid and its affect in education (source: Google Scholar)

With other characteristic elements accept today's general "manufactured" image of life adolescents and young people. This is where their relationships and friendships are technically "channeled", which are so important for their socialization. Their emotional and erotic concerns and functions are limited – which burdens their mental world and the cultivation of their spirit. Their plans, their ambitions, their dreams, which are the foundations of their lives, are altered.

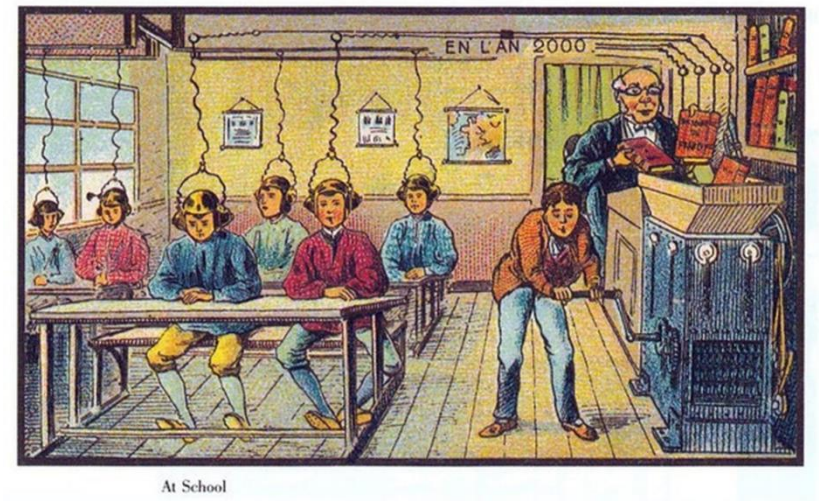

Figure 3: Futuristic picture by Jean-Marc Côté issued in France in 1899. Jean-Marc Cote and other artists envisioned what France would look like in the year 2000. Presented at the 1900 World Exhibition in Paris, at least 87 different cards were distributed in France from 1899 to 1910. CREDIT: Wikimedia Commons/Jean March Cote.

Uncertainty and insecurity obviously concern all those affected by unemployment, since for them the whole problem becomes a permanent one. But in children and young people, who have not yet mastered basic interpretive tools for understanding reality and have not strengthened their personality; these elements become components of their psych synthesis, their worldview, and their ideology.

However, teachers, in addition to their comments about the state's omissions and their necessary claims to implement all measures to protect schools and universities, have the highest pedagogical duty. In addition to courses and classical teaching, they are called upon to give special weight to the rational interpretation of the pandemic – away from obscurity, etc. – to specialize and stress over and over again the correct application of scientific protection measures in school and beyond, to promote critical thinking and rationality, to cultivate the spirituality and emotion of students. Obviously, all of this (and not only that) is part of the classical responsibility of teachers – only now they are becoming even more critical and necessary.

The world is changing. And it doesn't always change in the direction man wants. But in any case, it is the struggle of life that ultimately gives its meaning. And the school has a say and a role in this struggle, because it is a word of Letters and education, it is an enlightening and humanitarian role!

Although online education has increased over the past decade, the pandemic has taken the higher education sector by surprise. It is true that universities went through traditional, face-to-face teaching on the internet quite quickly. However, the 'remote' teaching adopted from the outset was unregulated and rough from the outset, without taking into account the principles and guidelines of distance learning. New technologies were used without special training and technical support, which – in many cases – were based on information infrastructures that could hardly support the growing demand for internet access (Peyravi et al. 2020). More importantly, however, neither teachers (many of whom had never taught in a virtual environment) nor students were ready to adopt this new virtual world, often ignoring the elementary rules of internet communication (netiquette) (Saleh et al. 2020).

The new reality offers great opportunities to invest in a hybrid and flexible education model. Successful and sustainable delivery of online programs requires careful planning and organisation based on key parameters (e.g., medium, pace, student-teacher ratio, communication synchronization, online evaluation), which should be taken into account together within a single educational ecosystem. Such an ecosystem should facilitate the creation of a digital educational community, supporting students in their learning process and, at the same time, enhancing their socialization and mental well-being. Unfortunately, the concept of such an ecosystem was absent from the "remote" teaching applied by universities worldwide, as for most the new education model was merely a temporary reaction to the pandemic, which did not reflect their long-term strategy (Deckman et al. 2020).

Figure 4: Synchronous and asynchronous training (source: Google Scholar)

Therefore, it is not surprising that the "great online learning experiment" (as described in Great Britain) does not seem to have succeeded. On the one hand, students declare themselves cut off from the academic community and their fellow students and generally disappointed by their entire educational experience. On the other hand, in a recent survey senior official from 172 universities and colleges expressed their serious concern about the increasing rate of student resignation from their studies, but also about the mental health of students, faculty and university administrators (Van der Leeuw, 2020).

7.4.1 But is this 'experiment' completely futile, and what can we expect in the future?

The higher education sector has for decades shown strong resistance to change, despite sustained motivation from the global environment and the market itself. In addition, students and employers have long questioned traditional – often archaic – teaching and evaluation methods (e.g., written examinations), underlining the new requirements for digital literacy, administration and leadership, problem-solving and globalization. The current pandemic has revealed that we can no longer avoid change.

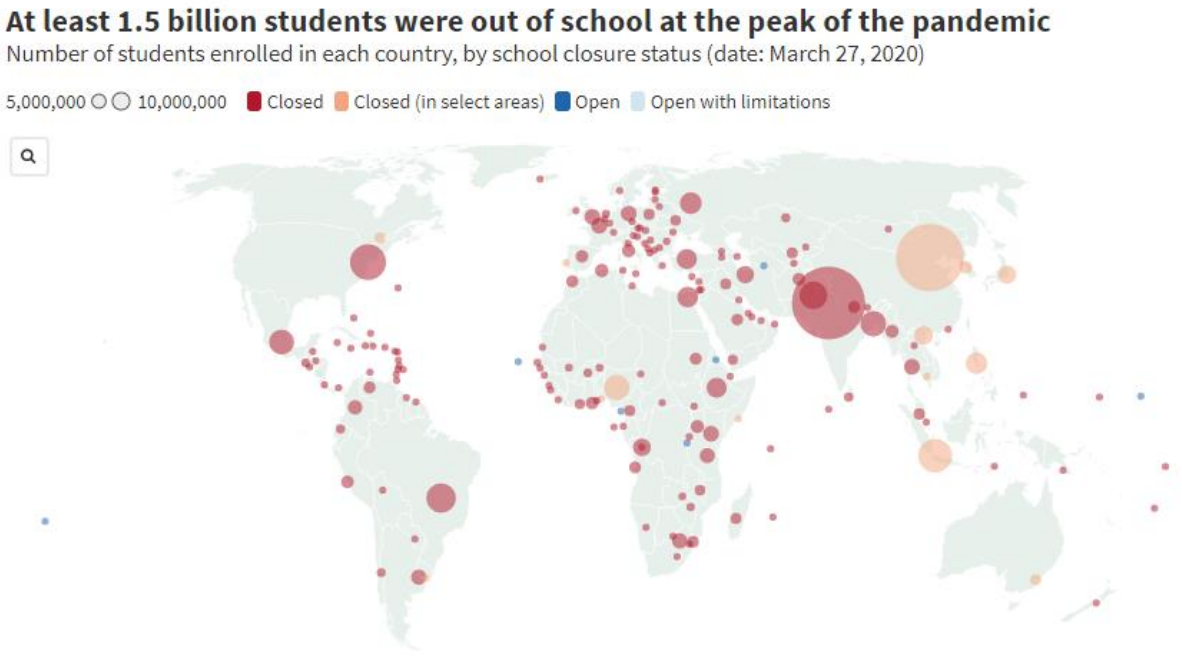

Figure 5: Source: World Bank EduAnalytics; Enrollment data from UIS as of March 17th 2020, downloaded from World Development Indicators • Notes: Data is presented for March 27, 2020 - the day when most students had either full or partial school closure. Enrollment data includes pre-primary, primary, secondary and tertiary school enrollment numbers. Located at: https://blogs.worldbank.org/voices/2020-year-review-impact-covid-19-12-charts

The new reality therefore offers great opportunities for education leaders to dynamically adopt "new normality" and invest in a hybrid and flexible education model. Such a model requires a versatile portfolio of products and services, which, together with the required human resources and infrastructure, will be able to adapt quickly to change. Today we have at our disposal digital infrastructures and platforms that facilitate this transformation (e.g., Zoom, Padlet, Polling Tools, and Flipgrid). We can thus build together with our students a shared view of our scientific field, but also work together towards the creation of curricula that meet the needs of the new market and the directions of the "new economy" (diversity, equality, connectivity, global

awareness, social and environmental awareness), leading our universities towards a new educational era (Ganigara et al. 2020).

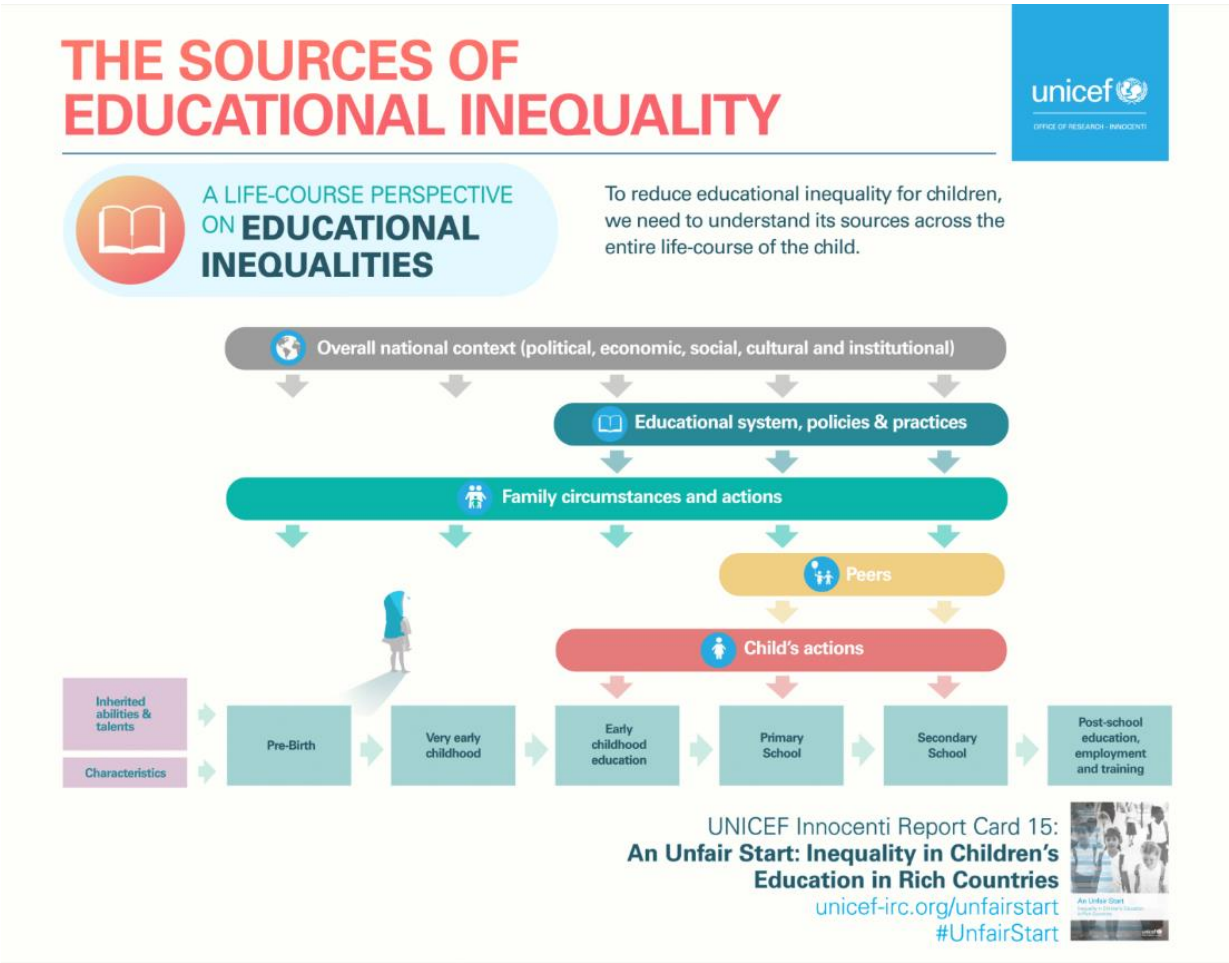

Figure 6: Inequalities in education (Source: UNICEF)

Regarding the impact of the pandemic on education, the closure of schools has created health problems for members of the lower social strata, as some schools also offer meals, and it has also affected their cognitive development, as there are families in Greece who do not have a computer and reliable internet connection (Preschool Education, 2010).

Education is one of the areas that has been hit hard by the coronavirus pandemic, and during the first wave of the pandemic, the education system was suddenly called upon to cope with emergency conditions, without having adequate and appropriate technological infrastructure and equipment (Ren et al. 2020).

There are many challenges to the integration of these children into education: inappropriate living conditions, language barriers and the difficulty of contacting guardians with teachers, inadequate infrastructure for distance learning courses, the reluctance of many unaccompanied children and families to join the country's education system, and the reaction of local communities and Parents and Guardians' Associations to the integration of refugee and migrant children into schools in their area (Rylett et al. 2020).

As regards the impact of the pandemic on the process of integrating refugee and migrant children into education, there has been an increase in violence in accommodation centers due to the reaction of refugees to restrictive measures. At the same time, refugee and migrant children are witnessing stress, which does not help them to adapt smoothly to any educational process, while children who are positively identified in the coronavirus experience traumatic experiences due to containment conditions.

In UNICEF's annual report on education in 2020, we read: “The large number of children whose education has been completely suspended for months is a global educational emergency. The impact of this can be felt in economies and societies in the coming decades. The COVID-19 pandemic and the closure of schools completely deprived at least a third of the world's pupils, or 463 million children, of education, as they were unable to train, according to a UNICEF report(https://www.unicef.org/reports/annual-report-2019)”.

The UN estimates that nearly 1.5 billion children in the world have been affected by the closure of schools or the quarantines imposed because of the new coronavirus. Not all of them had the opportunity to access distance learning, and the differences in e-learning from continent to continent are glaring. The UNICEF report is based on data collected from around 100 countries and on internet, television or radio access (https://data.unicef.org/topic/education/covid-19/).

At the same time, even for children who had access to technology, their schooling could be under adverse conditions, due to pressures from the various jobs that would have to be done at home, teleworking or lack of support in the use of IT tools, according to UNICEF.

Students worldwide who did not have access to tele education amounted to 67 million in east and south Africa, 54 million in west and central Africa, 80 million in the Pacific and East Asia region, 37 million in the Middle East and north Africa, 147 million in south Asia, 25 million in eastern Europe and central Asia and 13 million in Latin America and the Caribbean.

As many countries prepare for a return to schools in the new school year, UNICEF "calls on governments to prioritize reopening schools with all safety when restrictions begin to ease". It also calls, when the reopening of schools is not possible, for authorities to make provision to meet the specific learning needs of pupils caused by the time they have lost from school, UNICEF also notes in its communication (Hodge, 2020).

Also important are the consequences for frontline workers, such as medical & nursing staff, health system rescuers, police officers, firefighters, emergency call center workers, workers in prevention and rescue units, as well as volunteers supporting some of the above services (e.g., Red Cross). Workers and volunteers from specific frontline groups are risking their lives to protect the community. Their role is socially recognized and recognized. However, what is less internationally recognized are the negative psychological effects experienced by these people (Gulati et al. 2020). As is understood, these groups experience an "anxiety", which is defined as the feeling that one has to manage on his own, "swimming upside down in the current" in order to respond to an emergency mission.

7.5 COVID-19: THE EU's reaction to the economic impact of the pandemic

The EU and its Member States have taken measures to limit as far as possible the impact of the COVID-19 pandemic on the economy. Together with the existing FUNDS of EUR 540 billion, the European Investment Bank (EIB) and the European Investment Bank (EIB) will be € for the three safety nets (for workers, businesses and Member States), the total EU recovery package amounts to EUR 2 364.3 billion. €.

The European Parliament and the Council reached a preliminary agreement on the package on 10 November 2020. The European Council of 10 and 11 December 2020 addressed the concerns expressed about the agreement and removed the obstacles to the adoption of the package.

Figure 7: EU and Covid-19 (source: Google Scholar)

On 23 April 2020, EU leaders decided to work out the establishment of an EU recovery fund to mitigate the impact of the crisis. They called on the European Commission to draw up an urgent proposal clarifying, inter alia, the relationship between the fund and the EU's long-term budget. The proposal, a recovery plan for Europe, was presented by the European Commission on 27 May 2020.

7.6 The effects of the pandemic

High incidence of pandemic in stress, loneliness and anger, but also improvement of socially beneficial behavior showed the first results of the World Health and Functionality Study in Periods of Communicable Infections (COH-FIT Study) in the population of Greece.

According to the first results announced by the research team of the Study for Greece, the majority of participants (72%) reported a worsening of stress in the last two weeks prior to completion of the questionnaire compared to the corresponding period prior to the pandemic. 21% reported small changes in stress levels, while 7% reported improved stress levels (Gulati et al. 2020).

Remarkable is the fact that older people (over 65 years of age) experienced the highest rate of deterioration in stress levels, which reached 96%. The survey found no differences between men and women in stress worsening rates, however in terms of rates of improvement in stress levels, these were higher in women than in men (12% vs. 9%).

7.6.1 Deterioration and loneliness

In terms of loneliness, most participants (70%) in the survey reported a worsening of loneliness in the last two weeks before completing the questionnaire compared to the corresponding period before the pandemic. The highest rate of worsening levels of loneliness - reached 96% - was experienced by the elderly (over 65 years of age), according to the RES-IPA. 27% reported small changes in loneliness levels, while just 3% improved (Breitbart, 2020a).

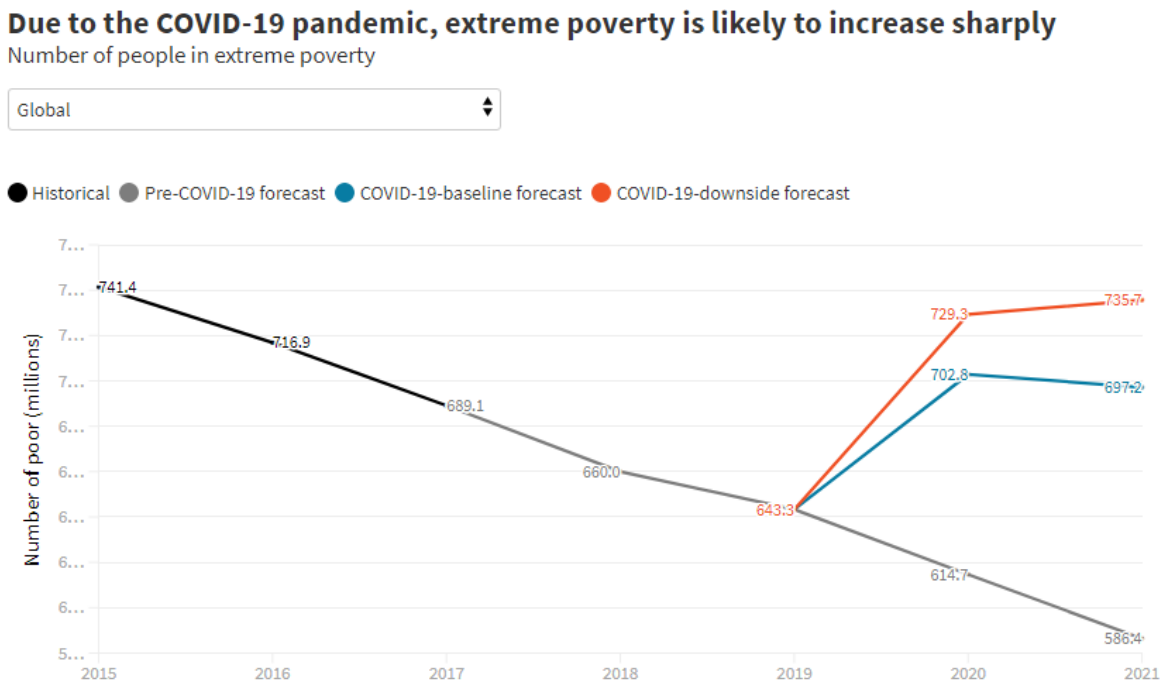

Figure 8: Global poverty (source: World Bank)

Young adults (18-39 years) reported higher rates of worsening loneliness compared to middle-aged adults (40-64 years). With regard to anger, 71% of participants experienced deterioration in the last two weeks before completing the questionnaire compared to the corresponding period prior to the pandemic (Breitbart, 2020b). Rates of worsening anger were higher in the elderly (96%) but also among young people (57%) compared to middle-aged people (53%). 26% reported small changes in anger levels, while 3% improved anger levels; the survey recorded differences between men and women in rates of small anger changes (42% in men versus 39% in women) but not in rates of worsening or decreased anger levels (James, 2020).

7.6.2 Improving socially beneficial behavior

In terms of socially beneficial behavior, 66% of participants improved, small changes were observed in 26%, while 1% of participants experienced an increase in the last two weeks prior to the completion of the questionnaire compared to the corresponding period prior to the pandemic (Greig, 2020). Differences in rates of improvement in socially beneficial behavior between young adults and middle-aged people were not found, while older people improved their socially beneficial behavior by 96%.

7.6.3 Internet, social media and media

With regard to the Internet, social media and the media, an increase in their time of use was reported in 85% of participants from Greece. The increase was greater among women compared to men (77% vs. 72%). and the elderly (98%) compared to middle-aged people (72%).

7.6.4 Ways to manage

The most effective strategies for dealing with the particular conditions brought about in everyday life by the pandemic were exercise or walking (63%), internet use (61%), hobbies (61%), direct social contact or social interaction (60%), study or learning something new (49%), social media and social interactions from a distance (48%), work at home or at home (42%), information on the Covid-19 pandemic (41%), the media (41%), time with a pet (36%), as well as physical proximity and sexual activity (36%).

For men, the most effective pandemic management strategies were internet use (61%), exercise or walking (59%), hobbies (56%) and hobbies (56%). and direct social contact or social interaction (55%). for young adults, the most effective management strategies were direct social contact or social interaction (65%), exercise or walking (65%), hobbies (65%) and social interaction (65%). and internet use (62%). and direct social contact or social interaction (57%). and direct social contact or social interaction (47%).

The research project is promoted in our country by the 2nd University Psychiatric Clinic of the University of Athens in collaboration with more than 200 researchers in research institutions and Universities of at least 40 countries. The study involved 7,467 people until 31 August, with most responses relating to the period from 26 April to the end of June. The median age of people from Greece who responded to this survey was 41 years.

7.7 Conclusions

The crisis affects almost all economic sectors horizontally, but some will be hit the most and others will be dragged in by their sinking or will find themselves at the center of large-scale acquisitions by companies with a stronger economic base. Only if brave and targeted rescue measures are combined with a green change in the economic activity model and production base overall, is there the possibility of rescuing a large part of the economy. In other words, rescue and recovery must support not outdated models of economic activity but a rapid and targeted transition to a new, green, resilient, socially responsible and sustainable economy model.

The recovery of the economy requires strengthening research particularly in green and socially important sectors and linking research results with real needs of society and the economy. This does not mean that research in the humanities and social sciences is becoming redundant and that all research should focus only on technological and economic issues. It is simply recognized that technology, and especially digital technology, contributes within the right framework, to combating social discrimination and inequalities, facilitates everyone's access to health, strengthens democracy and facilitates distance learning. Without context, however, technological applications could lead to more authoritarian regimes, centralization of power, control of citizens, degradation of democracy, the face of discrimination and inequality. It is therefore very important to monitor the application of technology.

Modern research is more knowledge-intensive and based on flexible shapes. Even a small country with limited resources such as Greece could be, through synergies and participation in networks, an important center of research and dissemination of research results. Some critical research areas for the future are combined and interdisciplinary health synergies.

We tend to talk about digital reform in public administration or now even more so in the crisis for teleconferences or tele-work that will surely change the way we communicate and work. But there are many other areas where digital technology plays an important role in reducing inequalities and improving everyone's access to basic rights (e.g., tele-medicine, remote service to citizens by the authorities, tackling tax fraud, energy democracy, decentralization in production, exchange and storage of energy from RES, participation in the process of shaping and decision-making, etc.).

However, digitization must be linked to a more general simplification of bureaucracy, not simply the use of technology in a bureaucratic and multi-role system that ultimately leaves out those who are not trained (digital illiteracy) and creates further obstacles in the absence of policies and tools that solve problems for those left behind. The role of the social economy is recognized at international and European level as particularly important, as experience in many countries shows, both during crises and during recovery (Thoma et al. 2020).

Cooperative schemes of different organizational types, sectors of activity and legal forms as well as partnerships between them and/or with other small and medium-sized enterprises and local authorities can (re)-integrate effectively into decent work and innovative sectors young

and long-term unemployed, migrants, seasonal workers, workers in precarious and informal working conditions but also contribute to green and social transformation with resources from the recovery fund.

This implies a transition from subsidizing extreme forms of unemployment to integrated labor integration policies and tools through social entrepreneurship by exploiting programs, promoting reliable education and training in new social and green professions, as well as the practical work of 'community work' programs in order to create decent working conditions rather than fill public sector gaps (Thunström et al. 2020).

As European and Greek bodies put forward to the European Commission, entitled 'How can we reactivate the European Youth Employment Policy following the CRISIS of the COVID-19 pandemic', education and training are crucial factors in the transition to a green economy model and the creation of new jobs. In the view of these bodies, youth employment policies in general, and in particular the European Youth Guarantee, should focus on the increasing preparation of young people for tasks and professions that are important, and really necessary, for the sustainable and environmentally compatible future of businesses and society (Lipscy, 2020).

Therefore, support should not be provided only to integrate young people and young people into existing labor frameworks. Nor waste resources on training or employment without a clear result. On the contrary, the emphasis should be on employment in innovative, emerging professions that are important for a sustainable Europe and on job creation with a focus on Green Skills. Activities that contribute to de-carbon and quickly achieve climate neutrality are central in this direction. However, in most European countries, existing training and related measures do not meet the demand for 'Green Skills' and the needs of modern labor markets. Jobs and services related to sustainable development need to be created and existing professional profiles need to be redefined.

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8 Collapse of a regional economy and its optimistic options for recovery

Günter KOCH
Humboldt Cosmos Multiversity, Tenerife, Spain

If there is one regional economy that has been fatally affected by the Corona epidemic and is now on the brink of extinction, it is that of the tourist islands, in Europe especially the islands belonging to the Mediterranean countries.

The so-called ultra-peripheral island regions of Europe, especially the Canary Islands, in one of which, Tenerife, the Humboldt Cosmos Multiversity (which is presided by the author of this article) has been hit even harder than any other Spanish tourist territory.

As romantically as the Canary Islands are perceived - they have been associated mythologically with the island of Atlantis as an instance of Thomas More's fantasy island of Utopia (More, 1551) - their situation is catastrophic today after more than one year of the pandemic. At the time when this article is being written, the Canary Islands are facing an economic slump of about 35% and equally high unemployment. Youth unemployment is even more dramatic with over 50%. A broad analysis shows that ultimately up to 50% of the economy of the islands depends on tourism or tourism related business, either directly or indirectly, as well as on international transport, because secondarily also the transport sector, the hotel industry, gastronomy as well as the construction industry largely depend on tourism and transport of goods.

Islands with a high living standard, as the Canary Islands were happy to experience, are each to be regarded as a microcosm in their own right, with a highly developed infrastructure, however, due to their insularity, they are at least scarcely in a position to relocate ground-based business. In addition, the Canary Islands in particular are prime examples of monolithic, i.e. hardly diversified, economic structures. An example of this is not only tourism, but also agriculture, which for reasons of an "economy of scale" has been cultivating monocultures for several decades, lately in the form of banana plantations.

In 2019, the gross domestic product (GDP) of the Canary Islands was at 47,164m euros, which places it as the 8th economy in Spain. Looking at the GDP per capita in 2019, which is taken as an indicator for the quality of life, the Canary Islands reported 21,244 euros. In comparison the GDP per capita in Spain in 2019 was at 26,430 euros and 41,340 euros in Germany (datamacro, 2020).

Looking in more detail to the economic domains, Tenerife’s economy is best characterized by its tertiary sector, which takes about 74.6% (Cabildo de Tenerife, 2020). Within the service sector, in particular the tourism and in consequence the hotel industry stands out. Especially in the hotel area, there is a foreseeable need for highly qualified and well-educated personnel for high-class hotels. In connection to this sector, construction of buildings and touristic specialized construction activities are flourishing (European Commission, 2020a). The industry sector on the island is sparse and accounts for only about 8 % of local GDP, and concentrates in the processing of tobacco, agro-food processing and oil refinery. In regard to the primary sector, i.e., agriculture, the accent is on rain-fed plants as are potatoes and vines, and second in irrigated agriculture as are bananas and tomatoes. A relevant export of tropical fruits like mangoes, pineapples and avocados as well as flowers has started in recent years. Exports in this field are mainly geared towards trade with national markets in Spain as well as in the EU (Cabildo de Tenerife, 2020).

The commercial business structure on the Cananary Islands at large is characterized by small and medium-sized enterprises. Thus, the Canaries have 146,126 registered companies, of which more than 50% have no employees at all, 35,17% employ five or less people and only 8.66% employ more than five people. For this reason, the island only has thirteen companies

with more than a thousand employees (European Commission, 2020). Approximately 1,130,700 people are in working age in the overall Canary Islands (2019), of which 239,600 people are unemployed. This involved 87,794 men and 116,735 women. The unemployment rate until early 2020 amounted to 21.19%, which was already above the national average. With the pandemic year 2020 it is exceeding 30%, with an unemployment rate of the young generation going above 50%. The majority of unemployed adult residents worked in the service sector, followed by the construction industry, the industrial field and finally the agricultural sector (European Commission, 2020). Analysed in more detail, most of the unemployed workers were from professions in administration, followed by farm workers, cashiers, carpenters, workers in orchards, greenhouses, nurseries and gardens, learning supervisors, receptionists and hairdressers. Considering such statistics, it can be concluded that the Canary Islands have a labour surplus in occupations in which lower skills are required (European Commission, 2020b). Regarding those who are employed, their minimum wage received in 2020 equals 950 euros per month, 50 euros more than in 2019, which is an increase of 5.6%.

The public debt amounted to 6,613 million euros in 2019, which is a debt per capita of around 2,978 euros (datamacro, 2020). Factors such as insularity, lack of raw materials and distance from the European continent resulted in disadvantages for a more prosperous development of the Canary Islands economy. To counteract these disadvantages, the Canary Islands enjoy the privilege of a special economic and tax regime, which includes e.g. special rules on the Value Added Tax (VAT) (European commission, n.d.a). These special rules imply that the islands are not part of the harmonized European VAT system (Article 6 of the VAT Directive). Instead, there is a local tax on consumption, the IGIC (Impuesto General Indirecto de Canarias) and another tax on consumption, namely the AIEM (Arbitrio sobre Importaciones y Entregas de Mercancías en las Islas Canarias). These taxes are handled by either the national or local authorities, which nevertheless need to accord with the general principles of the Treaty on the Functioning of the European Union, in order to exclude discrimination in the taxation of goods (European Commission, n.d.b).

During the last thirty years, the standard of living in the Canary Islands has continuously increased. This is evident in the steadily rising Human Development Index (HDI), which in 2018 had a value of 0.861. In comparison, Spain as a whole is in 25th place with a value of 0.893 and Germany is in 4th place with 0.939. In general, the HDI value shows a combination of life expectancy, GDP per capita and education levels. Countries that reach a value above 0.800 are considered to enjoy a very high level of development, which indicates that the Canary Islands have reached such high level of human development (Conceição, 2019, p. 300; Forte, 2018; globaldatalab, 2020).

The current Covid-19 crisis has an extraordinary strong impact on the Canary Islands economy. For example, every second company has reduced its workforce and about one in three has even laid off more than half of its employees or sent them to work part-time. Accordingly, about 40 percent of the island's residents are unemployed or working part-time. As a result, at least 28,000 people are now living at subsistence level. This in turn has a major impact on the economic performance of businesses. According to the Spanish Confederation of Small and MediumSized Entrepreneurs (CEPYME), 90 percent of companies currently make less sales than they did before the Corona crisis. Around 40 percent of them even experience turn overs less than half. Since the islands experience a huge dependency on tourism, it is harder for them to face the effects of Covid-19. All economic indicators of the Canary Islands are disproportionately more negative due to the dependence on the service sector as caused by the current Corona situation (Bornewasser, 2020a, 2020b).

In 2020, the economic collapse was compounded in addition by the fact that the islands were flooded by waves of migrants from Africa. Based on an article of Julia Macher (Macher 2020) in the German weekly DIE ZEIT, the situation must be drafted as follows:

Since September 2020, the number of those setting off from the West African coast in fishing boats towards the Canary Islands has risen steeply. The Atlantic route is one of the deadliest refugee routes in the world. At its narrowest point, 60 nautical miles separate West Africa from

the Canary Islands. Most boats with migrants leave from the south of Morocco. Not all of them arrive. According to estimates, around 500 people drowned during the crossing in autumn 2020 alone. About 20,000 have crossed the Atlantic to Europe so far, 7,000 in November 2020 alone. To the end of 2020 a total of 2000 boat people are estimated to have died – after a report from official German television (2nd Channel).

The Maghreb expert and journalist Ignacio Cembrero sees the current political situation in Morocco as a cause for the flight. In autumn 2020, the military conflict between Morocco and the Western Sahara liberation movement Polisario broke out again. Since then, the North African Kingdom of Morocco has massively withdrawn security forces from the coastal towns. Most of the boats depart from the port city of Dajla. According to the Spanish daily El País, around a thousand people are constantly waiting there for their chance to cross. Most of them are Moroccans who previously worked as waiters, tour guides, taxi drivers or in the tourism industry and who have lost their livelihoods due to the Corona crisis.

There exists no official information on the migrants' countries of origin. According to the Spanish Commission for Refugee Aid (CEAR), about half of them come from Morocco, followed by Senegal and Mali where the civil war governs the country. There are repatriation agreements between Spain and the Maghreb state, but currently the borders are closed due to the pandemic. Thus, diplomatic efforts between Spain and Morocco have come to nothing.

Normally, the high touristic season in the Canary Islands begins towards winter. However, because of the Corona pandemic, most hotels have remained empty to the end of 2020, except for twelve resorts that the Government rented at short notice to accommodate 5,500 migrants. From asking the migrants where they want to go and how to proceed, it is known that a majority want to get away from the Canary Islands to “Mainland Europe”. But that is exactly what the Spanish Central Government does not want. In the late months of 2020, the government has officially flown just 2,000 people to the mainland, mostly women and minors in need of special protection, or refugees who have applied for asylum. The presidents of the two islands Gran Canaria and Tenerife are furious about the Central Government’s ignorance. They foresee that the Canaries would be turned into permanent “prison camps” comparable to Lesbos in Greece. The Spanish Interior Ministry does not hide the fact that this policy is primarily meant as a deterrent. The Madrid Government wants to avoid migrants sending home photos of their successful arrival at the Canary Islands or the further in Barcelona, Madrid or Seville, signalling that their journey finally has been a success.

The Ministry of the Interior dodges enquiries about the exact number of flights made to the mainland. The Ministry of Social Affairs and Migration does not consider itself responsible for providing information. This leaves to us only a speculative calculation: if one assumes that about 20,000 men and women have arrived on the Canary Islands since the beginning of the crisis, there are currently about 9,000 who are staying there, 300 have been repatriated to their countries of origin and 2,000 are on the mainland as persons in need of protection or asylum seekers. Accordingly, the number of actual flights or repatriations must be much higher as officially admitted.

Politicians on the islands now fear for social peace and so they claim, that Spanish authorities forget about that the country is a tourism-dependent region, so especially the Canary Islands are particularly suffering from the Corona-Virus crisis. If social unrest spreads in the midst of such a crisis, it is foreseeable that it will create fear among the population, and fear in turn serves for a breeding ground for hatred. Aid workers already in 2020 reported that they were being mobbed and insulted by resident islanders. 6,450 long-term reception places that Madrid is prepared to create for the migrants on Tenerife, Gran Canaria and also Fuerteventura are far too few, foresseing that Uup to 300 people per day will continue to arrive on the islands in autumn 2020. Even if the numbers slow down seasonally in winter 20/21, the end is far from in sight.

In sum, as far as the Canary Islands are concerned, one must speak of the pandemic as an “Amargeddon” (https://en.wikipedia.org/wiki/Armageddon) that caught the islands unprepared. Although the Humboldt Cosmos Multiversity (www.humboldt-cosmos-multiversity.org) has

prominently pointed out the diversity deficit in its workshops since the beginning of its existence in 2012, however, it ultimately had to realise that even in academic circles, such as the University of La Laguna (ULL) and the islands' high-tech institutions as are ITER, InTech, ITEC, the Oceanographic Institute, the IAC, plus others more, they even more showed little response, or let's say it this way: little potential to react to this warning of a general danger. One of the warning voices on the potential catastrophic effects of an epidemic on the islands came from Rodrigo Trujillo, a mathematician from the local university ULL, pointing out which consequences a disease event would have for the fragile Islands' economy (Trujillo 2019)

The manifest "doom and gloom"-situation has led to quite a few initiatives both by the island governments and by private initiatives. In particular, the foundation of the local bank Caja Canarias stood out with a series of lectures analysing the situation, but as well as from the government itself, clever but ultimately unworkable proposals came forth so far, at least no proposals driven by entrepreneurs and private investors.

In view of the analysis of the deficits towards an efficient and entrepreneur-driven rebuilding of the islands' economy, the Humboldt Cosmos Multiversity in cooperation with the University of Kempten in Germany launched a project in which the master class of 25 students in international management were challenged to invent business ideas for rebuilding the economy specifically for Tenerife. Of course, it would have been obvious to use the existing structures and mechanisms to restart tourism and therefore develop a new start "in the old normal", which would unquestionably allow for a quick relaunch. This option, however, was discarded for two reasons. (1) Even if new forms of tourism, such as tourism devoted to ecology or health, will be indispensable, it still remains to be popular tourism. (2) In order to break up the monostructures and to move towards a more more diverse economic situation, new projects are needed that produce a diverse economy from the ground up.

Taking into account existing potentials and preconditions, the following five proposals on Sustainable Business Models based on the core idea of circular economy have been elaborated by the Kempten students' group as a solution to escape from the current depression (Kempten 2021):

1. "Ocean Support": Main goal of the "Ocean Support" business is to achieve plastic free beaches and seas. Funding is conceived by crowd and donation financing. Collected plastics shall be recycled.

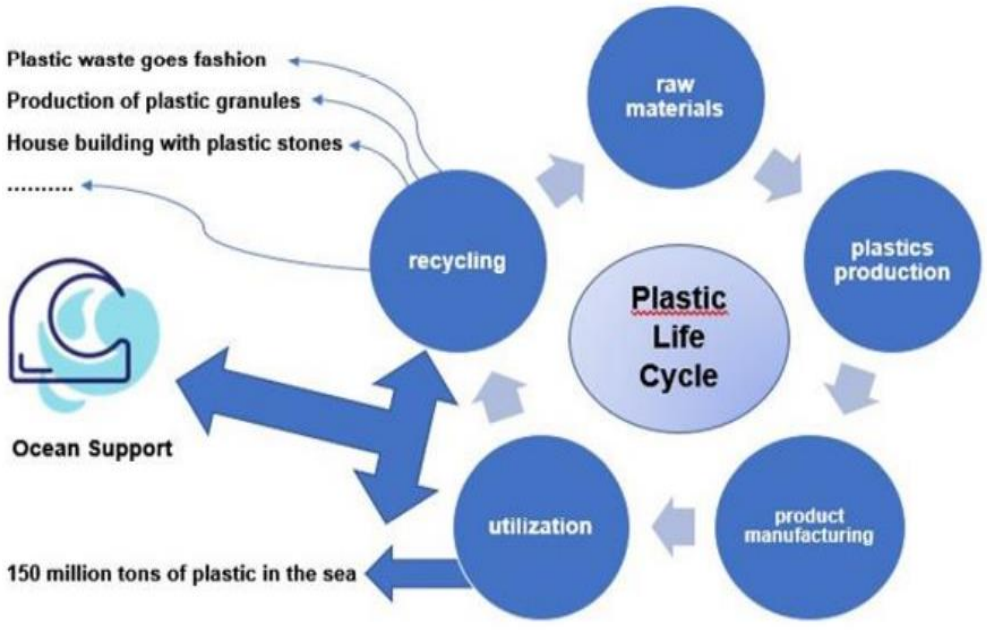

Figure 1: Plastic life cycle

2. “Seawater Greenhouse”: Efficient agricultural cultivation by efficiently transforming seawater into fresh water using solar energy.

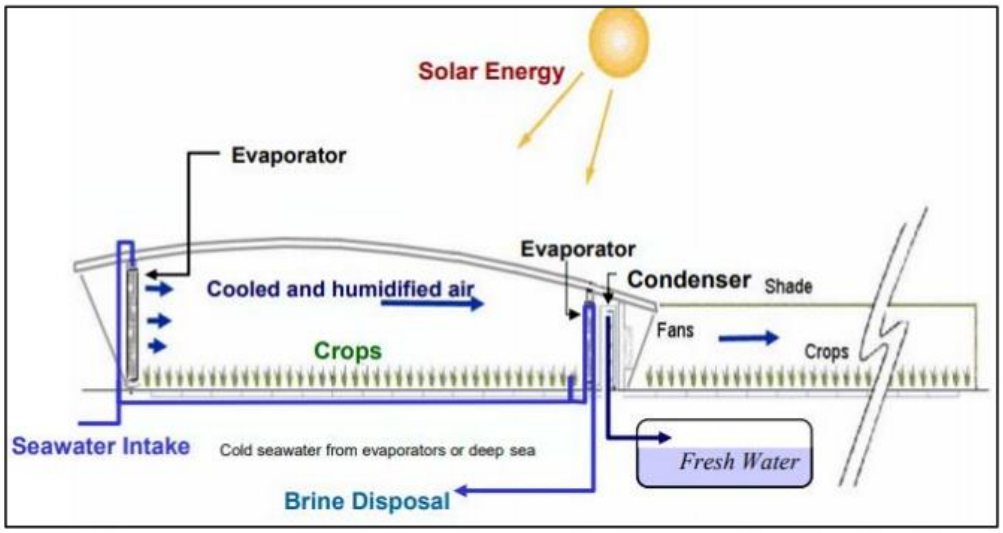

Figure 2: The functionality of the Seawater Greenhouse (Source Paton and Davies 1996)

3. “OneMarket”: The vision with onemarket is to create a platform for the suppliers and consumers of food products. The main idea is that consumers can order locally produced food of good quality by their phones or computers. "Food products" include everything Tenerife can offer: vegetables, seafood, and meat, as well as locally brewed beer.

Figure 3: Circular Business Model OneMarket

4. “Vinerife”: The suggested goal is to expand Canarian wine business for the international market and to establish a well-organised and well working wine cooperative between today’s individual winegrowers as much as there are some of them willing to go for a merger.

Figure 4: Canarian wines

5. “Working from Home transferred to the Island”: The core objective of Working from Home is a service to enable employees of e.g. continental contractors to work remotely on a beautiful island for a limited time. This way, employees do not have to work from home, but can work for a limited time at another location that is equipped for their needs. Working from the Islands connects employees, their employers, co-working spaces and accommodation.

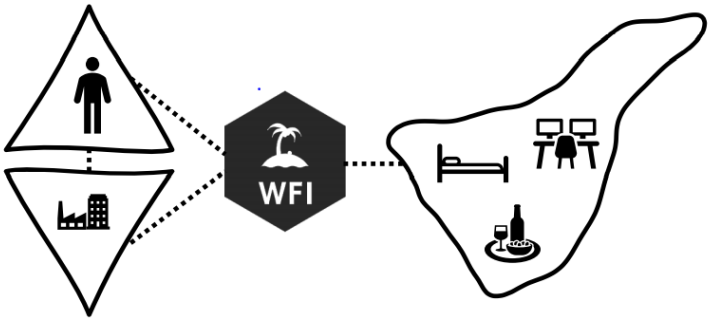

Figure 5: Working from Home transferred to the Island

Clear enough that the perspectives worked out by the students group - where intention of which is to raise optimism for the future - the proposed projects have different time horizons between an immediate implementation (Distant Working as outlined by proposal 5) to projects implementable within 2 to 3 years (proposal 3: “One Market” and 4: “Vinerife”) and longer term projects needing 5+ years (as apply for proposals 1: “Ocean Support” and 2: “Seawater Greenhouse”)

Even if, as was said at the beginning, the Canary Islands were hit by the pandemic like by an Amargeddon, the archipelagos has a potential to become a best in class template proving the wisdom that every crisis also contains the chance for a new beginning. Even if only one of the projects presented above will lead to success, the costly intellectual investments of the Humboldt Cosmos Multiversity in conjunction with the University of Kempten will have paid off in five to ten years at the latest and will have given the Canary Islands and its inhabitants, especially the youth, a new economic face. In this way, the pandemic would have generated a new world, perhaps even a new utopia.

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9 Influence of a global epidemic on future ICT use

Peter KOTAUCZEK
Institute for Human Informatics, Austria

Covid-19 is a fact. The virus exists and can be detected. It can trigger more severe and lighter clinical pictures and even lead to death. None of this is new and applies to all viral infections. Medicine has to deal with this. Politics too. But what does that have to do with ITC?

The previous computer usage mainly deals with short numerical values. This has cultural roots because the arithmetic tasks mainly operated with short numbers. Recently, however, the focus is on pattern processing tasks and these are based on long numbers.

One of the most important basic techniques in computer technology and natural number theory is parsing. By this we mean the breakdown of a (binary or multibasic) long number into individual blocks. Generally speaking, the universe can be understood as a continuously counting number according to the Peano axioms, which aims at the state of the Champernowne number but never reaches it. A Turing machine "cuts" out any short pieces (blocks) with the read / write head in relation to the joke juxta posed long number and concatenates them.

This process is called parsing. In the computer, the first parsing takes place in the compiler or interpreter. This parsing is strictly a syntactically and algorithmic part of every programming language. Unfortunately, the phenomenon of parsing is far too little covered in ITC education. There were no disadvantages as long as IT worked almost exclusively with short data strings in well-defined fields. The switch to biological-based data processing, as it is being used more and more in connection with Covid-19, also requires a reorganization of the training content.

Every natural number has a set of symbols and a juxtapose length. In everyday language we say: "This number has so and so many places". At each point there is a symbol from the symbol stock (e.g. the symbols 0 to 9 in the familiar decimal system) and the totality of the symbols results in the unique and unmistakable number. This reading of the number is called a concatenation. All arithmetic we learned in school is based on the natural numbers. But all computers and smartphones also work on this basis.

The interplay between joke and concatenation of a number is one of the most important and, at the same time, least known human cultural techniques. It seems so natural and natural to us that we never talk about it or teach it in schools (with the exception of theoretical computer science or certain areas of mathematics). That could also be a reason that we all allow ourselves to be so easily led behind the light with numbers.

The aim here is to show that parsing is not limited to computers and mathematics, but also takes place constantly in daily life. We divide texts, images and amounts of money into smaller parts every day and put them back together in our heads to form new wholes without worrying about the underlying cultural technique of parsing and re-parsing. The so much politically discussed “redistribution” is also based on parsing and re-parsing. As in a gold refinery, we constantly “pour” the “bars” as if they were made of gold.

Let's take any book as an example. It starts with lots of spaces and then continues with a large number of letters, punctuation marks, digits and symbols. Everything according to strict syntactic rules. In the computer this is standardized in the so-called ASCII code and results in a very, very long bit stream.

As we read a book, we begin to recognize the signs from left to right, to decipher them and to think together into more highly organized groups. In words, sentences, thoughts. This is parsing with the brain. At the end of the process, we say we have read and understood the book. We make an overall judgment. Positive or negative.

The transition from syntactic to semantic parsing takes place somewhere between the deciphering of the individual symbols and the sense-recognizing perception.

If it was an interesting book, we will read individual passages over and over again later. That is then re-parsing. This is the norm with specialist books. These are seldom read like a novel from front to back in one go.

Usually, you mark the most interesting places in such books with a colored marker pen. This is, for example, the re-parsing of a physics book carried out in our experiment. If you concatenate the marked text, i.e., read it in one go, you have the whole book in front of you in condensed short form. However, through the glasses (aspect) of those who did this re-parsing. Journalists and opinion leaders are good at the art of re-parsing in order to distill their view of things from outside sources. Teachers and popular educators use this to shape the worldview of their students. The advertisement uses the technique for framing the products it works for. Politics does this to generate power.

However, the same book can be read completely differently through a different re-framing. Some readers do that too and then, instead of an introduction to physics, for example, have a treatise on the historical development of natural philosophy. You will get to know personalities in science from many centuries and their reflections on God and the world. You will read exciting anecdotes about experiments made.

But there is a much more dramatic aspect of re-parsing (note: aspect dynamics). Right now we are experiencing a complete re-parsing of our monetary system. In the course of the consistent enforcement of epidemic law, as it is currently practiced all over the world, the cycle of money is not only inflated enormously but also reversed. How can we imagine that?

Let's look at the following figures, they show a section of a gigantic Jordan curve, which is bounded on the outside by a circumference and on the inside by an inscribed circle. This geometric shape has mathematically precisely defined properties.

It is compact, unrestricted and unlimited. It is closed. The sum of all partial curvatures is always 2pi. It has a reading direction.

A rich literature on the geometry of the Jordan curve can be found in Google, so this mathematics will not be elaborated on here. We are interested in the Jordan curve as a geometric metaphor. The spatial counterpart to the Jordan curve is the Jordan sphere, a structure that is currently haunting all media as the (fictional) form of the Covid-19 virus. (This picture was generated with the BEKO robot painting machine (CALSI) as early as 1987).

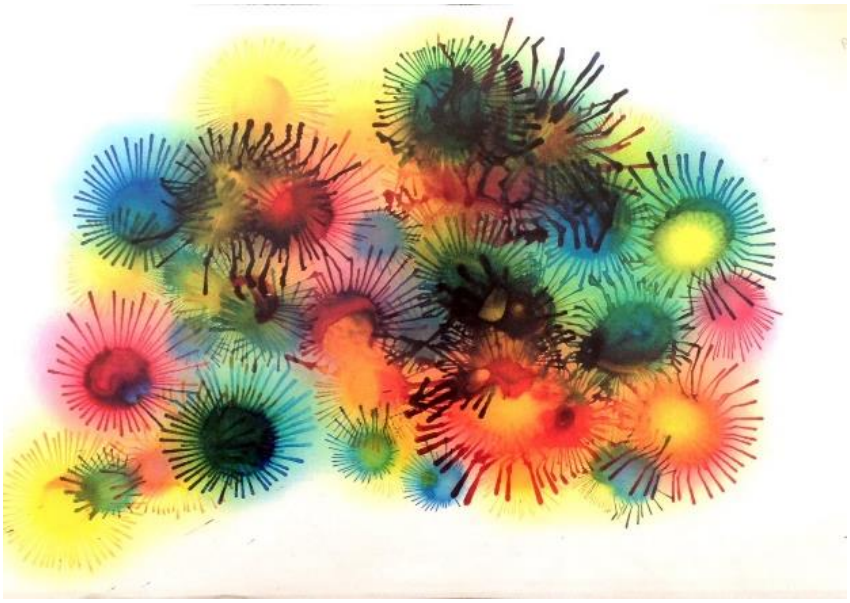

Figure 1: Jordan sphere

Back to the Jordan money curve:

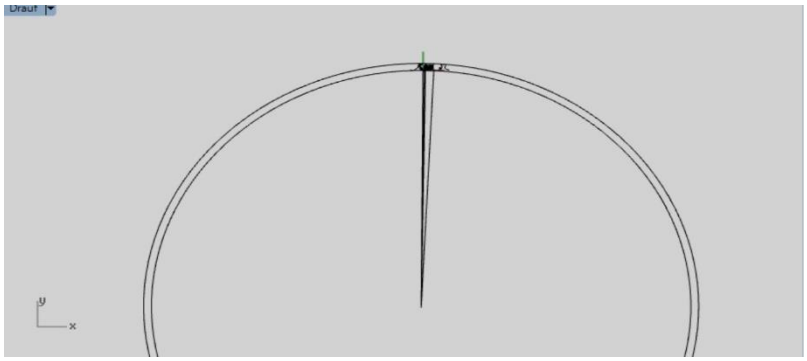

Figure 2: Jordan curve

The entire money supply can be imagined as a huge Jordan curve, where every unit of money (value) (e.g. euros, gold bars, land, shares, Bitcoin, dollars, etc.) is virtually symbolized as a point group of this curve.

This curve is closed and unevenly curved. The curvature symbolizes the aggregation of the money (value) units. Money tends to accumulate, as has been known for ages. This money-Jordan curve acts like a Turing machine. There are "read / write heads" that act on the Jordan curve and change the attribution of the monetary units. Each of us is such a “read / write head” in this picture, we can “read” our money stocks to a certain extent by counting them and crediting others by transferring or physically handing over our money. For example, we could buy a piece of land by handing over a gold bar. In an orderly economy, however, it will be done by overwriting a state-recognized currency (EUR) (with a click of the mouse).

This constantly changing money-Jordan curve is only circular in the theoretical ideal case. In reality it is dented locally because the ability to dispose of amounts of money by overwriting is extremely unevenly distributed. There are centers of gravity for money, as can be observed in physics with gravity. This inequality is currently growing because the centers of gravity are becoming fewer and fewer in number but increasingly gigantic in terms of amount.

The Jordan curve also has a writing direction. This is formed by causal time sequences. You cannot reverse money flows at will. So, taxes always flow from the citizen to the state. But civil servants' salaries always go from the state to a special class of citizens, the civil servants. Banks act on both sides. Markets too.

The geometry of the Jordan curve also helps us to better understand a phenomenon that has recently become so dramatic that is happening right before our eyes. For the first time in human history, it was technically and geometrically possible for fear of real danger to arise can spread globally faster than the danger itself. The hysteria of the Covid-19 fear is forcing one country

leader after the other to put whole countries in a prison-like state due to a slight increase in the overall mortality rate.

Fearful people and those who benefit from fearfulness, grows and spreads much faster than the real danger itself. Regardless of how dangerous the virus itself is, economic disasters are "managed" that will probably end up killing more people than the virus. However, one cannot assign these victims. All professional political actors know this and therefore always give in to mass hysteria or even sit at its head to collect votes. They know that when people are afraid, they cannot think logically. Even a dynamic curvature clumping in the Jordan curve cannot be assigned to a single cause clearly enough. Here the individual aspect dynamics in connection with synchronization effects play a central role. Just like in the monetary system.

And what is happening with our money right now? So far (the last thousand years) money has been generated by land through the work of people (and animals / plants) and redistributed upwards. The farmer produced food, the artisan tools and the officials order. The money generated migrated from below via taxes and levies upwards and down again via acts of grace and favor from the rulers. But also very much through market-dependent exchange acts. In addition, there was always voluntary renunciation and gifts. The money was always covered by the availability of things. Over land, houses, soldiers, farmers, food, equipment and farm animals. The machines and (salable) knowledge were added later. Later, the credit balance was added through the banking system. The rulers pledged their future tax revenues to bankers, who lent the rulers money for their luxuries and wars. The modern states do the same, but under new titles such as people's welfare or redistribution.

The new money economy now seems to run differently. If you believe the politicians, the money will soon be generated by the government in the central bank and distributed to the citizens through distribution organizations (ministries, banks, chambers, NGOs, state-affiliated corporations, etc.). In this context one speaks of "helicopter money" or "Modern Monetary Theory MMT". The state is not limited in its money creation (at least according to the supporters of this theory) in its ability to lengthen the money-Jordan curve. In this way, the “direction of flow” of the money tilts in the other direction. From bottom-up to top-down. This is what we call the “pole shift” hypothesis.

However, the state has little influence on the micro-curvatures of the money-Jordan curve, which are determined by the individual cash holdings. This is where the individual acts. The cash holding period determines the viscosity of the money (known as the cantillion effect). The state as a source of money is inherently viscous. This is called bureaucracy. Oligarchic centers of influence emerge (persons and institutions such as ministries, chambers, trade unions, regional authorities). The money channels can be variably wide or narrow, so the flow of money will be very different from one sector to another. We have heard sums of money from our politicians lately that take our breath away. Astronomical sums of money are generated every day from nothing, as in the physics book above in the vacuum fluctuation ("excitations of the vacuum"). The state is visibly falling in love with the possibility of controlling the economy centrally via liquidity management. Monetary planned economy is becoming more and more fashionable. New money distribution programs are constantly being announced.

Nobody knows how this radical global experiment of the MMT (Modern Monetary Theory) will turn out. What is certain, however, is that there will be winners and losers in this process. Those, like financial professionals, who better understand the geometric game of money flows, will position themselves in places of the higher curvature zones and be among the winners. Those who passively wait to see what happens and fail to grasp the curvature of the money-Jordan curve will lose. Therefore, in the opinion of the IHI, it is worth researching and understanding the geometry and re-parsing of the Geld-Jordan curve. It takes time and it is imperative to be in a hurry! "Those who come too late are punished by life."

This famous finding by Michael Gorbatschov brings us to the epidemic problem that currently affects mankind the most. An epidemic event is always very vague and complex. The ITC is just an auxiliary science for collecting data and facts about all related observations, assumptions and findings. The main application of modern ITC is primarily the link between

biological data and money flows. But the output of the ITC is the basis of almost all political decisions.

Data in biology, especially the structures of giant molecules, are a rapidly growing proportion of the strings (binary long numbers) processed in global computer networks. Such biomolecules are molecules of organic substances that occur in living things. They mainly consist of carbon and hydrogen, which form chemical compounds with oxygen, nitrogen, phosphorus or sulfur. A special genus of such biomolecules are the perforins, which play a central role in the development of an RNA vaccination against Covid-19. Such strings (molecule representatives) are preselected in simulation calculations in the computer, which then leads to great time savings in the real laboratory, which makes a decisive contribution to the faster development of vaccines. From an information-theoretical point of view, the lipid cell membrane is also a Jordan curve in two-dimensional space on which the perforin household can be simulated.

The parsing and re-parsing of long strings (= Blockchamper long numbers) is the most important tool for handling long data strings. Recently, a certain application of this technology has been penetrating more and more into our consciousness: the Covid 19 crisis and how to overcome it. A special aspect is the fact that Bill Gates dominated this topic with the announcement of the development of a special vaccine and apparently initiated a billion dollar business with it. One speaks of a potential of 7 billion vaccine units per virus. The EU had already pre-ordered 400 million units, although there was still no vaccine. This has been discussed highly controversially in the media and on the Internet. At IHI, we are primarily interested in the bioinformatics aspect. In addition, the IHI has the knowledge and the means to research there.

The CRISPR / Cas method (from “Clustered Regularly Interspaced Short Palindromic Repeats” - “grouped short palindromic repetitions with regular intervals”) is standard in applied genetic engineering and virology. It serves as the basis for constructing designer genes and profitable testing procedures. This makes it the focus of the IHI. For BEKO, a cooperation and / or investment with / in relevant IT companies should be considered.

The FASTA data format is a text-based format for displaying and storing the primary structure of nucleic acids (nucleic acid sequence) and proteins (protein sequence) in bioinformatics. The nucleobases or amino acids are represented by a one-letter code. Each letter can be transformed into a number on the computer. Theoretically, every gene sequence is therefore a subset of the Champernowne number, and thus (like the money geometry) is the subject of ongoing IHI research.

Sequence data can be viewed in public databases such as NCBI.

"FASTA format is a text-based format for representing either nucleotide sequences or peptide sequences, in which base pairs or amino acids are represented using single-letter codes. A sequence in FASTA format begins with a single-line description, followed by lines of sequence data. The description line is distinguished from the sequence data by a greater-than (">") symbol in the first column. It is recommended that all lines of text be shorter than 80 characters in length.

An example sequence in FASTA format is:

>gi|186681228|ref|YP_001864424.1| phycoerythrobilin:ferredoxin oxidoreductase
MNSERSDVTLYQPFLDYAIAYMRSRLDLEPYPIPTGFESNSAVVGKGKNQEEVVTTSYAFQTAKLRQIRA
AHVQGGNSLQVLNFVIFPHLNYDLPFFGADLVTLPGGHLIALDMQPLFRDDSAYQAKYTEPILPIFHAHQi
QHLSWGGDFPEEAQPFFSPAFLWTRPQETAVVETQVFAAFKDYLKAYLDFVEQAEAVTDSQNLVAIKQAQ
LRYLRYRAEKDPARGMFKRFYGAEWTEEYIHGFLFDLERKLTVVK"

(Zitat Wikipedia)

FASTA and BLAST are the algorithms that are most commonly used for sequence comparison. In bioinformatics, BLAST is an algorithm and a program for comparing primary biological sequence information, such as the amino acid sequences of proteins or the nucleotides of DNA and / or RNA sequences. They are trimmed for speed so that you can quickly search

through the large sequence databases. It is therefore very important to understand the algorithms, but also their limitations. Since the sequence comparison serves to prove the homology of proteins, one must be sure in the evaluation of the results.

The current IHI experiments with parts of the Champernowne

Number and Jordan curves have a new current long number in

Focus on the four-base number system: the complete gene sequence of the currently rampant Covid-19 virus, which completely rules our lives and politics.

A concrete experiment was the transformation of the complete genome of the Covid-19 virus 2 Wuhan-Hu-1 from the database of the US National Center for Biotechnology Information into a decimal BlockChamper number with the concatenated size of 3.300022 * 10 ^ 29902 defined by the IHI. Juxtaposing and semantic linking of this number resulted in 29.94% adenine, 18.37% cytosine, 19.61% guanine and 32.08% thymine in the Covid-19 virus. For reasons of competence, the IHI did not evaluate whether this structural peculiarity has a biological meaning and what it could be. Only the number-theoretical facts were the subject of the investigation.

For a better idea, a tiny piece (10 of 426 lines) of this gigantic BlockChamper number is shown here (Drosten also used the same technique for the development of the PCR test named after him for Covid-19):

First the FASTA notation:

ATTAAAGGTTTATACCTTCCCAGGTAACAAACCAACCAACTTTCGATCTCTTGTAGATCTGTTCTCTAAA

CGAACTTTAAAATCTGTGTGGCTGTCACTCGGCTGCATGCTTAGTGCACTCACGCAGTATAATTAATAAC

TAATTACTGTCGTTGACAGGACACGAGTAACTCGTCTATCTTCTGCAGGCTGCTTACGGTTTCGTCCGTG

TTGCAGCCGATCATCAGCACATCTAGGTTTCGTCCGGGTGTGACCGAAAGGTAAGATGGAGAGCCTTGTC

CCTGGTTTCAACGAGAAAACACACGTCCAACTCAGTTTGCCTGTTTTACAGGTTCGCGACGTGCTCGTAC

GTGGCTTTGGAGACTCCGTGGAGGAGGTCTTATCAGAGGCACGTCAACATCTTAAAGATGGCACTTGTGG

CTTAGTAGAAGTTGAAAAAGGCGTTTTGCCTCAACTTGAACAGCCCTATGTGTTCATCAAACGTTCGGAT

GCTCGAACTGCACCTCATGGTCATGTTATGGTTGAGCTGGTAGCAGAACTCGAAGGCATTCAGTACGGTC

GTAGTGGTGAGACACTTGGTGTCCTTGTCCCTCATGTGGGCGAAATACCAGTGGCTTACCGCAAGGTTCT

TCTTCGTAAGAACGGTAATAAAGGAGCTGGTGGCCATAGTTACGGCGCCGATCTAAAGTCATTTGACTTA

Each of the letters here denotes a nucleotide.

And now the transformed decimal IHI BlockChamper notation:

033000223330301133111022300100011001100133312031313323020313233131300 0

120013330000313232322132310131221321032133023210131012102303003300300 1

300330132312332010220101202300131231303133132102213213301223331231123 2

332102112031031021010313022333123112222323201120002230020322020211332 31

113223331001202000010101231100131023332113233330102233121201232131230 1

232213332202013112322022022313303102022101231001031330002032210133232 2

133023020023320000022123333211310013320010211130323233103100012331220 3

213120013210113103223103233032233202132230210200131200221033102301223 1

230232232020101332232311332311131032322212000301102322133011210022331 3

313312300200122300300022021322322110302330122121120313000231033320133 0

You can clearly see that this is now a familiar number spelling, which we can use our parsing tools without knowing the biological / chemical background to work out structural properties.

Structural properties such as palindromes (CRISPR) or accumulation phenomena can be investigated very well with the means of number theory at the IHI, even without deeper knowledge of biology and genetic engineering. Contact virologists or pharmacologists should be sought for further conclusions or even products. However, this is a risk capital issue.

To conclude and to illustrate, an interesting example from the gene databases. A comparison with the sequence of an orchid plant and an influenza virus:

>Seq3 [organism=Phalaenopsis equestris var. leucaspis]
CCTATACCTAATTTTCGGCGCATGAGCCGGAATGGTGGGTACCGCTCTAAGCCTCCTCATTCGAGCAGAA
CTAGGCCAACCCGGAGCCCTTCTGGGAGACGACCAAGTCTACAACGTGGTTGTCACGGCCCATGCCTTCG
TAATAATCTTCTTTATAGTTATGCCGATTATAATCGGAGGATTCGGAAACTGACTAGTCCCCCTAATAAT
CGGAGCCCCAGACATAGCATTTCCGCGAATAAACAACATAAGCTTCTGACTACTCCCACCATCATTCCTC
CTCCTCTTAGCATCCTCCACAGTGGAAGCAGGCGTAGGTACAGGCTGAACAGTGTATCCCCCACTAGCTG
GCAACCTAGCTCATGCCGGGGCCTCAGTCGACCTCGCAATCTTCTCCTTACACCTAGCTGGTATTTCCTC
AATCCTCGGAGCAATTAACTTCATTACAACAGCAATTAACATGAAACCTCCTGCCCTCTCACAATACCAA
ACCCCACTATTCGTCTGATCAGTGTTAATTACTGCAGTCCTCCTTCTCCTTTCCCTTCCAGTTCTAGCTG
CAGGAATCACAATGCTCCTCACAGACCGCAACCTCAACACCACATTCTTCGACCCTGCCGGAGGAGGAGA
TCCCGTCCTATATCAACATCTCTTCTGATTCTTCGGCCACCCAGAAGTCTACATCCTAATCCTC

>Seq5 [organism=Influenza A virus]
CCTATACCTAATTTTCGGCGCATGAGCCGGAATAGTGGGTACCGCCCTAAGCCTCCTCATTCGAGCAGAA
CTAGGCCAACCCGGAGCCCTTCTGGGAGACGACCAAGTCTATAACGTAGTTGTCACGGCCCATGCCTTCG
TAATAATTTTCTTTATAGTTATGCCGATTATAATCGGAGGATTCGGAAACTGACTAGTCCCCCTAATAAT
CGGAGCCCCAGACATAGCATTCCCACGAATAAACAACATAAGCTTCTGACTACTCCCACCATCATTCCTT
CTCCTCCTAGCATCCTCCACAGTCGAAGCAGGCGTAGGTACAGGCTGAACAGTATACCCCCCACTAGCTG
GCAACCTAGCTCACGCCGGAGCCTCAGTCGACCTCGCAATCTTCTCTCTACACCTAGCTGGTATTTCCTC
AATCCTCGGAGCAATCAACTTCATTACAACAGCAATTAACATAAAACCTCCTGCCCTCTCACAATACCAA
ACCCCACTGTTCGTCTGATCCGTCCTAATCACTGCAGTCCTCCTGCTCCTTTCCCTTCCAGTTCTAGCTG
CAGGAATCACAATACTCCTCACAGACCGCAACCTAAACACCACATTCTTCGACCCTGCTGGAGGAGGAGA
TCCCGTCCTATATCAACACCTTTTCTGATTCTTCGGCCACCCAGAAGTCTACATCCTAATCNTC

Do you see the difference? You have to look for a long time to see the tiny difference. Although these are two very different organisms. A pathogen and a popular ornamental plant. The difference is easy to determine from a number theory point of view (according to IHI there is an approx. 96% agreement). Such statistical / mathematical sequence comparisons have long been standard in genetic research. For example, the comparison pair human / chimpanzee is around 99%, human / mouse around 90%, human / horse around 50% and human / banana also around 50%.

How strongly e.g. Microsoft, as a leading global IT company, is already involved in bio-informatics, should the following quote underline:

Microsoft even has a programming language for DNA computing that can help make DNA computing practical once the technology of bio-processors progresses to the point that it can run more sophisticated algorithms. In fact, Microsoft is planning on introducing DNA computing to its cloud services by 2020 and actively developing a DNA data storage to integrate into its cloud services.

Quelle: https://amp.interestingengineering.com/what-is-dna-computing-how-does-it-work-and-why-its-such-a-big-deal

The link provided provides further information about this development.

What does it all mean for the ITC?

1. Bio-informatics is one of the fastest growing IT business fields.

2. Virus and vaccination with genetically modified RNA is cutting edge.

3. The announced RNA-based Covid-19 vaccination is genetic engineering in humans.

4. Every DNA and thus CRISPR is geometrically a Jordan curve.

5. Microsoft Azure is heavily involved in CRISPR.

6. Bioinformatics has become an important branch of the pharmaceutical industry.

The world star among historians, about whom Bill Gates writes the following on Facebook: "Historian Yuval Noah Harari will always have a place on my bookshelf (and in my book bag)." Wrote this sentence in his most recent book:

"If governments and corporations succeed in cracking the human operating system, we will be exposed to a whole flood of precision-controlled manipulation, advertising and propaganda." (Harari, Yuval Noah. 21 Lessons for the 21st Century (German Edition) (p. 85-86). CHBeck. Kindle version.)

Who in the world knows more about the operating systems business than the creator of Windows? So why is everyone wondering that Bill Gates of all people is jumping into this business field?

10 Across Borders and Barriers – Students International Online Conference

Julia KRAUSE
HTW Dresden, Germany

10.1 Abstract

Teaching at universities or in adult education requires not only profound knowledge of the subject to be taught but also some pedagogical and didactic tools. Educators across the globe have been looking for tools that would inspire and motivate students, would enable them to work independently by doing their own research and in this way - learn how to learn. Tools that enable to develop a passion for certain subjects and topics, to learn to work in teams & contribute to a common goal, to have a strategic vision for their own achievements and to be patient at the same time. This Corona year required a new didactic approach and sometimes projecting the old formats onto new online circumstances. An online conference, among other creative tools, was an event that received a huge positive response from students, locked in their home countries without direct contact to other fellow students. This was expressed in the quality and creativity of students´ work and engagement. But also, the geography of our participants was amazing – providing equal opportunities to students from all corners of the world – the perfect tool to stay connected and to be heard & seen in times of lockdown!

10.2 Challenges of teaching and requirements of the future employment

The last summer semester 2020 was a very special one. The challenge was not just to offer an “interim” solution, but to make the best out of the situation and to create new formats or adapt old ones required due to the Corona pandemic. The topics of flexibility in thinking, agility in action, "embracing" the change and innovation that we tried to teach our students in all the semesters before, had suddenly the opportunity to be actively addressed and implemented. A number of challenges and requirements had to be taken into account while creating new lectures, seminars or teaching formats. Here are some of those challenges and requirements.

10.2.1 The lack of contact

The first online semester was a challenge not only for teachers but also for students. Being almost isolated from the world, spending most of the time in front of computers, it was often impossible to establish personal contact with other fellow students.

For lecturers, too, it was unusual to sit in front of a "black wall" and give lectures without seeing the students' faces most of the time, without being able to “read” from them whether the material presented seemed to be exciting or at least interesting, or whether students were distracted or bored and unable to pay the necessary attention to the subject.

Many seminar participants did not know each other, especially international students who participated for the first time in lectures and seminars at that particular university. Of course, in some situations, it was possible to learn a lot about their personalities from the chat messages, but there was still a huge lack of visual connection, which led to some kind of restraint.

10.2.2 Research-based teaching

Although the traditional lectures are very well suited for such digital teaching, we know that this passive learning is exhausting and less effective. It is important to create spaces and opportunities for students to acquire knowledge and to search for content on their own, to systematise it and to present it to others in an appropriate form. After all, one learns best when one actively and independently generates the knowledge or better - teaches the topic to others!

10.2.3 Communication

In addition to technical knowledge (in my case in Supply Chain Management and Sales), the ability to communicate, to present one's own ideas to others, to inspire others with one's own content is of enormous importance for the leaders and managers of tomorrow. "Communication is only learned through communication", Cicero once said, and in every subject, no matter how technical it may be, opportunities for ideas exchange, conversations, discussions, question rounds and presentations should be created to experience “the power of Communication”.

It is of a huge importance not just to be a good “story teller”, but also to be able to listen to others. This is a skill and ability that is often neglected. Already in schools we learn how to write, how to read, how to speak, but not how to listen - and by this we should understand the ability not to understand the spoken words, but the ideas behind them, or even the feelings and the motives of the partner. This requires and promotes a certain empathy and emotional intelligence that are crucial for an effective human relationship.

10.2.4 Digitisation

The working world of tomorrow will look different. Many meetings will no longer be held live and in presence, but will actually use the advantages that digital collaboration tools offer. This not only saves time, but also contributes enormously to environmental sustainability by refraining from numerous unnecessary business trips. In doing so, it is important to know and master these tools, to reduce the fear of using them, to be flexible and open towards such opportunities and feel comfortable in such new circumstances.

In addition to digital tools for presentations, there are a number of programmes that make it possible to work together on certain documents and develop creative ideas (e.g. Google Jamboard), organise work together (e.g. etherpad-tools), conduct live surveys (e.g. Mentimeter) or even create quizzes and play them live digitally together (e.g. Kahoot). These are just a few possibilities that can be used for teaching as well as for corporate communication in the future and that help to create a certain closeness despite the distances. This is also a certain prerequisite for the increasingly important IT competence of modern and future employees and managers.

10.2.5 Presentation

It is well known that most people are afraid of public speaking. The reasons for this are complex: one fears not being good enough, not being able to convince, being laughed at, forgetting something or simply not being understood. This manifests in trembling legs, sweaty hands, a stare or gaze that wanders to the ceiling, rapid speech tempo, etc. To overcome these fears and uncomfortable feelings, a proper preparation will help, and, of course, practice.

It is also of importance for the future leaders to be able to present one's own thoughts to the audience and to exemplify one's own interests and passions in a way that would create your “followers”. While speaking in front of others you learn to express yourself clearly and purposefully and to respond to possible questions with confidence. The right mindset is very important here - having the courage to try new things, to react flexibly to possible problems or disruptions – these are the soft skills that are expected from the employees in the 21st century.

10.2.6 Body language

"You can't not communicate", a famous quote by Paul Watzlawick. We reveal much more about ourselves and our attitudes and feelings through body language than we do with words. And if we want to be listened to and to reach people with our ideas, we have to make sure that non-verbal communication is in harmony with verbal communication. Non-verbal communication, which includes not only gestures, eye contact, body and head movements, but also para-verbal communication, i.e. how fast, high or low we speak, how clearly we articulate, what rhythm and melody our speech has, as well as extra linguistic aspects, is an instrument that can also be used consciously to achieve certain persuasive goals or to be able to convey one's own ideas in a targeted and efficient way.

10.2.7 Diversity

Diversity manifests itself in many different forms in university life. On the one hand, of course, there are the subjects themselves and different approaches to dealing with them. On the other hand, there are the students who come from different cultural environments, bring different experiences, have different interests and preferences and speak different languages. This is always an enrichment for the group, because you learn an incredible amount not only from teachers or from books, but also from each other. Both parties should recognise this first. The heterogeneity that prevails at universities today is an incredible advantage and instrument at the same time for more tolerance, openness and more understanding that we are different, think differently and have to accept these differences or remain open to them.

10.2.8 Visualisation

Packaging one's own ideas in a visual form that enables understanding, ensures better retention of information and demands special attention from the audience is a principle of modern management in every company and a skill not yet perceived by many and yet to be learned. Visualisation can be in the form of spoken figurative language, but can also be created through images, schemes, colours, structures or a linguistic consolidation of ideas or important points that together have a common thread and contribute to a better understanding of the ideas to be conveyed. This is something that comes into play when designing the presentation slides or posters. In doing so, one learns to focus on the essentials, to tailor information to the audience and to draw the audience's attention to oneself and one's own topics.

10.3 Implementation - turning challenges into advantages – Best Practice Case

All these aspects mentioned above - on one side - lack of contact with fellow students due to complete online teaching and on the other side - a set of skills and abilities that the working world of tomorrow expects from us and our students, should be actively addressed, taught and practiced regardless of the fact whether our lectures and seminars are held live or online. This was the impulse for the idea to organise an International Student Online Conference. This format offered the opportunity to pursue all these aspects and ideas mentioned before and to create the environment that would lead to better learning processes as well as better communication with and among students. Topics within International Supply Chain Management with all its facets and International Sales with many exciting topics on digitalisation, compliance, sustainability and communication were identified and offered to students. Moreover, it was also possible for students to create their own topics based on the main theme, which could either be of a general nature or relate to specific industries and sectors, such as the automotive industry, mechanical and plant engineering, the chemical industry, the financial sector, the food or textile industry or even luxury goods or the aviation industry. The topics ranged from psychological-communicative, such as body language, story

telling, personality development, emotions and negotiations in purchasing or sales, social - such as relationship management, event management and gender aspects, to agility and innovations, sustainability and compliance and various types of digitalisation, such as augmented reality, social media, big data, digital twins, blockchain technology, which are already shaping our business and industrial world today and will change it tomorrow.

However, it was also important to emphasise the interdisciplinary nature of the topics by linking certain business management findings with engineering or psychological and communication aspects.

Figure 1: Participants' presentations

Some of the work was done in small groups – by 2-4 people. It was another challenge – developing teamwork skills, the ability to exchange ideas with others, to distribute tasks, to agree on procedures and contents, to achieve a goal together. This also required better planning, thoughtful time management to take into account the needs of the team members and achieve the desired outcome.

After the literature research and/or own observations and interviews with business professionals, the results from this own research were summarised either as a presentation or in form of a poster.

Figure 2: Students´ posters

It should also be emphasised that this format or assignment was of a voluntary nature, but the participation was terrific - over 90% of all students participated in the formats in at least one form (preparing either a presentation or a poster). This is also an interesting issue about the power of voluntariness. Under pressure or necessity to “do” something, very often the interest disappears. But the creativity and success need that particular “freedom” to unfold.

The focus of this task was not on assessing students´ abilities, but on experimenting, trying out, practising, testing and 'acting out' a conference and the way of presenting.

The geography of the participants was fascinating - from Mexico, to Brazil, Europe with Germany, France, Italy, Ukraine and Russia, to Asia - India, China, Indonesia, Vietnam and Africa- Egypt, Ghana and Nigeria. It was exciting for all the involved to experience so many people from so many regions together in one digital place and to experience and share their passion.

Figure 3: Geography of the participants

Most of the participants were young people, but we had also some “surprise-guests” who already had 20 years of professional experience behind them. This is another form of diversity - across generations, which is occurring repeatedly at universities nowadays and enriches everyday learning incredibly. This is the trend, which is sure to continue, towards intergenerational teaching as a result of the life-long learning process and the realisation and openness of many people to start a second career or simply to continue and learn new subjects.

The conference was a success - due to the number of participants, the quality of the contributions and the enormous commitment that many students had shown in creating the works and in presenting them. But there was also some other discovery: being closed and reserved at the beginning students realised and made an experience that if one “opens up” and shows oneself (the requirements for the participation at the conference was the turning on of camera during presentation and discussions), so much more can be conveyed and so much joy is offered by this active way of communication, thus creating a great teaching and learning atmosphere and an environment for one's own growth!

10.4 Conclusion - Sustainability in teaching

When lecturers are engaged in their work, students become motivated too. This leads to a wonderful commitment, joy and great results at the end. To make those results “visible” and keep them “alive” longer, it is important to capture them, not to let them be forgotten, but to pass them on in the sense of the above-mentioned visualisation, sustainability and knowledge transfer. That is why a video was created after the conference that recorded those impressions and experiences and ensures the sustainability of the results.

At the same time, this “video of the results” is a great tool to maintain the relationship with students - something we always address in relation to customers in companies. It is important that at the end of a learning module, a seminar, a course, an event or the whole study students get something back that can be considered as a “souvenir”, emphasizing the importance and the interest in their work, something to take away as a reminder of successful teaching and great results of their own research. This can certainly be shown to others in one's network - family, friends, colleagues, and thereby inspire the others for similar or other creative formats. This is also a form of collaboration - the 17th sustainability goal, which ensures sustainable implementation of one's own ideas and thoughts. This also can be considered as an example of the possible long-term attachment of students to other fellow human beings and institutions that were companions of their own development.

https://www.youtube.com/watch?v=BgVOhBrINws&feature=emb_logo

11 Finnish Different Perspectives of Effects by COVID-19, Case Studies “University of Applied Sciences”, “Senior Specialists”, and “Experiences of retired emeritus”

Kari LAINE
Satakunta University of Applied Sciences, Pori
Lähdeniemi MATTI
Tampere University
Olli MERTANEN
Turku University of Applied Science

11.1 Case 1: University of Applied Sciences

Finnish Universities of applied Sciences started the Covid-19 lockdown on March 18th in 2020. All Universities of Applied Sciences (UAS) went to online teaching just in days and the Finnish UASes faced lockdown until August 2020. Satakunta University of Applied Sciences (Satakunta UAS) has less credit point loss caused by lockdown compared to any other UAS in Finland. This is due to many circumstances and active work. During the spring 2020 semester there was even 5,4 per cent more credit points earned than year before. This paper provides insights into a Finnish University’s (Satakunta University of Applied Sciences) situation and actions during the year 2020. The paper focuses on faculty of technology.

Finland is one of the leading countries in the world in public electronic services. Furthermore, studies show that the digital skills of Finns are the best in the EU. This proves that the prerequisites for success in digitalization are excellent. (Finnish Ministry of Finance 2020)

Satakunta UAS has Bring Your Own Device (BYOD) principle with all new students. This means that the UAS gives a specification for devices, mainly laptop computer, that the students use for their studies. This was one of the reasons why transition to forced online teaching went fluently. Another reason was that Satakunta UAS had its own self-developed online classroom and online learning platforms, and teachers and students of all faculties were familiar with their use. Efforts have been placed to develop interactive video teaching system with breakout rooms. The system can be used in special classrooms at the campus but also from any location on any device. Even students can use the same system by themselves to work as remote teams.

11.1.1 Effects of Covid-19 on teaching and learning

The development and evolution of teaching during the lockdown was a quite linear process with successive steps following each other because of each other (Fig 1). As mentioned, the lockdown was announced on March 18th. The last day at the campus and the first day of the lockdown were spent entirely in planning how to survive in lockdown but also in arranging the most critical actions and teaching events. In many papers this was called emergency remote teaching (see for example Krishnamurthy 2020). On the last day at the campus all the possible equipment and supplies needed in online courses were collected to be carried to home offices by the teachers and researchers. At the same time the images and videos for online exercises were shot as thoroughly as possible.

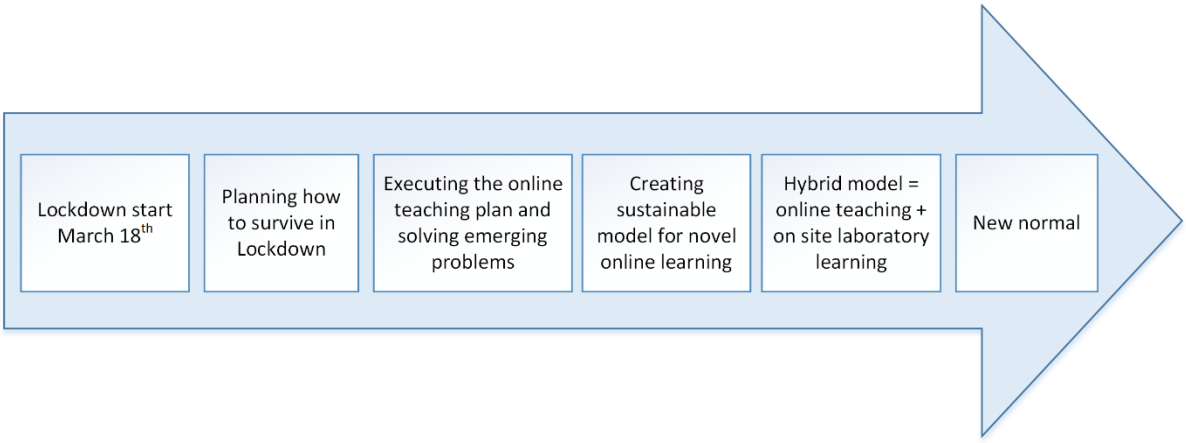

Figure 1. Evolution of teaching during the lockdown.

All the courses, their actions and teaching methods were reviewed step by step on the first lockdown day. For each step, it was considered whether and how it could be executed and arranged online. When steps that could not be implemented online were identified, they were written down and dates were agreed for their redesign. This was clearly the most critical phase of the whole lockdown, because without it, the day-to-day needs for changing teaching and teaching methods would have become too much.

In the tricky lockdown situation, the everyday teaching had to begin online with the materials and possibilities there was. The plan written in the first lockdown day set the guidelines to the online lectures and exercises. It also boosted the teachers to make appropriate decisions and changes when such situations emerged. Based on the versatile experiences lived through in this situation, a sustainable model for novel online learning could be created. This new experimental model has then been used also in the hybrid model of higher education, when all the possible teaching has been executed online while for example the laboratory exercises with real equipment have been arranged on site, in the laboratories. At the moment, there is no certainty as to when and how to return to campus teaching, but it is certain that all this will cause change and a new normal (Fig 1) is taking shape as we speak.

In teaching, almost all teaching, exercises, and assignments have been transferred online. It required time and efforts, but people with same strong attitude made it happen. Some difficulties have occurred with students that have equipment that does not meet the BYOD specifications. This sometimes causes situations where specific applications do not work as they are supposed to do. These difficulties are mostly solved when the right equipment is in use and instructions are followed. Extra online counselling has been done and sometimes personnel has taken control of the students' equipment online to solve the problems.

Some students, that have not been socially active on campus, have activated more online. They have perhaps found that this new situation brings them new opportunities to contact teachers personally online, by email, or by different collaborative technologies. Thanks to these short online consultations, some students have succeeded to earn credit points even better than in the "normal" circumstances.

Small amount of the students, approximately less than five per cent, have become passive. They have participated to hardly any online teaching and learning. On the other hand, it is easier to identify these passive learners with online metrics, so it may be that the situation is not worse than normally. In normal situation, most of the teaching on campus has no obligatory sessions. So, losing these students may be mainly due to missing of their day rhythm.

The laboratory exercises were affected the most by the changes made because of the lockdown. About a half of the laboratory assignments were changed into online assignments based on videos and demonstration materials, which were used to familiarize students with the same type of challenges. Learning in these exercises was verified with online tests. Rest

of the assignments were able to be done with offline programming and running the programs in virtual environment. The online learning is not exactly same as learning with the real equipment and technologies. Nevertheless, it gives students the most important learning experience, mastering one technology well creates potential to master similar technologies well, too. The most important goal of the laboratory exercises is to give the students practical experiences with technologies. It is obvious that the virtual exercises do not achieve the same level of practical experience as real exercises. So, in the hybrid model, the laboratory exercises will still be carried out on site.

During the summer 2020 Satakunta UAS was in lockdown. This made it possible to start some construction and renewal projects at the campus earlier than planned. Now, in hybrid situation, all teaching and assignments are online, and laboratory work is done in small groups. The number of students in the laboratory is limited to half from the normal situation. Five people from the personnel can be situated in the same space simultaneously. First year students are at campus, whereas other students are mainly online apart from the laboratory working days.

Some of the students say they are tired. They may lack self-management and time management skills, or their learning styles do not fit to the current situation. According to other research, Covid-19 has effect on students' mental health and performance (Friedman and Kopczuk 2020, Aucejo et al. 2020, Gualano et al. 2020). The economic status of students may affect their suffering of the situation. Lower income students suffer more (Aucero et al. 2020).

Student visits to industry sites have been completely ruled out even after the lockdown, as the companies do not take any risks of spreading the virus to their personnel, nor does the university want to expose its students. Some of the visiting lecturers have been able to teach online. While industrial partners' representatives have familiarized themselves with online working methods during lockdown, they are more willing to give visiting lectures online. For student exchange, online studies have been created for students that can't come and study at Satakunta UAS. Online studies start on January 2021.

11.1.2 Effects on collaboration projects

Everywhere, the lockdown also affected the activities of cooperation, research and development projects. Adapting project actions to the requirements of online work took time and there were certainly almost as many different solutions as projects. Reorganizing actions could mean planning meetings and events online instead of traditional meetings or seminars etc. as well as filming demonstrations as videos and presenting them in online meetings. It meant also reorganizing and rescheduling tasks based on things that are possible during the lockdown and things that could not be done during the lockdown. The reshaping of actions in collaboration projects are seen in Fig. 2.

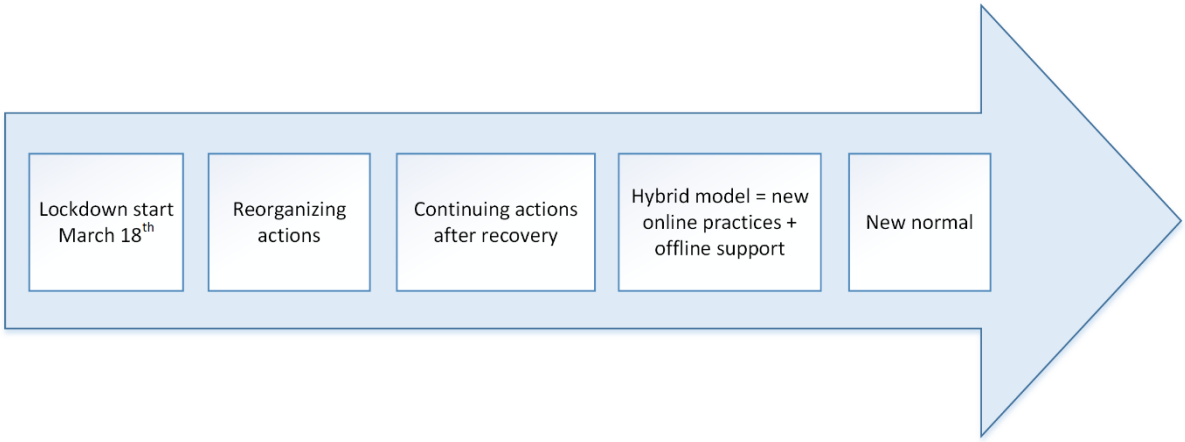

Figure 2. Reshaping of the actions in collaboration projects.

Based on the empirical study made at Satakunta UAS, in collaboration projects it took more time to recovery from the lockdown shock than in teaching. One major reason for this was that in teaching there was only six weeks of the semester left at the lockdown start and the courses had to be finished. Another reason was that projects are usually more complex and have several parallel approaches, so it took time to re-evaluate the goals, needs and possibilities of the project and to reorganize the actions according to that. Similarly, in projects, the implementation of new policies and timetables led to a reshaping of activities. These new activities are then used also in the hybrid model of the project work, where all the possible activities are performed online, but all required actions are taken e.g. in laboratory or face-to-face.

Visits to collaboration partner organizations ended almost entirely in May. Only few organizations have created practices to deal with visitor groups. Online meetings with partners have made it possible to continue collaboration with partners. Understanding partner organization's circumstances and requirements for contract research have been more difficult when it has not been possible to visit the partnering organization. Seeing the environment, like production facilities makes it possible for the experts to make their own observations and conclusions and not relaying only on the facts given. One of the new ways of working that has come up with some industrial partners has been video clips made from the production sites, which enabled more detailed knowledge of the operations.

Contacts from industry decreased in number of amounts since May. During this quiet period all existing smaller research projects were finalized. Luckily, industrial partners have become active again after the quiet period. Now they offer collaboration possibilities again.

11.1.3 Effects on research and expert tasks

Most of the research projects continued with minor changes in project plan and schedule during the lockdown. Some practical actions like actions made in the laboratory were delayed, and it was seen also in the budgets of research projects. However, the implications to the budget were mainly changes in the timeline.

On the other hand, there has been more time, and there are even more results followed. This is due to reduced time for travelling and less uncontrolled interruptions. In teaching work of the experts, the results have been transferred to teaching even more effectively than before the crises, because now there has been more time for that.

Part of the partner organizations became paralyzed. They did not find new ways to proceed in the new situation. This caused break in collaboration for some months. Since partners learned effective online practices all has been almost like before the crises.

In international collaborative projects, everything needs and can be done online. However, additional innovations are not created/initiated without face-to-face meetings.

Most of the conferences are delayed or cancelled. Some of them are gone virtual. In virtual conferences unofficial things like running into someone does not happen. It is difficult to create serendipity with online solutions. Review processes of journals are delayed, and reviewers are allowed to have extra time to review papers. This causes delays in publication processes.

11.1.4 Discussion

The government of Finland started to make actions immediately when Covid-19 was seen on the region. There were limitations for travelling and all pupils and students from the age of ten went to distance education, for example. In general, Finland has good technology infrastructure and it made online studying and working well possible. Probably based on early actions, there has been less Covid-19 infections in Finland compared to many other European countries. That, again, made it possible to have effective online teaching and working. Although

the change from earlier phase to lockdown and hybrid models went fluently, teachers may have feeling of inadequacy.

Other researchers report that lower-income students have more delay in their studies because of Covid-19 than student with better incomes (Aucejo et al. 2020). In Finland, students with lower income suffered perhaps less than students in same situation in other countries, because in Finland the university studies are free. Students can also receive study grants and they can take state-guaranteed student loan for their study time.

In the lockdown start, teachers had to change their teaching style and recreate materials suitable for online teaching. Students, on the other hand, had to adapt the new style of teaching and try to find personal ways to participate in teaching and learning. Here, too, one's own activity, but on the other hand an open attitude towards change, has helped both teachers and students. The goal is not only how to survive, but how to eventually rise the quality and value of the learning (see for example Krishnamurthy 2020, Ratten and Jones 2020).

The students, teachers, researchers and collaboration partners that started to see opportunities directly, have suffered less from the difficult situation. They have studied what things to do at once, and how to proceed in the new situation.

11.1.5 Conclusions

In spring 2020, teaching went online in days. There had been online teaching before, of course, but now all teaching went online. For teachers that was perhaps not so big change mentally as it was for students. Some students got lost, mainly due to their lack of self-management skills. Although the change was moderately tolerable for teachers, it was a laborious phase that certainly exhausted. Assessment also had to be thought from a new perspective, as tests and exercises were done online.

Attitude seems to be the most significant factor defining how different actors have recovered from the crisis. There have been not only bad effects. Some best practices will be continued and utilized wider. New normal after the crises will be different for time before the crisis. Research has not suffered that much. Part of the research can still be done as earlier. Collaboration with partners suffered first but recovered quite soon as online practices were learned.

Some conventions will get lost and new ones will be established. There will be less meetings, travelling, and more online teaching and collaborative learning after the crisis as well. Unplanned meetings at campus and outside campus decreased in number of amounts. It is difficult to bring serendipity with online or software solutions. So, there must be conscious thinking, how innovativeness can be sustained or even increased. Therefore, the design of these new ways will be done in collaboration with many stakeholders in order to find new best practices for innovation.

11.2 Case 2: Senior Specialist

11.2.1 Up and down effects of Covid-19 in the life of senior specialist

It was 6th of March 2020 when post doc pool had the meeting of executive board. At the beginning of our meeting, we did jokes about new ways to say hello, knocking our elbows or touching our foot and after few days it was real life. We were organising online meetings and it was really surprising how rapidly we were familiar with Teams, Zoom, Google Meet and other several tools. Post doc pool is the combination of several foundations granting about 3.2 million euros for young talented doctors for their international research periods.

Naturally training was needed and several times somebody was asking “am I online now?”, do you hear me now?” and maybe the most used comment was “could you please unmute me”. Training was producing results and meeting started to be more and more effective maybe sometimes too effective lacking rambling innovative discussions. For me it was a bit exciting to act first time as a meeting chairman, to figure out how the statements are allocated to the members and how to avoid overlapping comments, but it was also running well.

There are several seminars and conferences in which you don´t have time to take part in but now I have taken part into several web seminars following also fruitful chat discussions, picking the coffee cup from my own kitchen. Another thing is that you don´t have to fix your outfit dress.

During March we also quit normal shopping and changed to online shopping picking our groceries from the backyard of the local supermarket. After a while the situation was normalised but came back again in the autumn. Another way was to study what are the quietest hours in different markets.

In everyday life, it is very normal that you have “left over lists” of the works which you finalise sometimes in the future and now Covid-19 has strongly limited your outside activities and now the list is almost empty. There are very few tasks left on the lists.

My hobby is a forest thinning and last spring about 100 cubic meters firewood was done, because the forest was the place where all the limitations by Covid-19 were easily considered. Forest work was also very positive for the personal health both physical and mental.

I belong to the local moose hunt group and normally when the weekend hunt starts at Saturday morning, we gather to the hunt cottage, cooking coffee, discussing but now we come exactly for the start of the hunt, stay outside with masks taking care of distances.

In Finland, we have our Independent Day at 6th of December, and I was asked to give the oration as a part of the ceremony. I will never forget the feeling when I was giving the oration in the big empty celebration hall without any audience only operative staff around for streaming the celebration to YouTube.

And last but not least, our 3 children and 7 grandchildren, with which we normally keep very near contacts even that they live far away. Now we primarily meet via WhatsApp but of course it is not adequate. Physical contacts or even that you have live contacts are important and we have done it so that during weekends every now and then we gather to picnics and wandering surrounded by Finnish landscape.

As a conclusion, online and distance working methods fit partly well for Finnish nature following the book by Richard D. Lewis “Finland, Cultural Lone Wolf”. On the other hand, there is another truth also, every human being needs real physical interaction for fruitful life and for the source of innovation and that is what we are waiting after we have cut down COVID-19.

11.3 Case 3: Experiences of retired emeritus

When I realized that Covid-19 changes my life in spring 2020, I could not imagine how things were starting to improve my life although I had to stay in quarantine. My quarantine was quite easy, because I live in countryside in the middle of forest faraway of any other human.

Although different kind of teleworking means were familiar to me for a couple of decades, I was surprised how fast people learned to utilize, develop and organize these means. Especially the organizers have rapidly learned better ways of action. I think that is the real reason in my case why I started to activate and to participate a lot more to different conferences, lectures and meetings. I have learned a lot and would say that even civilized. Of course, these tele meetings and webcasts are not the best way for human to network with others, which is one main idea of many conferences (at least not yet with now available tools). All the same the possibilities to participate more may influence the broadening networks to new areas and groups of new

kind of people? And the participating to these kinds of happenings is in most cases a lot easier. Maybe the development will solve also unformal part of conferences, evening meals, excursions and other happenings.

And surprise, the improved tools changed also my private living. I could play and discus with my grandchildren. It is amazing how rapidly even toddlers learned to use these new ways of communication. And isn't it cute when toddler comes at the end of video session to give you a hug, hugs the smartphone and then waves with a tiny hand. These kind of videocalls are part of our new normal. Of course, I try to meet my grandchildren quite often also face to face naturally, but they live quite far away and there is the virus. This makes me think why it is still not so common to utilize the available possibilities in everyday situations in private life. Traditional smartphone voice calls seem still to stay in use in ordinary communications. I wonder why!

There is no doubt that COVID-19 leaves behind total new manners to work, study and communicate also after the virus. It will take some time, but is inevitable: cheaper, time saving, more convenient and more efficient in most cases. I do really believe in this change. Hopefully it may also help the climate, when all kind of travelling shall decrease.

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12 Conclusion and Closure

Konrad Paul LIESSMANN
University Vienna, Austria

Sometimes there are really subtle differences. While the end of school is a long-awaited event by almost everyone involved, which promises two months of vacation and fun, the three-week school closure as part of the measures to combat a pandemic is an act of violence that deprives a generation of children and young people of their educational opportunities and a high livelihood becomes. At least that is what it sounds like in the "religious war" that broke out over the question of whether educational institutions should switch back to distance learning. Wars of faith do not bode well. As a rule, it is about confessions and less about arguments. Despite all the pros and cons, some of the paradoxes that characterize this dispute are astonishing.

The opponents of the school closings like to conjure up the importance of education, which has to fall by the wayside. Interestingly, however, that the educational losses that were recorded in the years before Corona due to nonsensical curriculum reforms, didactic fashions, unnecessary test inflation, hysterical Pisa activism and excessive control systems worried as little as the continuous increase in functionally illiterate people. Perhaps all of this is not about education at all, but rather that the children do not have to be at home. Then you should say that clearly.

It is amazing that there is now a complaint that the substance cannot get through because of Corona. Material? Do we hear right? Hasn't it been raved to us all the time that modern teaching has no material, no knowledge and no content to convey, but only competencies that can best be acquired not in school but in the real world? Is this didactic innovation no longer valid just because a virus has contaminated the classrooms that are already hated by education experts?

Before Corona, the "flipped classroom" was the latest craze in school education. The students - all of them are known to be highly talented digital natives - do their research at home on the Internet, and the teacher, as a learning guide, only gives gentle feedback. And was that not why there was constant talk of an autonomization of learning that wanted to leave the subject, method, pace and level of teaching to the individual pupil - and now the world is supposedly collapsing because the school gates are closed for a few days?

Oh you of little faith! No sooner does reality offer the restless educational reformers the chance of realizing their concepts than they are despaired. That is not surprising. The euphemistic notions of self-determined digital learning have always been naive. They overlooked the fact that socially disadvantaged children suffer again; they ignored the fact that without basic technical knowledge there is no meaningful learning online; they overestimated young people's ability to discipline themselves; they neglected the function of the school as a place of contact, care and storage; they denied the vital importance of a professionally qualified teacher for teaching; and they misunderstood the importance of digital technology: This is a tool, but not a miracle cure.

The nicest thing - the complaints about the school closings suggest - it is when many young people sit in one room and a teacher stands in front of them who has something to say. Anyone who finds this notion horrific shouldn't be upset about school closings; The others, however, could learn a lesson from the experience with Corona for the reopened schools: an end to unnecessary, pseudo-progressive, ideology-driven and unrealistic educational reforms.

13 Blockchain in Health Services to Record Medical Data and Treat Diseases and Pandemics.

F.D. LYMPEROPOULOS
University of West Attica, Aigaleo, Greece
I.P. GIANNAKOPOULOS
Alba Graduate Business School, The American College of Greece, Athens, Greece

A possible solution using the Proof of disease algorithm and the Internet of Medical Things

13.1 Abstract

Since 2019 we are facing a global unprecedented medical crisis due to the pandemic of the new coronavirus (COVID-19). This crisis has caused serious effects on societies and economies, as well as on the health systems worldwide, since it has put great pressure on them and has exposed their vulnerabilities.

Recent advances in information and communication technology (ICT) such as Blockchain, Internet of Things (IoT) give us powerful means against the COVID-19 crisis, and any future threat.

This review paper focuses on Blockchain technology and its features (decentralization, controllability, integrity, data confidentiality, variability and traceability) which give us a significant advantage in developing efficient tools that can distinctively aid us in the aforementioned areas. We analyze the benefits as well as the challenges of using Blockchain in the healthcare industry. Furthermore, we examine a complicated general healthcare data process implementation with the use of blockchain and of the consensus protocol "Proof of Disease" (PoD). Also, a general healthcare data process implementation that combines the blockchain and the Internet of Medical Things (IoMT) technologies, in order to address the IoMT issues of security, accessibility and handling large amounts of data, analysing also the distinctive challenges of combining the two technologies.

Keywords: Proof of disease, IoT, Blockchain, Health Industry, Proof of disease, Internet of Medical Things

13.2 Intoduction

The exponential increase in data processing, transmission, and storage capacity brought about by the digital revolution, and the concomitant reduction in costs per unit, marks the start of the “Age of Data.”

The use of blockchain technology in the health care industry offers considerable technical advantages, such as built-in fault tolerance, disaster recovery, open-source reliability and robustness, compatibility with commodity hardware, interoperability, multi-source data entry support, cost efficient high scalability, standardized cryptography and data encryption algorithms, as well as user-centric accessibility and control policies. Furthermore, it offers distinct health care advantages, such as health data single storage location, real-time data tracking, data security, diversity and comprehensiveness, treatment personalization, and clinical care coordination and emergency medical response improvement.

These benefits of blockchain usage can be furthered enhanced if we combine the blockchain technology with other cutting edge algorithms and systems. More specifically: The Ethereum based future ready Proof of Disease (PoD) is a consensus protocol with a computer understandable single instance of truth. It will solve many challenges that electronic health records (EHR) or health information exchange (HIE) have failed to address. This medical system will help achieve all the complex needs of P6 (Participatory, Personalized, Proactive, Preventive, Predictive and Precision) medicine and finally reduce the disease burden.

The Internet of Medical Things (IoMT) offers an infrastructure of smart medical equipment and software applications for health services, which promotes remote medical diagnosis and timely health services. The patients can use their smart devices to create, store and share their Electronic Health Records (EHR) with a variety of medical personnel including medical doctors and nurses.

13.3 Proof of Disease (PoD) Protocol for Healthcare Data Process

Non-communicable diseases (NCD) are caused due to lifestyle, environment, or genomic causes over a long period of time with confusing signs and symptoms. A significant proportion of their diagnosis is erroneous or unnecessary. To reduce the disease burden (which involves unwarranted medical treatments and unnecessary lab tests) and improve public health, algorithmic support is essential. For this, health data must be computer understandable, secured and interoperable. However, medical and data entered into computers are unstructured natural language texts with medical jargons which a computer normally cannot understand. Furthermore, Electronic Medical Records (EMR) are data silos in the hospitals and do not interoperate: They can be interpreted only by medical experts, they are not algorithm ready, do not possess any intelligence and often fail to detect simple data entry errors.

13.3.1 Healthcare Data and its Process

Effective treatment of any disease relies on obtaining and accessing health related data of a person on a spatial and temporal basis from the day of birth, illness and disease episodes and their outcome analysis, lab test results that are outside of the normal range, genomic data, environmental, health events, lifestyle related data, and therapeutic data including toxicity or side-effects. The health data must be secured via anonymity, privacy and confidentiality procedures, possess single instance of truth, be available and accessible anywhere anytime by authorized stakeholders, and be machine understandable and exchangeable. For their effective process there should be a protection mechanism towards fraudulent attack or hacking, a recovery facility so that the data it still accessible when the data owner is unable to access it (in case of trauma or loss of security key), and a proper medical care system where this data will be integrated. This system needs to be participatory, personalized, proactive, preventive, predictive and precise (P6 Medicine(P6M)). P6M will reduce disease burden and promote the cause of evidence-based medicine (EBM) and precision medicine. It will need algorithmic support of interoperable temporal and spatial data of health and disease, both of an individual (n=1) to be available for examination, as well as of the population (n=N) as evidence.

In order to achieve the aforementioned effective process of the proper health care data, a solution is proposed that includes the following steps: The health care data gathered are examined in order to reach a consensus, so that the current state of a person's health is ascertain. This consensus is based on a consensus protocol called Proof of Disease (PoD). Then, by using PoD, Artificial Intelligence and Big Data Analytics, a blockchain based medical care system (according to P6M) is created for the effective process of the health care data. [1]

13.3.2 The proposed medical care system and the PoD consensus protocol

The medical records are classified in three distinct generations: The first Generation (1G) had handwritten “human readable and human understandable” medical notes, the second Generation (2G) has “computer readable and human understandable” notes and the third Generation (3G) health care systems will have “computer readable and computer understandable” algorithm ready medical notes.

This medical care system is an Ethereum based blockchain technology deployed in the cloud which allows data from multiple 2G sources like EMR, diagnostic centers, clinicians, genomics, Internet of Things (IoT), etc. It interoperates with various healthcare stakeholders such as patients, doctors, hospitals, laboratories, advocacy groups, pharmacists, and insurers to access and interact with medical information with necessary security, privacy, and anonymity in a peer-to-peer (P2P) approach. Finally, it allows accurate, immutable, auditable, transparent, secure, and machine understandable (controlled vocabulary/ontology based) interactions.

PoD is designed for medical care blockchain. It can address all the above needs, because it provides a computer understandable single instance of truth, and it combines evidence-based medicine and AI/KM (Artificial Intelligence/Knowledge Management). The philosophy behind PoD is to provide assurance of high quality medical care quickly and cheaply, by ensuring that the disease and health information entered into the ledger is accurate (certified and validated by qualified medical miners).

The implementation details of PoD are as follows:

a. Computers and smartphones are used as user devices. The server is a cloud based application where client and server communicate through JSON (JavaScript Object Notation) objects.

b. Following standard authentication, the patient, the doctor, or even a IoT device, enters pathophysiological details of the disease in simple English. The server then runs any spell checker and morphological analyser designed for languages with rich morphology and complex word compounding, on the entered text, using customized medical dictionary corpus.

c. Using UMLS (Unified Medical Language System) and Metathesaurus the entered text is parsed and converted into multiple UMLS CUI (Concept Unique Identifier).

d. The disease's name and symptoms are extracted through masks like "Find", "Disease", etc.

e. The UMLS CUI is converted into International Classification of Diseases (ICD10) and SNOMED Clinical Terms (CT) codes. The ICD is a health care classification system, providing a system of diagnostic codes for classifying diseases. [7]

   The SNOMED CT is a systematically organized computer processable collection of medical terms providing codes, synonyms and definitions used in clinical documentation and reporting. SNOMED CT provides the core general terminology for electronic health records. [8]

f. The vital information and the disease history are taken from the EMR. In case EMR data is not available, vital information is entered by the user online.

g. The SNOMED CT codes, obtained from Step e, are used to determine the disease network and the disease trajectory of an episode.

h. The overlapping (union) SNOMED CT subgraphs from different disease episodes of the past are the domain of morbidity and disease penetration.

i. SNOMED CT is integrated with phonemics databases to discover the core disease concepts in machine understandable ontologies using graph analysis.

j. In the final stage, the results from above phases are passed to a team of specialists. Medical specialists function as a medical miner (MM) in the blockchain system.

   Medical miners validate and confirm the results from the above steps (i.e. the integrity of the illness or health data), by comparing with population data, public health data and evidence based medicine knowledge body. They also identify the likely trajectories of the disease with evidence. Then, they commit the results into the health blockchain system, ensuring a single instance of truth about the health state at a certain instance of time.

k. In case the proof of disease cannot be ascertained, big-data biological databases (e.g. Human Phenotype Ontology (HPO), are added and iterated over. [10]

13.3.3 Types of mining activities in the health chain system

In the health chain system, there are three types of mining activities: Two types of medical mining, and one type of financial (coin) mining. [2]

The medical mining consists of the medical transaction or episode mining (MEM), where the consensus is about a disease episode, and the health state mining (HSM), where the consensus is about the overall health. The HSM involves medical experts, statisticians and evidences from literature and biological databases. It deals with illness, chronic, or acute medical conditions, and it includes examination, recommendations, and referrals if necessary. From this evidence, the experts identify and analyze the total path of care in terms of cost, quality, risks and best possible actions (with the goal to reduce the disease burden), and on the other hand they modify the care continuum in order to reduce unwarranted diagnostic tests, treatments, hospital admissions and readmissions, to decrease length of hospital stays, and to improve cost-effective prescribing. On top of that, the medical miners check and assure that the medical transactions and health status entered into the blockchain ledger are correct and satisfactory. They are paid by the users having the token purchased from the medical blockchain system.

Since the medical miners are paid for their services, there is an additional mining activity in the blockchain network for the payment procedure: The financial mining. Here, for the consensus (payment for the PoD service), Ethereum's native coin consensus is used. The coin miners check the financial transactions to avoid Sybil and double spending attacks, and they follow the process of Ethereum platform for transaction fee and rewards. In health chain system the coin mining and medical mining are done by the same organization.

13.4 Blockchain and the Internet of Medical Things (IoMT)

13.4.1 Problems

One problem that needs to be solved in regards of IoMT is that unless the underlying communication within IoMT is secured, malicious users can intercept, modify and even delete the sensitive EHR data of patients. Also, IoMT devices require gigantic storage infrastructure for real-time processing because of the enormous amount of medical records. Currently, most IoMT institutions store the collected medical data and deploy their application servers in the cloud. However, implementing IoMT using the cloud is not always convenient, because on one hand cloud servers are not fully trusted, as data could be removed or altered, and on the other hand patients lose full control of their EHR since most health services within IoMT are constructed under a centralized platform outsourced in the cloud. [3]

13.4.2 Proposed Solutions

There has been recent interest in providing a secure IoMT generated healthcare data supervision by utilizing blockchain, since a blockchain based data structure can be explained as a virtually incorruptible cryptographically connected blocks where critical patient related data can be stored. In other words, a temper-prove distributed ledger (Blockchain) can offer a way to secure the IoMT, by recording the transactions of digital communication. Also, a decentralized blockchain based methodology would overcome many of the problems associated with the centralized cloud approach. [3]

The whole system operates as follows:

a. The IoMT & Blockchain based system is created by connecting computers and all the participants with each other.

b. The doctor is present even in a remote location, observing the patient activities and advising the patient through the IoMT & Blockchain based system.

c. The medical precisionist from the diagnostic center uploads the EHRs, which are eventually added to the patient's history.

d. The doctor analyzes the real time statistical reports, which are generated in the diagnostic center and shared on the distributed ledger.

e. Patients are also monitored through wearable tracking devices, which sense the changes in the patients' bodies and send this real time data to the doctor and the care takers via the IoMT.

f. The doctor then advises the patient according to the condition.

g. The EHRs and the treatment documents of the patient are shared on the distributed ledger and viewed by every node of the patient's network. Diagnostic labs also generate and add EHRs to the blockchain, since they are part of the IoMT network. Whenever a new patient record is created, a new block of data is initiated in the patient's blockchain network.

13.4.3 Internet of Medical Things (IoMT) and Blockchain Combination Challenges

13.4.3.1 Conflict Challenges

Certainly, blockchain technology is beneficial to the IoMT in terms of security. However, integrating both technologies is not trivial at all and is facing several challenges due to the conflicting requirements in these two technologies: As far as processing is concerned, mining process and complex cryptography in blockchain are resource-hungry, demanding intensive computation and high energy consumption which cannot be afforded by resource-constrained IoMT devices that already suffer from resource shortage and energy limitations. Also, there is the issue of mobility: Blockchain was designed for a fixed network topology. However, implantable/wearable medical devices are in constant movement which continuously change the topology. Furthermore, IoMT applications are generally critical and require a real time and immediate response. Grouping these streams of data on blocks while respecting real time requirement is challenging. Finally, in regards of traffic overhead, blockchain nodes communicate continuously to synchronize, which creates significant overhead traffic. This is not affordable by bandwidth-limited IoT devices. [4]

13.4.3.2 Technical Challenges

The integration of blockchain and IoMT opens the way to many relevant applications in the health field. However, the adoption of this integrated technology is complex and requires in-depth interdisciplinary combination of low-level technical knowledge (e.g. management of

IoMT devices and configuration of blockchain to meet IoMT requirements), with high-level technical knowledge, including sharing, storing and treating IoMT data. In this context, it is crucial to conceive an abstraction layer that will hide all these complexities, as well as provide developers with new application programming interfaces (APIs) and middleware to allow them to easily implement decentralized and secure applications for healthcare using IoMT. Most of existing solutions do not yet reveal any technical details that could address the above challenges. There is a need that researchers demystify all the technical details of the blockchain integration into IoMT. [4]

13.4.3.3 Maturity Challenges

The literature review shows that there are some significant research gaps. There are several problems that must be addressed in order for the collaboration of blockchain technology and IoMT to reach maturity and be efficient. Lack of standards is one of the problems, because the proposed solutions are proprietary and do not define standard protocols which would promote interoperability: It is crucial to provide universal and platform-agnostic solutions that govern the interaction between IoMT devices, blockchain, cloud computing and end-users. Another problem is limited application scope, since the majority of existing works are only focusing on healthcare applications related to remote patient monitoring and IoMT data management, including data sharing and storage. However, it is also crucial to conceive tracking applications that prevent counterfeit drugs and medical errors. In this context, the use of blockchain technology accompanied by the IoMT can be an effective solution to control the activity of doctors and manage the drug supply chain. [4]

13.5 Benefits of Using Blockchain in the Health Industry

13.5.1 Technical Benefits

The use of blockchain technology in the health care industry offers considerable technical advantages:

a. The blockchain architecture has built-in fault tolerance and disaster recovery, and the data encryption and cryptography technologies are widely used and accepted as industry standards.

b. The blockchain would be developed as open-source software. It is reliable and robust under fast changing conditions that cannot be matched by closed, proprietary software.

c. The blockchain would run on widely used and reliable commodity hardware. Commodity hardware provides the greatest amount of useful computation at low cost. The hardware is based on open standards and manufactured by multiple vendors.

d. The blockchain addresses the interoperability challenges within the health IT ecosystem: Health IT systems would use Open APIs to integrate and exchange data with the health blockchain. Open APIs are based on industry best practices, are user friendly and would eliminate the need for development of complex point-to-point data integrations between the different systems.

e. Blockchain data structures can support a wide variety of health data sources including data from patients' mobiles, wearable sensors, EMR’s, documents and images. The data structures are flexible, extendable and able to accommodate whatever data will be available in the future.

f. Data from cheap mobile devices and wearable sensors is growing at an exponential rate. Distributed architectures based on commodity hardware provide cost efficient high scalability. As more health data is added to the blockchain, cost efficient commodity hardware can be easily added to handle the increased load.

g. Blockchain works with standard algorithms and protocols for cryptography and data encryption. These technologies have been heavily analyzed and accepted as secure and are widely used across all industries and many government agencies.

h. In a health care data processing system based on blockchain technology, the user would have full access to his data and control over how his data would be shared, would assign a set of access permissions and designate who can query and write data to his blockchain, and would be allowed, by a mobile dashboard application, to see who has permission to access his blockchain. Also, the user would be able to view a log of who accessed his blockchain (including when and what data was accessed), give and revoke access permissions to any individual who has a unique identifier, and finally setup specific control policies about who has access, about the allotted time frame for access and the particular types of data that can be accessed. These control policies would also be securely stored on a blockchain and only the user would be allowed to change them. [5]

13.5.2 Health Care benefits

The use of blockchain technology in the health care industry offers also distinct health care advantages: [5]

a. Creation of a single storage location for all health data, tracking personalized data in real-time and the security to set data access permissions at a granular level would serve research as well as personalized medicine.

b. Health researchers require broad and comprehensive data sets in order to advance the understanding of disease, accelerate biomedical discovery, fast track the development of drugs, and design customized individual treatment plans based on patient genetics, lifecycle and environment. The shared data environment provided by blockchain would deliver a broad diverse data set by including patients from different ethnic and socio-economic backgrounds and from various geographical environments. On top of that, as blockchain collects health data across a patient's lifetime, it offers data which is ideal for longitudinal studies.

c. A health care blockchain would expand the acquisition of health data to include data from populations who are currently under-served by the medical community or do not typically participate in research. The shared data environment provided by blockchain makes it easier to engage these populations and develop results more representative of the general public.

d. Blockchain data structures would work well for gathering data from wearable sensors and mobile applications and, thus, would contribute significant information on the risks versus benefits of treatments as well as patient reported outcomes.

e. Combining health data from mobile applications and wearable sensors with data from EMRs and genomics will increase the medical researchers' ability to classify individuals into subpopulations that respond well to a specific treatment or who are more susceptible to a particular disease.

f. Daily, personalized health data will likely engage patients more in their own health care.

g. The ability for physicians to obtain more frequent data (i.e., daily blood pressures or blood sugar levels versus only when a patient appears for an appointment) would improve individualized care with specialized treatment plans based on outcomes/treatment efficacy.

h. Blockchain would ensure continuous availability and access to real-time data. Real-time access to data would improve clinical care coordination and improve clinical care in emergency medical situations. Real-time data would also allow researchers and public health resources to rapidly detect, isolate and drive change for environmental

conditions that impact public health. Epidemics could also be detected earlier and contained.

13.5.3 Challenges and opportunities for blockchain technology in healthcare

Despite blockchain's potential as an emerging technology to be innovative and disruptive, it remains immature, particularly in healthcare. Reflecting the fact that it is still early days for health blockchains, there are few real-world examples of blockchain systems that have gone into production and that also have strong commercial or user adoption in healthcare.

Although the core characteristics of decentralization, security, provenance, transparency, trust, and better management of data consist clear benefits to address acute healthcare needs, we need to ask what core blockchain characteristics and design principles need to be taken into account, and how can they address the diverse healthcare challenges and the real-world legal, regulatory, privacy, business, provider-centric and patient-centric considerations that are unique to healthcare. In an attempt to address these challenges, a 'fit-for-purpose' health blockchain design framework is proposed, which includes fundamental questions regarding basic blockchain design principles, data sharing and management, governance decisions, technological choices which enhance blockchain function, and last but not least, regarding the ultimate goal for the blockchain solution. If these questions are appropriately mapped, there is a higher likelihood that the blockchain approach will be 'fit-for-purpose' for whatever healthcare challenge has been identified. The framework questions are based on six principles: [6]

1. Design decisions, meaning whether the blockchain will be public (generally open to participation by anyone and not permissioned), private (involving limited participation and having permission structures), or hybrid (blockchain system with both public and private designs).
2. Data sharing and access requirements, since in healthcare, is subject to various privacy, legal, and regulatory requirements, such as the Health Insurance Portability and Accountability Act (HIPAA) and the General Data Protection Regulation (GDPR).
3. Governance, i.e. the need to define the nodes, users, peers and validators of the blockchain, define whether the blockchain will be comprised of only trusted partners or of a consortium of participants, define if and what type of data will be shared among these participants, whether data will be stored on-chain, off-chain, or on a side-chain, the type of permission structures that will be utilized, whether the blockchain will include public entities, regulators, patients and consumers, and how these actors will make decisions about how to govern the blockchain (including choices regarding consensus mechanisms, permissions, and data governance).
4. Enhancement decisions, meaning the addition or not of technologies that improve the blockchain function, including the development of an application layer that interfaces with the blockchain, the use of smart contracts to automate processes when certain agreed upon conditions are met, and the use of a cryptocurrency & tokens to incentivize participation that ideally provides shared benefits to all participants.
5. Ultimate healthcare goal of the blockchain: Although it may seem obvious, a critical issue that must be addressed is the definition of the ultimate goal of the blockchain to improve healthcare. Beyond the core benefits of a distributed, immutable, transparent and higher trust system, the unique benefits blockchain can provide for healthcare processes over other existing technologies must also be assessed: Not all blockchains will have the same goal(s). Some may be designed to simply lower healthcare transaction-related costs by improving and automating processes (such as the use of smart contracts), removing intermediaries, or reducing administrative burden. Others may emphasize on the creation of mechanisms to drive revenue generation, or the improvement of data processing (collection, use and sharing) from patients, consumers, and providers through the offer of incentives (such as tokens).

Furthermore, some may focus on more indirect benefits (such as increasing compliance or preventing fraud), while others may be designed to achieve multiple goals, yet may start with the most pragmatic use first.

6. A final question may simply ask whether the healthcare-related challenge or goal really needs a blockchain.

13.6 Conclusions

The main challenge of the healthcare industry worldwide is that it consists of complex interconnected entities, each of which, as a rule, has separate, siloed information systems. As a result, the administrative costs of these systems contribute distinctively in the overall, constantly increasing, healthcare delivery cost. Blockchain is the technology which, thanks to its unique features that we reviewed in this paper, can address many of the challenges that the healthcare industry faces. Nevertheless, the potential of blockchain for healthcare highly depends on its acceptance by the healthcare ecosystem, so that the proper technical infrastructure can be created. Though there are specific concerns and speculations regarding blockchain's integration with current healthcare systems and its cultural adoption, the technology is beginning to prove popular in the sector. [9]

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14 Opportunities of Online Education by the Example of the International Center for Finance Markets Research

Tatjana NIKITINA
Sankt Petersburg State University of Economics, Russia
Maria SKALABAN
Sankt Petersburg State University of Economics, Russia

In 2020 the spread of the novel coronavirus has affected all spheres of life in all countries of the world. It has naturally affected education, which traditionally requires a face-to-face format.

Thus, according to “RBK”, during the first wave of COVID-19 schools were closed in 190 countries[19]. In this regard, 90% of pupils, that is approximately 1.6 billion people, switched to distance learning.

Today the overall education market continues to grow. The Russian segment reached 50 billion Rubles by the end of 2019. “Interfax” reports that about half of the EdTech market in Russia is occupied by the so-called online universities: supplementary professional education for adults. They count 22-25 billion Rubles[20]. In 2019 the international market was estimated at $187 billions, so by 2025 it was expected to reach to $319 billions[21]. According to the new calculations made in August 2020, it is anticipated to increase further by $404 billions before the end of this year[22].

The EdTech market in the world is large, but Russia’s share in it accounts for only 1%. However, it is growing rapidly now[23].

In the transition to a remote format of education, schools and universities have encountered various problems, which can be divided into technical and human ones. The former includes slow Internet, which could interrupt lectures, and obsolete equipment. Whereas the second are caused by the fact that teachers are not used to working in an online format, and students are not always able to absorb information this way.

In Germany, for example, back in March students were skeptical of online learning. However, according to recent surveys, they are generally satisfied now. More than 60 percent of students would like to listen to lectures online via Zoom in the future. For this reason, teachers need to completely redesign their courses to meet students’ expectations outside the lecture hall.

It is fair to say that for students, the format of online education has not been as shocking as it was for schoolchildren. And this is because universities had been prepared for the distance learning even before the quarantine was imposed. Nevertheless, many students and teachers point out that under such conditions the quality of education drops and there is a lack of social

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contacts. Another difficulty is faced when students who live in dormitories have to attend online-classes, being in the one room.

However, at the same time, despite all the negative aspects associated with the pandemic and distance education, new opportunities for even more intensive development of international cooperation in the online format have opened up for universities in 2020.

An example of this is the International Scientific and Practical Seminar on Current Issues in Economics and Finance, organized at the St. Petersburg State University of Economics with the support of the International Center for Financial Markets Research[24].

The International Center for Financial Markets Research (ICFMR) was established in 2013 in order to strengthen the competitiveness of Russian financial science and expand networking with foreign partners. For many years, ICFMR has been actively cooperating with leading universities in Germany, Switzerland and Poland.

In order to strengthen and improve the international network of St. Petersburg State University of Economics, as well as to maintain partnerships with foreign professors during the pandemic, the International Scientific and Practical Seminar on Current Issues in Economics and Finance has been held in online format since October 6, 2020. The Seminar took place every Tuesday over three months via Zoom in the format of presentations and discussions[25].

During this time, 12 professors from Germany, Switzerland and Poland made presentations. Such topics as “Banks facing epochal challenges - what to do?”, “Digital transformation of banks: the experience of Swiss banks”, “How financial penalties for banks travel through financial markets”, “COVID-19 and international trade from a German perspective”, “Negative effects of applying regulatory risk measures in portfolio selection and bank management”, “Companies in a pandemic environment”, “Virtual money forms and crypto assets - global challenges for banks”, “Financial investments and pension planning”, “Safety as a legal problem”, “Current challenges of the Russian financial system”, “City logistics of the future - sustainability on the last mile”, “Security and prosperity through international and regional cooperation” were presented and discussed.

From our point of view, such events allow not only to strengthen existing international relations, but also to expand the network of university’s academic contacts.

Therefore, the International Scientific and Practical Seminar on Current Issues in Economics and Finance demonstrates the opportunities opened up by the COVID-19 crisis for even more intensive development of academic cooperation for the benefit of professors and students all over the globe.

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"Und jedem Anfang wohnt ein Zauber inne,
Der uns beschützt und der uns hilft, zu leben."
(Hermann Hesse)

Datum	Hauptredner	Universität	Thema
06.10.2020	Prof. Dr. Clemens Renker	Institut für Mittelstands-Erfolg	Banken vor epochalen Herausforderungen – was tun?
13.10.2020	Prof. Dr. Bernhard Koye	Kalaidos Fachhochschule	Digitale Transformation der Banken: die Erfahrungen von Schweizer Banken
20.10.2020	Prof. Dr. Dirk Schiereck	TU Darmstadt	Mittelstandfinanzierung
27.10.2020	Prof. Dr. Volker Nitsch	TU Darmstadt	COVID-19 und internationaler Handel aus deutscher Perspektive
03.11.2020	Prof. Dr. Mario Brandtner	Ernst-Abbe-Hochschule Jena	Negativen Effekte der Anwendung regulatorischer Risikomaße in der Portfolio Selektion und in der Bankensteuerung
10.11.2020	Prof. Dr. Claus Luttermann	KU Eichstätt-Ingolstadt	Unternehmen im Umfeld einer Pandemie
17.11.2020	Prof. Dr. Detlev Hummel	Universität Potsdam	Virtuelle Geldformen und Krypto-Assets - globale Herausforderungen für Banken und die Regulatotik
24.11.2020	Prof. Dr. Raimond Maurer	Goethe-Universität Frankfurt am Main	Finanzinvestitionen und Rentenplanung
01.12.2020	Prof. Dr. Uwe Schneider	TU Darmstadt	Sicherheit als Aufgabe für das Management
08.12.2020	Prof. Dr. Tatjana Nikitina	UNECON	Aktuelle Herausforderungen des russischen Finanzsystems
15.12.2020	Prof. Dr. Sabina Kauf, Prof. Dr. Ralf Bogdanski	Universität Opole, TH Nürnberg	Stadtlogistik der Zukunft – Nachhaltigkeit auf der Letzen Meile
22.12.2020	Dr. Gabriele Kötschau	„Wirtschaftskooperationen West-Ost"	Sicherheit und Wohlstand durch internationale regionale Zusammenarbeit

http://en.unecon.ru/icfmr

15 It’s not over yet. Anyway 10 takeaways of this pandemic mess

Lukas MANDL
Member of the European Parliament (lukasmandl.eu)

„Never waste a good crisis.“ This was allegedly stated by Winston Churchill. So, let’s consider it a good advice and try to take advantage of the current Covid-19 pandemic crisis. Perhaps Churchill was referring more to making decisions during a crisis for the time afterwards. But his quote can also be understood as a call to learn lessons from a crisis. Here I am trying to mention ten of them as I see them:

15.1 Don’t assess a crisis and its management before it’s over

While I highly appreciate this book and its goal – that is why I am grateful for the opportunity to contribute – I have to acknowledge that there is some uncertainty in assessing a crisis before it is over. Anyway, we do it. I do it too. And I find a lot of sense in it. I just want to make us all aware of the fact that it is clearly not over, and that we will understand many of our own misinterpretations and mistakes only afterwards. My friend Bettina Rausch, who heads the ‘Political Academy’ of the Austrian People’s Party (OEVP) as president, drew my attention to an abbreviation that says a lot about the reality of our time, with which we will have to deal now and in the future decades to come. It reads as "VUCA" and stands for vulnerability, uncertainty, complexity and ambiguity.

Well, this is it! This is the world we live in. Generations before us have overcome major problems, genocides, wars and more. And problems like that still exist in today’s world. While we have good reasons to be grateful to everyone living on this planet before us, who has contributed to a better world, we face more ambiguity, complexity, uncertainty and new kinds of vulnerabilities than ever before. This was clearly shown to us by the pandemic through many phenomena occurring collaterally. In this article, I am focusing more on these phenomena rather than on health issues.

15.2 If it’s a crisis, let’s call it a crisis

For the current generation of leaders in countries based on democracy and the rule of law, a crisis like the pandemic is unprecedented. Executives and managers in therefore privileged societies are used to spread good news, motivate others, draw attention to the positive aspects and opportunities, while remaining reasonable. – Of course, we must not stop encouraging one another. We need a word of encouragement or a helping hand even more than before during the crisis!

But the nature of this crisis requires a long-term strategy, dealing with the uncertainty mentioned above, as well as a clear language on its character: it is a serious crisis, a true “game changer” with enormous repercussions. The world as we knew it before the crisis will be gone. Timeless pillars such as creativity, innovation, diligence, trustful cooperation or to care for each other will remain in place. But many daily processes and professional fields will change. During the crisis, crisis management needs our full attention and a high level of discipline.

Leaders need to speak frankly about the crisis to the men and women they are working for. Focusing only on the bright aspects is highly insufficient and leads to a lack of crisis response. Men and women in leading positions are criticized even more during the crisis. Among the

points that commentators argue about is the question of "fear". Does this or that leadership behaviour cause fear? Well, if there is something to be really afraid of, I would rather expect a good leader to draw attention to it, which may cause fear – and lead to appropriate reactions.

15.3 A true crisis affects everybody

During the first months of the crisis, the chief editor of the Austrian daily ‘Die Presse’, Rainer Nowak, stated that “a true crisis would be a crisis for everybody”. The context of this period was a general political atmosphere claiming that the governing bodies were misusing the crisis for their own popularity and leverage. – Almost a year later, it can easily be assessed that Nowak was right. If a crisis is real, it affects everybody.

We may have learned during the pandemic crisis that it is not just the leaders mentioned above – especially government officials – that are affected in both their professional and personal lives. But that our neighbour, a person on the street or a service agent on the phone are affected as well. That is why, there are many good reasons to help each other, not to underestimate the state of another person, but to keep in mind that this person is also affected; and that reliable relationships are a natural human need and, especially during a crisis, we need each other and are requested to care for each other.

15.4 Never underestimate conspiracy theories

No matter how mature an evidence may be, there will still be rumours about miscalculations or even about mysterious powers behind the scenes manipulating science and the public. No matter what political affiliation a politically engaged person has, no matter what kind of media content a journalist produces – as long as the respective people act reasonably, they already knew before this pandemic that there are conspiracy theories around. These theories are obviously wrong but still there will always be a number of people believing in them. This divides our societies and slows down processes in all areas of crisis management – from the governmental area to academia.

Experts knew the problem before the pandemic. The problem was already rapidly worsening with the misuse of social media platforms, but it has really escalated since the beginning of the pandemic. The main reasons for that may be the following: People have time as they stay at home. They are always connected to the internet and – as companies in this area have also assessed – use much more time for online conversations and social media of different kinds. Due to the pandemic and the crisis management, many people get increasingly bored, or stressed, or angry. Once they try to find guilt, where there is no specific guilt, they become increasingly open to conspiracy theories. And then these theories spread with high speed and get worse and worse.

Joking about those minorities, whose members can be understood as spreaders and victims of conspiracy theories would be the wrong reaction. When conspiracy theories are spreading among the public, leaders must listen, must take them seriously and even literally! Only then will it be possible to react properly, to reach out to spreaders, victims and possible victims with proper answers related to common sense but also the right sentiments. Because the sentiments behind such tragic developments are always real! That is in my view one lesson of this.

15.5 A crisis demands a true crisis response

Anticipating further developments is among the most important factors that make leadership excellent. The sooner an extraordinary scenario is unterstood as such, the sooner decisions can be made to prevent people from suffering unnecessary harm. If a real crisis scenario is

underestimated and defined as a regular challenge, the response will not be adequate. – These thoughts may sound banal. But as the world has seen during the current pandemic crisis for some leaders it has been extremely difficult – and for some obviously mentally impossible - to accept the severe crisis as such.

Acceptance is not the only mandatory condition for a true crisis response, but it is imperative for everything else. A worthy response also needs interaction, communication to establish a common understanding of the situation, constant research for new evidence of anything related to the problem, and many other things mentioned in this text. – The main takeaway here is to trust evidence-based forecasts and not fall back into our wishful thinking.

15.6 Don't close parliaments, never

Even during the toughest days when Italy was severely hit by the disease and many passed away, the President of the Italian Parliament, Roberto Fico, claimed that parliamentarians must not stand back but do their job. He stated: "MPs are like doctors, they cannot halt. Parliament must be in the front row, it must not withdraw, like doctors and many others do not withdraw. I want to remind everyone of that. Because in times of crisis, parliament not only remains a means of guaranteeing democratic principles, but is called upon to support people, who stand in the first line of the fight against the crisis and people, who are suffering economic and social losses".

In my view, parliamentarism is one of the greatest innovations in human history. It is not a technological one, but a social and political one. It avoids violence by authorities or in the streets. It includes each and every citizen, it creates a structure and an atmosphere of representation and it guarantees the renewal of power every few years. The last point has been defined by the philosopher Sir Karl Popper as an essential feature of democratic systems.

Parliaments must remain open during crises of any kind. The European Parliament's President David Sassoli, an Italian as well, whose work I generally appreciate, has been criticised for trying to put parliament into a remote-only status during the autumn and winter of the pandemic. While everyone had to trust each other in continuing to work as proper as possible under pandemic-conditions to avoid unnecessary danger, while monumental political decisions had to be taken to support companies and employees, the idea of putting the parliament into the background was wrong. Consequently, the decision did not uphold for more than a few weeks. After a month, the European Parliament was running on a crisis-adequate level again, with care, distance and all necessary means and measures, but fit to act.

15.7 Let's develop at least something to be called resilience

Politically, the most important takeaway for the European level is the need for a quick and sustainable development of what experts call 'strategic autonomy'. There will be a next crisis. Resilience means to be prepared for a blackout as well as for an embargo, for a new migration crisis as well as for riots due to disinformation, political polarization and social division, for a cyber attack as well as for a regular military attack, for terrorist attacks with conventional weapons or even with chemicals or other means.

Most important in this field is our mindset, our understanding of what we are defending against what kinds of threats. We are defending ourselves, our children, future generations; we are also defending the 'European Way Of Life' and its values – human dignity, individual freedom, democracy, rule of law. We are defending our capability to support other parts of the world with development aid and economic cooperation. Since today's Europe has achieved enormous maturity in many fields, there is a lot to lose, there are a lot of targets to attack, there is some weakness in our current shape.

As mentioned before, it is too early to define every single lesson as the crisis is still ongoing and about to negatively surprise each of us day by day. Especially the EU's crisis management cannot yet be honestly assessed. What we can still assume, however, is that in some respects Europe has acted excellently while in other respects it has not been quick, brave or determined enough. We will have to figure out many things and to decide at highspeed on open questions for example on our understanding of the crisis mode, on bureaucracy, on so-called data protection, innovation etc.!

15.8 It's getting worse before it gets better

In a crisis it usually takes time before we accept the negative deviation from normality. If the crisis is really severe, it can happen that after this acceptance even more things go wrong than we already expected. This has clearly happened since the beginning of the Covid-19 pandemic. To manage lockdowns was hard, to manage the distribution of vaccines was even harder. To manage the first kind of the virus was hard, to really accept mutations and manage them was even harder. While these examples only concern crisis management itself, there were numerous other things that governments and parliaments, hospitals and other health institutions, the military and civil society, business, academia and the media had to manage, which were not directly related to the health issues but to disinformation and misinformation as well as to other phenomena already mentioned above.

„Misfortunes never come singly." This seems to be an important quote to prepare for crisis. If we are aware of this risk, we can invest in prevention, try to anticipate as many scenarios as possible and avoid further or collateral damage. If we do not confuse our wishes with evidence-based predictions, we will be better prepared mentally and practically for the next obstacle to come, and the next one after it. Wishful thinking can mislead us. This is one lesson here.

15.9 To be jointly affected does not necessarily mean to react jointly

As the term literally suggests, the pan-demic is a global phenomenon, it affects all of humanity. One would expect the different leading powers to cooperate even more in order to fight the common threat. But obviously this expectation turned out to be naive. Several powers outside Europe seek confrontation rather than cooperation even more than before. Potential vaccines have been misused as a tool to divide Europe.

And beside the direct connection with the health crisis itself, violence and brutality were not stopped during the pandemic, but rather triggered. In Belarus, an illegitimate regime is trying to stay in power by all dirty means. In Ukraine, the aggression by the Russian leadership continues. In the Mediterranean Sea, Turkey has not stopped provoking Greece, Cyprus and the entire European Union; and smugglers still seduce their victims into making dangerous and pointless journeys. The conflict between Armenia and Azerbaijan escalated including through the use of drones against people in more harmful ways than ever before. The war in Syria is still ongoing. The Chinese regime is increasingly suppressing people – above all the citizens of Hongkong and the Uyghurs. Europe is attacked via means of hybrid warfare on a daily basis – disinformation is one of them. No matter who is the source of such attacks – and there are many of them! – the aim is always to create divisions between European countries and within European societies.

The main lesson in my view is that the European approach of promoting cooperation rather than confrontation must be maintained and strengthened. The most important lesson from European history is that it's much better to build bridges and strengthen relationships than to provoke conflicts or seek confrontations. The general approach of Europe's contribution to the

world now and in the future must be that of cooperation. This European policy will be extremely challenged in the years to come. To defend universal values like human dignity and individual freedom, liberal democracy and the rule of law, Europe must stand its ground, which is also in the interest of global development in terms of the Sustainable Development Goals (SDG) and the Europeans themselves, since cooperation leads to exchange of goods and services, prosperity, friendship between peoples and peace.

15.10 It is not a game

For those who were not personally affected, as well as for western societies that were barely affected at the beginning of the pandemic, which the World Health Organisation (WHO) only defined as such on March 11th, 2020, the whole endeavour felt like a game. At least the means and measures to protect others and oneself could be characterized as models for gamification. It was new, for many it felt like fun and something very right and at the same time; it was trendy to show gratitude to nurses and doctors, supermarket employees or military personnel; it was easy to show sympathy for those heavily affected while leaning back in the chair.

Once the numbers rose at different times in different parts of the world, once it became clear that this will not be over anytime soon, once responsible leaders, especially those in the executive branch, had to continue taking tough decisions, even as they became increasingly unpopular, the general atmosphere worsened. This has not caused troubles for governments in the first place but for the crisis response, since the misbehaviour of one single person could harm the situation on a large scale.

Among the lessons of this could be that personal responsibility must be placed at the forefront of education and other areas that influence our understanding of the human nature. If a person understands his- or herself as more or less subservient, he or she will more likely not act responsibly when it is needed, but rather rely on authorities of whatever kind. This is also a threat to liberal democracy. In addition, virtues that have often been judged as outdated have also proven their value and meaning, like patience, resistance or self-restraint.

16 Digital Transformation of Work Models - Ethical Implication

Łukasz RĄB
Akademia Pedagogiki Specjalnej im. Marii Grzegorzewskiej, Instytut Filozofii i Socjologii, ul. Szczęśliwicka 40, 02-353 Warszawa
Karolina RĄB - Kettler
Politechnika Śląska, Wydział Organizacji i Zarządzania, Katedra Stosowanych Nauk Społecznych, ul. Roosvelta 26, 41-800 Zabrze

16.1 Introduction

The 21st century has already had two economic crises - one in 2008, and the other one we are currently experiencing - a crisis caused by the outbreak of Coronavirus.

The economic crisis of 2008 revealed the weaknesses and contradictions of capitalism and neoliberalism. It was after the 2008 financial breakdown that books such as “The Capital in the Twenty-First Century” (Piketty, 2013), “Post Capitalism: A guide to our future” (Mason, 2015), or “Utopia for realists. And how we can get there” (Bregman, 2017), and many similar were published. Although written from a bit different perspective and on various topics, they all embrace the criticism of modern capitalism and the belief that the recent crisis has opened a window to a new social and economic order.

“Corona crisis” is currently one of the main drivers in reshaping work models - companies need to implement safety procedures, introduce home-office, redefine many job positions, and launch new processes, such as remote on-boarding and online team bonding events.

Alongside those ideas, significant social and demographic changes have occurred.

The aim of this paper is to have a look at how the consequences of the above-mentioned crises are changing the way we work. In particular, we will be interested in the ethical dimension of these transformations and its (mis)alignment with sustainable development.

16.2 Digital revolution

Before the 2008 bubble burst some were foreseeing the arrival of a new socio-economic order that will be neither communist, nor capitalistic.

Already in the seventies Daniel Bell was describing the emergence of a post-industrial society, in which the economy is based primarily on the services sector and the development of knowledge/information. Progress in the field of new technologies is the most important factor for Bell, shaping the post-industrial reality. Knowledge itself becomes a commodity, it is the main resource and thus plays the role of classically conceived capital. Economic changes have also remodeled the social structure, according to the author of “The End of the Age of Ideology”; the most important role in the new society is to be played by technical (technocratic) elites (Bell, 1975).

Bell's concept is a vision of a knowledge-based society (Bell, 1975). His thought seems to be continued by Alvin Toffler. In the pages of “The Third Wave”, he explains how three revolutions/waves (agricultural, industrial, and postindustrial) laid the groundwork to new socio-economic structures (Toffler, Toffler, 1996.).

The guru of organization theory – Peter Drucker – in his “Post-capitalistic society” claimed that developed countries were shifting away from capitalism into post-capitalism. In this society it’s knowledge, not the means of production, which is the most important resource (Drucker, 1999).

Similarly, the American sociologist Richard Florida perceives social development. Like the previously quoted researchers, he sees the foundation of agricultural and industrial epochs in certain goods/material factors. However, the foundation of the postindustrial revolution is creativity (Florida, 2010).

For these researchers, the post-industrial era means not only a change in the way of production, but also a social revolution. They postulate the disappearance of the class struggle. Moreover, they argue that the classic division into the bourgeoisie and the proletariat does not reflect the actual social structure in which highly educated specialists or managers have a dominant role.

One of the deeper analyses of the social consequences of the post-industrial revolution is proposed by Antonio Negri and Michael Hardt, the authors of the famous “Empire”. In their famous book, they explain how the development of modern technologies allows one to free oneself from alienated work, which was based on exploitation (Hardt, Negri, 2005).

Even stronger, Negri’s ideas are visible in the book entitled “Goodbye, Mister Socialism”.

Negri claims that once knowledge becomes the most valuable commodity, people are freed from exploitation and alienation. Industrial proletariat is turning into cognitariat, and free employees are only limited by their own knowledge, not by the owners of the means of production (Negri, 2008).

Alongside with these optimistic visions of the postindustrial era, there are some ardent critics of digital revolution. One of the most relevant observation to the topic of this paper is Shoshana Zuboff’s description of surveillance capitalism. Surveillance capitalism is a large-scale process of collecting, analyzing, and processing data for profit. Its essence is the constant gathering by large tech companies of "behavioral surpluses", i.e. traces from searching and browsing history of the websites by users (Zuboff, 2019). What is important, this process is not only dangerous for our privacy, it is not only commoditizing our choices, preferences. It has a huge impact on our freedom(s) – both in macro (for example politics, social structure) and micro levels (such as conscious consumption, individual autonomy). In terms of individual autonomy, it can lead to a complete surveillance of the employees by an employer and to a new form of objectification.

Surveillance capitalism is an inherent trait of Anthropocene. The Anthropocene is the new geological age we live in. It is characterized by human hyper-righteousness: the actions of the human species have become so great that it has begun to actively influence all living conditions on Earth. The concept of "anthropocene" was proposed and introduced into a wider circulation by Eugene F. Stoermer and Paul J. Crutzen (2000, pp. 17-18). Since then, there have also been discussions and disputes about the beginning of a new era, and the discrepancies in its dating are quite large. Some researchers point to a period between 50,000 and 10,000 years ago when the megafauna extinction took place. Others assume the beginning of the Anthropocene with The Great Acceleration after the Second World War. There are also voices that make us look for the beginning of a new era in the beginning of globalization, which began with the great journeys of the Portuguese and the "revolution" of Copernicus (Sloterdijk 2011, pp. 13-14).

The progress and technological achievements that characterize the Anthropocene are in fact biological ignorance and the pursuit of money (Rąb, 2019).

Man's attitude in the Anthropocene is extremely extractivist (one-sided, self-centered, profit-centered, beyond responsibility) not only in relation to nature, but also to himself. Currently,

in the times of "digital dictatorship" (Shiva, 2020), data from human minds and bodies were commodified and extracted as the so-called "surveillance capital" (Rąb, Kettler, 2020).

16.3 Transformation of work models

The above described post-industrial/knowledge-based society is a result of the digital revolution, which not only transformed the social and economic patterns, but also the way people work and want to work. (Fobel, P., Kuzior, A., 2019).

Many researchers have been describing this transformation of the ways of working.

One of them is Richard Florida, who in his “The rise of the creative class”, describes the emergence of a new social class, creative specialists, who, according to him, play the predominant role in the modern economy. In his study, he presents the set of values shared by the creatives, which highly influence their working style:

- Work-life balance
- Flexibility
- Continuous development
- Working with an interesting technological stack. (Florida, 2010).

The way this American theorist pictures this new class is similar to what sociologists see in the Y generation. Millennials, how some authors also describe them, include people born between 1980 and 2000. According to several studies, this generation is focused on self-fulfillment and satisfaction. Other core values, especially visible in the working environment, include respect, recognition, continuous development, fairness, tolerance and equity (Sonnet, Kralj, Kandampully, 2012).

Regardless of the label, sociologists agree that this generation is not mainly money-driven and that above-mentioned values play a more significant role to them in a workplace than a salary (Florida, 2012). To better understand this phenomenon, let us recall here the famous World Value Survey of Ronald Inglehart. What we know from his study, is that generations raised in welfare are less willing to make trade-offs and sacrifice their individual autonomy for the sake of economic and physical security. They take this security for granted and focus on being self-fulfilled and living up to their values (Inglehart, 1977).

Given the social and economic changes, many organizations have been striving to find new organization models. Let’s have a look at three of them, which are the most widespread and have the biggest impact on current management practices:

- Agile management – agile management is a methodology, which has its source in software development. In 2001, seventeen developers published “Agile Manifesto”, with an aim to improve and ease software engineering processes. It is based on four core values, and twelve principles. The agile set of values is composed of the following:

a. Individuals and interactions over processes and tools.

b. Working software over comprehensive documentation.

c. Customer collaboration over contract negotiation.

d. Responding to change over following a plan (agilemanifesto.org, 12.09.2018).

The principles help developers putting agile concepts into action:

e. Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.

f. Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage.

g. Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale.

h. Businesspeople and developers must work together daily throughout the project.

i. Build projects around motivated individuals. Give them the environment and support they need and trust them to get the job done.

j. The most efficient and effective method of conveying information to and within the development team is face-to-face conversation.

k. Working software is the primary measure of progress.

l. Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely.

m. Continuous attention to technical excellence and good design enhances agility. j) Simplicity – the art of maximizing the amount of work not done – is essential.

n. The best architectures, requirements, and designs emerge from self-organizing teams.

o. At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly (agilemanifesto.org/principles, 12.09.2018).

Jurgen Apello, in his “Management 3.0” summarizes agile development in these words: “Agility is about staying successful in ever-changing environments” (Apello, 2011, pp 376).

- Holacracy: is a method of decentralized management and organizational governance, in which authority and decision-making are distributed throughout a holarchy of self-organizing teams, as opposed to the traditional, hierarchical systems. It is based on the principles of flat hierarchy and self-governance (holacracy.org, 12.09.2018).
- Squad model (Spotify): when Spotify was launched, it operated in a typical scrum system. However, once the company started growing, scrum stopped being the most efficient way to organize the teams. They set up a new structure – squads, which are small, cross-functional teams. The emphasis in this model is put on freedom, autonomy, and flexibility, which is, however, always tightly aligned with the company mission (https://www.youtube.com/watch?v=3YrRW4u9Rl0, 12.09.2018).

To summarize, all these models are based on the ideas shared by such authors like Daniel H. Pink, Richard Florida or Alan Burton-Jones, who claim that employees are driven by self-directed processes, self-management, autonomy, and purpose, much more than by financial incentives.

This approach is very much aligned with the humanistic shift in the management theories. Humanistic management can be described as a trend that places people at the center. Humanistic approach to management was expressed very accurately by Emilian Orzechowski: "If we assume that the basic motive (and sense) of activity in any sphere of social life is to act for the good of man and the human groups that create this structure, bringing the essence to an economic dimension is total nonsense " (Kostera, 2014). It must be remembered, however, that classical management does not stand, or at least should not, in contradiction with humanistic management. What we are talking here about is the restoration of the main role in the organization of an employee. Monika Kostera, one of the most important propagators of humanistic management in Poland emphasizes that thinking in economic terms is important not only from the point of view of the generated profit, but also for achieving goals of the general social dimension (such as providing jobs) (Kostera, 2014). This is an obvious reference to Adam Smith, who in the "Theory of moral feelings" postulates the use of reason not only for getting rich, but above all for respecting moral principles (Smith, 1989). Quoting again Monika Kostera, "This trend [humanistic – K.K] has three fundamental aspects. First of all, the goal of humanistic management is man (...). Secondly, humanistic management uses the legacy of the broadly understood humanities, understood as knowledge, culture and sensitivity. (...) Thirdly, humanistic management deals with human experience.” (2014).

Humanistic management is aligned with a broader philosophical concept of sustainable development, which briefly can be described as a search for a compromise between the economic growth and protection of social and natural environment. Practical application of sustainable development in the business field is implementation of CSR (corporate social

responsibility) by organizations, which strive to find a balance on various fields: ecological, economic, and social. It introduces to their actions an ethical dimension, which, according to such authors as Aleksandra Kuzior, is the most important and the only relevant direction of human (economic) actions (2006). Moreover, from the practical and pragmatic perspective, we can observe that this humanistic and ethical dimension has been playing recently a significant role for the candidates to choose an employer, for the employees to remain at a company, and for the organizations to define their EVP (employer value proposition).

16.4 Values in the new work models

In the course of two years (2018-2019) the authors of this article were conducting research within a Berlin-based tech startup.

The discussed company is a 5-years old tech startup with 68 employees. Most of the staff belongs to the generation Y. What should be also underlined, is the diversity of the organization. Its employees represent 27 nationalities. In terms of the structure - hierarchies and departments exist, but they are flat, and employees work very cross-functionally. Most of the projects involve representatives of at least two teams. It has its implication not only in the professional projects, but as well in the company's culture and decision-making process that affects how people work. For instance, there is a benefits committee (represented by all the departments of the company and all the seniority levels) that designs and distributes the budget for the team and company well-being and benefits.

As for the management model, the examined organization leans towards scrum (agile management). Initially, the company was experimenting with holacracy, however, after a year it decided to change its managing and organizational model. This shift itself in the management style shows how agile in nature this organization is. During its early days, when it was a small team of a couple of employees being also friends in the private life, the holacracy worked really well. However, as the company started to grow and mature, this model did not work for all of the new employees, and the decision was made to look for an alternative. Agile management (with the preference in scrum) combined with a relatively flat, but still existing, hierarchy, creation of distinct departments and roles - it all had been tested before it was fully implemented.

It should be also underlined that the company embraced the digital transformation into its working model and is very flexible in terms of working remotely by its employees. Every employee has freedom to choose the place of working, as long as it is agreed and accepted by the team and the manager. For that very reason the forced home office during the corona virus lockdown has gone very smoothly. On top of that, the organization uses technology that eases the remote working process and is open to experiment with the new tools.

The focus of the study conducted at the above described company was put on its values and employees' engagement. The authors' aim was to analyze the presence and the strength of the official values. The authors also had a look at the employees' engagement in order to understand the link between the values strength and the latter one.

On top of that, the authors analyzed employees' association with the organization. The employees were to choose a couple of descriptions/associations they have with the company and rank their importance for them. These associations were divided into two distinct groups - one was named as unofficial values the other one as company's EVP (employer value proposition).

In order to obtain the relevant data, the authors of this paper conducted a series of "values", "EVP" (employer value proposition), and "pulse and engagement" surveys. Also, the retention rate in the past 2 years was examined. The second factor is of high significance; studies show that the average retention rate in a startup in Berlin is 18 months.

“Values survey” was focusing on how the company’s official values are lived and implemented by the members of the organization. The company established a value code (mentioned below), which was the base of the “values survey”:

- We adhere to highest standards of integrity
- We make data-driven decisions
- We move fast
- We are rebellious
- We focus on impact.

The survey was running through April 2019 – May 2019. The completion rate was 82%, and all the questions were answered.

Conclusion of the study are as follows:

- All of the company’s official values mark a strong presence in the employees’ day-to-day work (3 of the values are perceived as present and strongly present by more than a half of the company’s staff)
- Most of the company’s official values are very operational - being in fact a sort of modus operandi guiding employees in their day-to-day work. What is more, the strongest values (these that scored 50% and more) are also supported and actively implemented by the relevant tools. The company uses technological solutions to fasten and smoothen the process (project management tools, ticketing systems, instant communication tools), to analyze data (studying customers’ behavior, competition activity, but also its employees engagement and satisfaction), tools to help them being integral with their values and product (add analysis, customer feedback and satisfaction surveys, candidates experience surveys, and more).

Employees of the company were also asked to choose from a various of descriptions/associations they have with the organization and rank their importance for them. The authors divided these associations into two groups - EVP (employer value proposition - chart two) and the company’s unofficial values.

- Compensation was one of the least important factors mentioned by the respondents. What was really important to them within the company is the possibility to work in an international place, where the hierarchies are low, and which allows them to keep a healthy work-life balance.
- For the employees of the studied company it is crucial to work in a truly diverse and inclusive environment that inspired them and pushes to improve their skills.
- The above-shown results (both from the EVP and the unofficial values) are very much in line with what researcher say about the values and working expectations of the generation Y. There is a much less focus put on the materialistic aspects, with a high importance given to the values part of how the organization operates.

If we analyze the results from the “pulse” surveys (they have been conducted in the company on a quarterly basis since August 2018), we will notice that overall satisfaction has been rising ever since. On top of that, the authors were interested in the eNPS score. eNPS stands for the employer net promoter score and is a scoring system designed to help employers measure employee satisfaction and loyalty within their organization. It was firstly used in marketing (NPS) to study customers’ loyalty and then implemented in the field of human resources. It identifies how eager the employees are to recommend the company they work for to their family and friends (as a prospective employer). The eNPS number has been also raising since the launch of the pulse surveys.

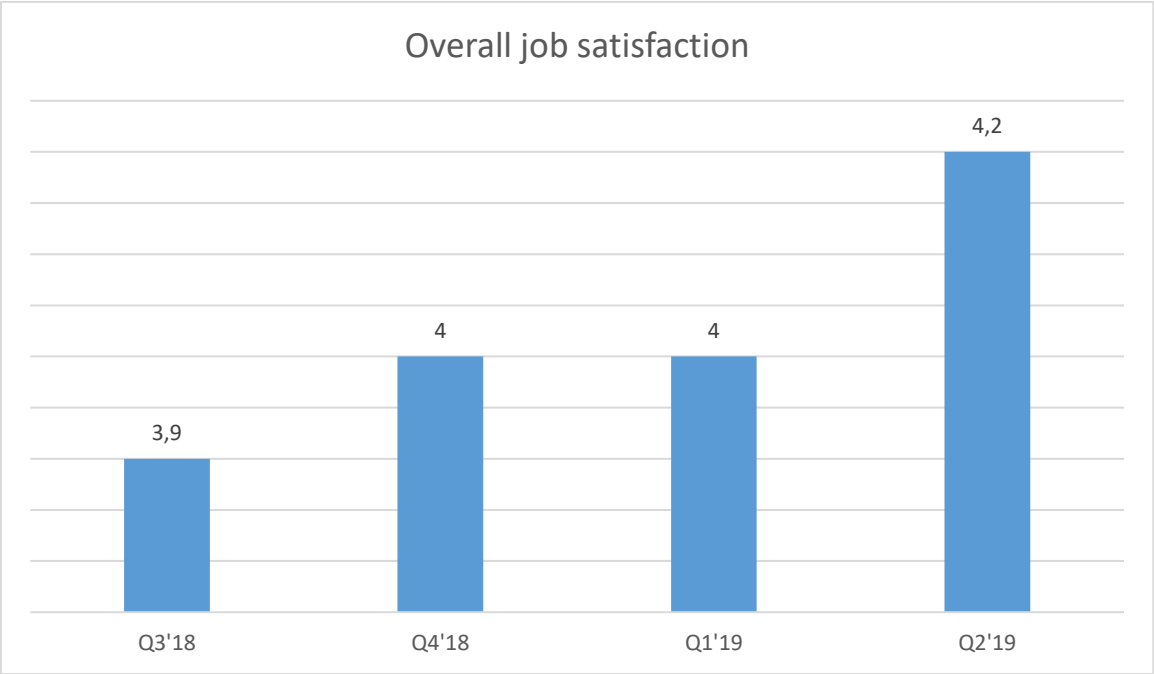

Figure 1: Rising overall job satisfaction Q3'18 – Q2'19.

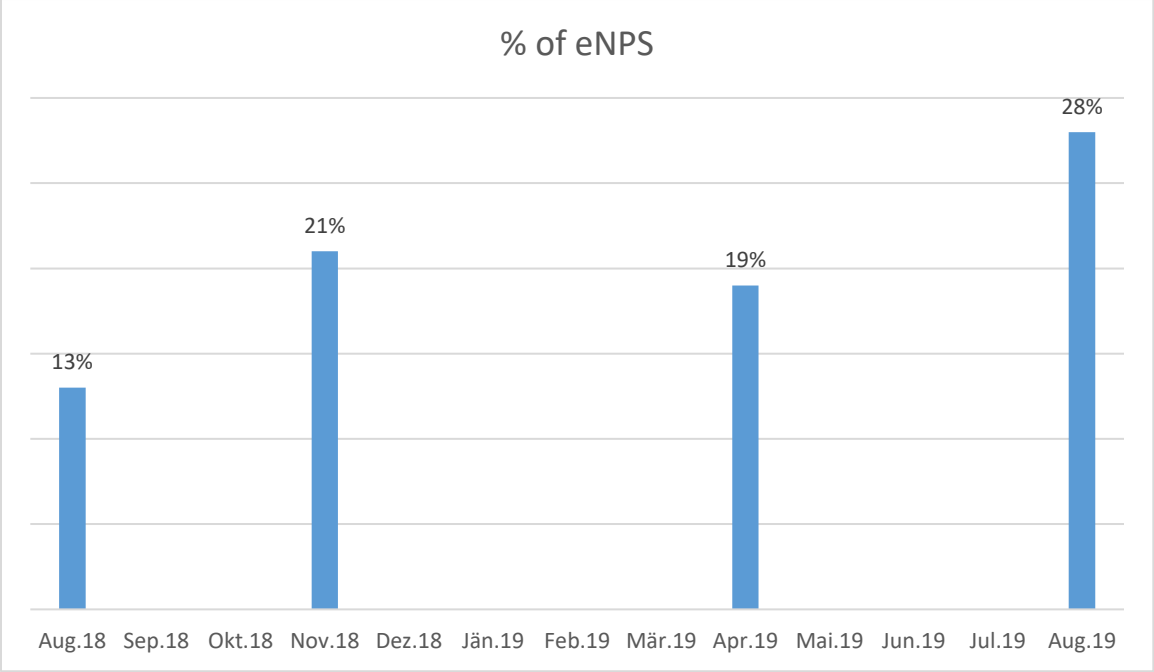

Figure 2: Employer net promoter score. Source: Authors' study.

If we compare the results from all the above-mentioned surveys with the level of the turnover rate in the examined 24 months at this organization, we will see it is on average level of 2,9%. This is a very low figure; most of the companies of that size have an ideal retention rate to achieve 90% (which hardly ever happens) (https://carta.com/blog/employment-tenure-startups/ 06.09.2019).

The studied company has achieved satisfactory results. Employees seem to be happy; they would recommend working for that organization to their friends and family, and their official values are not only preached, but also apparently lived by the employees.

Based on the conducted research, we can summarize the operating model of this company in the couple of bullet points:

- It is a learning organization - it tests different models, does the reality check, and then implements changes - the best example is the shift from holacracy to a more "structured" model. In this case, with the growth of the company, this model was not really suitable anymore. Also, even though in the beginning the holacracy was working really well, the management was aware of the negative effects it can have on a bigger and more complex organization. To be more precise, let's bring here a very well-known example of Zappos, which was one of the first organizations to have implemented this type of culture. As a reminder, Zappos' CEO, Tony Hsieh in 2015 gave his employees an ultimatum – you either accept the holacratic organizational model, or you need to find another employer. In theory, all the foundations of this managerial shift sounded highly positive: flat structure that does away with top-down management and puts the decision-making in the hands of autonomous circles populated by self-managed employees, work is defined by roles rather than by job specifications, one employee executes multiple roles (https://medium.com/infinitebeta/how-holacracy-is-killing-businesses-a425fd0b7eb4, 06.09.2019). However, 200 people, who constituted back then 14% of the staff, decided to leave immediately. In the past two years, employees' turnover at Zappos is at 29%.

Some critics of holacracy refer to this model as a cult, a sect; a group of firm believers, who does not accept any shade of grey and doubts regarding their "religion".

- Values are of a high importance to the company - the core company values were forged short after the company was created; moreover, it was not a top-down action, but a democratic process that involved several employees and weeks of brainstorming. What is also important is that the founders are open to implement changed in their core values set if needed. After a series of values surveys, when it was clear that two values are relatively weekly represented ("We are rebellious" and "We focus on impact") the decision was made of not putting too much of importance towards these two.
- The company understands that not only pay-check matters to its predominately millennial employees - for that reason it offers great work-life balance, self-development opportunities, daily inspiration and challenges.
- The company incorporated digital transformation before it was forced by the COVID-19 crisis. The employees have always had freedom to choose their working place (if agreed with the manager and the team), and they have been always equipped with the tools that make remote work easier and simply feasible. However, what is the most important is the level of trust that is given to the employees. Even during home office there was never a new, special way of controlling employees implemented, also, everyone could manage their time it the most convenient way (what especially mattered to the working parents). What matters are the results not the presentism.

16.5 Conclusions

Corona lockdown forced companies to go through an accelerated digital transformation. In many organizations, this change was really sudden and driven solely by the external health crisis circumstances. However, this process, although it is still quite recent, has already made significant remodeling in the world of work. Some companies announced that they are shifting their work models into digital ones. For instance, Twitter allows all its employees to work remotely, and Facebook expects half its staff to do so within a decade. But this can be observed not only within the tech giants but as well at the smaller organizations and startups, such as at

the examined company, which has introduced a hybrid model - employees can voluntarily choose between working from home or being on-site.

This is more than a digital transformation - this is a real revolution of the working models.

However, if this revolution is to be about something more than just a change of working tools and places, the ethical dimension cannot be omitted. As in the presented company, the impact has to be put on the individuals and values. This approach is in line with the humanistic management paradigm, which can be simply described as a way of management that puts individuals in the center. Moreover, implementing humanistic management can be a guarantee for sustainable development, understood here as combining business and social goals.

On a smaller, scale it means creating a good working place and a prospering firm. An enterprise cannot run successfully without its people. And it is not only about its employees, but also the whole social environment that interacts with the company uses its products, etc. Without social responsibility, this relation is unfair and uneven, which will always result in economical failure. On a bigger scale, however, humanistic management as a part of sustainable development is a necessary condition for democracy, thus a sane economy. “Business cannot succeed if society fails” - therefore, digitalization only combined with a humanistic, ethical approach can lead to sustainable development.

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17 Underlying Educational Changes within an Era of Hygienic Crisis

Tjeodore G. RIZOS
University of Patra, Greece

17.1 ABSTRACT

This brief article, based on the present knowledge and available literature, aims to demonstrate the various aspects of the transmission of the pandemic on the educational edifice across the world. Its main concept concerns the fact that various critical events like the outbreak of Covid-19 may become turning points for a smoother functioning of pedagogic institutions in an era of post-modernism. Rapid changes in the organization of instructional methods have taken place contributing to the construction of a creative and integrative learning environment. The main preoccupation of the script presented here revolves around the idea that the widespread utilization of ICTs enhances students' ability to assimilate existing information, imagine innovative possibilities for a better future and design useful solutions under the deeply ambiguous and urgent circumstances that we're witnessing. The gradual emergence of a novel educational milieu requires the coming into being of a process of life-long learning which leads to a feeling of self-fulfillment. The systematic application of telematics services provides a strong stimulus for the accomplishment of higher order thinking skills through the inculcation of critical and independent states of mind. Moreover, equal opportunities for all citizens are promoted and the international multifarious communities are eager to acquire technological literacy competences and eliminate the prevailing gaps of knowledge.

Keywords: application of ICTs, blended learning, educational process, Covid-19

In modern times we observe that the confluence of innovative computer and communication technologies has brought about an acceleration of access to all kinds of information. The wide pervasiveness of globalization along with the advent of the digital revolution have driven contemporary societies in a fierce race to reap the benefits ensuing in an effort to revive their economies. Bold initiatives assumed by policy-makers, educationists and non-governmental organizations have created permanent incentives for an increased dissemination of ICTs (Information and Communication Technologies) in all aspects of life and education is no exception to the rule[26]. The uncertainties inherited from the past of a world defined by four classroom walls and impermeable boundaries have given their place to a novel global interdependence of complex structures which require flexibility, responsiveness and imagination. When technology is applied in a meaningful manner students and teachers are provided with the opportunity to be instantly connected to whichever part of the world they desire. New paths are opened that stimulate learning and contribute to the development of high order thinking skills[27].

Histories of technological breakthroughs often recited have revealed the existence of close links between insightful discoveries in industries and communications accompanied by improvements in educational methods. The computers' extraordinary ability to offer lessons in multimedia formats and foster a real time student-teacher dialogue and direct exchange is only the tip of the iceberg for the consolidation of a qualitative educational milieu. The rapid availability of ICTs has been responsible for a thorough transformation of the learning process

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so as to facilitate the smooth integration of cutting-edge technologies. Various pedagogic activities have been reoriented and reformulated from the manual to the open sources. The governmental institutions strive for the enhancement of the implementation of ICTs in education through the promotion of technological literacy and the facilitation of equal access to every student that needs to obtain information. One of the most admirable achievements of the establishment of educational technology is linked to the clearance away of the impediments that prevented the equal dissemination of information to all the citizens without regard to their color or social status. Rare documents that researchers had to schedule appointments in order to examine have now been digitized and posted on the web for anyone to delve into them at any time he wishes. Projects like the E-rate have opened up possibilities for connection to affordable broadband internet for schools around the globe. The utilization of the cyberspace eliminates geography as a limiting factor thus information can be gleaned easily from libraries, research centers, museums and educational institutions from all over the world. According to the words of David Thornburg, modern technologies are space collapsers, time shifters and creative tools that extend our reach to previously unfathomed realms of knowledge[28]. The variety of pedagogic services and methods of teaching has been boosted by the effective application of the principle of life-long learning that is gradually implanted into the minds of youngsters. While some subjects that the new generation is taught last forever (literacy, numeracy), other topics change so swiftly that they become obsolete by the time students enter the workforce. The use of television, radio, e-mail and the internet can be harnessed in support of the construction of an educational system built around the idea that learning should be a constant and time a variable.

Moreover, as far as teachers are concerned they should make an effort to embrace warm-heartedly the adoption of novel teaching activities and be eager to transform themselves into agents of innovation in the classrooms of the 21st century. Traditional tools like books, pens and paper will co-exist with the high-tech instruments of the telematics era that is increasingly gaining ground. Within a more fluid and distributed setting teaching is going to be provided wherever the learner is located-a room at a school, on the bus ride home, in the park, at the museum or on the library. Therefore, the educator's role will differ from that of content presenter and test giver towards a more productive capacity as a coordinator; an expert guide who provides vital instructions to the learners and helps them navigate the subjects being explored. He has to be open to the assimilation of new discoveries and pathways that become apparent along the educative process. The pervasive development of inexpensive desktop videoconferencing equipment has paved the way to unique opportunities for casual dialogues on a wide range of issues and contributes to the overcoming of the sense of isolation felt by educators whose area of interest was more narrow-based. Modern pedagogues benefit to a large extent from the positive effects of the telematics revolution in other important ways. For example, nowadays the abundance of existing technology allows them to acquire access to reference materials on virtually any academic subject while online communication facilities can promote collaboration and conversation with peers from diverse locations of the planet. The findings of a significant survey conducted by the Center for Applied Research in Education Technology show that the application of technology in class has considerably increased the performance of pupils and inculcates them with positive attitudes and motivation. It enhances meaningful learning as the extensive use of innovative applications enriches the process of acquiring knowledge. As a characteristic case in point they cite a sample of eight graders who performed much better on NAEP mathematics tests when computer technology was employed for real world simulations as opposed to drill-and-practice purposes[29].

The engagement with interactive video programs has been demonstrated to ameliorate problem-solving skills while assistive technology provided pupils with mental retardation an invaluable aid to overcome their limitations and learn academic, social, vocational and survival

[28] Thornburg, D. D. (2000), "Technology in K-12 Education: Envisioning a New Future", USA: Office of Educational Technology, p.1-13.
[29] Van Bavel, J. & Baicke, K. (2020), "Using Social and Behavioral Science to Support Covid-19 Pandemic Response" in Nature Human Behavior, www.researchgate.net/publication/341050215

skills necessary to function independently in society. Productivity tools such as databases, spreadsheets, computer-assisted design, graphics and multimedia authoring software enable students to independently analyze, interpret, organize and evaluate their work and enter the workforce with greater capabilities. The adaptation of technological advances to real-life spheres of life allows the trainees to meet arising demands in various careers related to finance, hospitals sales and manufacturing. As the abrupt outbreak of Covid-19 has affected the whole world education received dramatic blows due to the near-total closures of schools, colleges, universities and other pedagogic institutions. Evidence published by UNICEF corroborates that as many as 117 countries are currently implementing nationwide and local closures impacting about 7.3 percent of the world's student population.

The most adverse consequence of the measures undertaken by the governments to prevent the uncontrollable transmission of the disease has placed a severe threat not only to the lives of teachers and parents but exacerbated existing economic and social inequalities. Children from low-income households often live in conditions that make homeschooling difficult. Siblings who have to experience learning together from home and parents who work and may not be able to supervise the educative process usually made matters worse. Disadvantaged members of society are mainly afflicted by interrupted learning, compromised nutrition, childcare problems and consequent economic hardship due to loss of their employment. In a desperate attempt to ease the disruption caused in education teachers, school administrators, local authorities and national governments exert themselves in order to cope with the wave of unprecedented circumstances that have ensued. As a result we witness a widespread use of distance e-learning initiatives and the exponential growth of open educational applications and platforms[30]. The vast majority of the existing educational institutions try to reach learners remotely so as to limit the hardship suffered by all the actors actively involved in education. More often than not, several universities have asked their faculties to offer online courses and supply reading material and drills through electronic means. This is a global turning point for all segments of society to adopt a new form of e-education and embrace a work-from-home culture. Nowadays, curriculum needs an outlet where teachers can carry on dispensing teaching or vital instructions to learners in an appropriate, flexible, effective and without limitations manner.

A new demand for methods of blended learning has arisen which combines the conventional face-to-face teaching with digital or online tools of instruction. The development of ICT and its relentless influence in pedagogical approaches has actively encouraged governments to adopt blended learning at schools. As Siemens pinpoints limited access to education due to distance or the outbreak of diseases, is one of the main challenges that the introduction of blended learning tries to address. This is achieved by the facilitation of learning in situations where students and teachers are far apart from each other. Other beneficial outcomes associated with the implementation of technology on education include the provision of unlimited access to valuable resources for educators to employ in class. In addition, availability of a wide array of learning materials that can boost learners' competences and improve their confidence levels. The educational attainment can be conducted from wherever teachers and learners are located, without the traditional demand for coming together. The smooth functioning of collaborative interaction is fostered and immediate feedback of assessment is reported the recipient. Teachers function as facilitators of precious information while learners are allowed to construct their own knowledge through their direct involvement.

The disruption caused by the unwelcome arrival of Covid-19 is seen as a demonstration that online education can bolster up learning for many students only if it is carefully designed and individualized to suit the needs of diverse pupils. During the urgent circumstances following the epidemic the providers of education had to come up with novel ways to establish a firm connection with students and were required to procure meaningful educational experiences to all attendees in their class. Their confinement at home made existing lesson plans no longer

[30] Cerroni, A. & Di Biase, E. (2013), "New Technologies and Changing Roles within Research, Culture and Education", in Advances in Social Science Research, Australia: AICEI, p.61-72.

adequate and forced them to assimilate instantaneously to the new technological techniques of teaching within a very short time span. Some of the insurmountable impediments for moving schools online involve the lack of digital devices among poorer families and an absence of high-speed internet in districts of the world with meager facilities[31]. Moreover, a large number of educators were reluctant to appropriately use computers and the web for a number of reasons like poor software design, lack of administrative support and fear of losing their authority in teaching as it became more learner-centered. A lot of them expressed their skepticism about the effectiveness of online learning to improve the performance of students. They even aired grievances about the increased time and effort needed to transform technology into an effective mechanism for the dissemination of knowledge.

This being the case, a wide range of studies reveal that despite the fact that remote learning has brought about many challenges, several students seemed to be thriving in the newly-created learning setting. Pupils were performing better since they enjoyed an unprecedented sense of freedom to work at their own pace without the distraction to look good. They didn't bother any longer about the necessity to fit in at school or even undergoing bullying by some stronger classmates. Observations of online lessons made evident that adoption of teaching methods like digital storytelling, video reporting or science exploration in the backyard engaged students in education in a more efficient way[32]. Meaningful learning experiences linked to their home lives, family and their identities gave them plenty of incentives to pursue what was relevant to their individual interests. Providing them with latitude to opt for place-relevant science activities that suited their inclinations and differentiated grading brought more dividends than trying to recreate school. The pedagogic staff soon realized that replicating the engagement and discourse from an in-person classroom shouldn't be the main goal of online teaching. Checking for understanding and providing timely and meaningful feedback was an essential prerequisite for the advancement of educational standards.

It is unquestionable that digital learning is afflicted with severe limitations due to the fact that most students miss social interactions, intimate contacts with their peers and hands-on science instruction which requires special instrumentation only available in the laboratories. Nevertheless, the often-heard concerns about pupils who fall behind as a result of Covid-19 school closure might be a little exaggerated. Several findings support the view that the recipients of education might finish the quarantine period having developed valuable new life skills, taking better charge of their learning. The process of blended learning should become an integral part of future schooling by endowing learners with more flexibility and easier access to a wide range of content[33]. They are getting a taste of independence by taking on previously unimaginable responsibilities for enriching acquisition of knowledge. On the part of teachers, the method os assessment can assume multiple individualized forms using technological potency to showcase the learning skills of students thus replacing the previously dominant type of standardized testing. The experience of the pandemic should be utilized in order to evaluate the importance of placing issues of equity at the forefront of remote learning plans with increased guidance for vulnerable groups. The sudden outbreak of the health crisis meant that not all learners could be reached to participate in online educational endeavors despite the exertion of courageous efforts by the administrative authorities.

Online delivery maintains the advantage of significantly reducing the time and costs of travel, increases opportunities to access and promote collaboration with expert professionals in a global range. This has the beneficial consequence of allowing rapid adjustments to take place regarding content and subjects of teaching. In our era, all Web 2.0 tools such as academic social networks, open-access archives and journals have been bent to accommodate scientific needs so as to help them track down researchers with similar interests and keep in touch with

[31] Jacobsen, M. (2002), "New Ways of Preparing Teachers for Technological Intervention", Canada: University of Calgary, p.3-8.
[32] Kaden, U., (2020), "Covid-19 School Closure-Related Changes to the Professional Life of a K-12 Teacher", Education Sciences, v.10, (165), p.1-13.
[33] Mahaye, N. E. (2020), "The Impact of Covid-19 Pandemic on Education: Navigating Forward the Pedagogy of Blended Learning", www.academia.edu/42842598, p.1-24.

innovative breakthroughs. Niche research subdomains have emerged including in their ranks networked learning, computer-supported collaborative instruction, e-learning and technology-enhanced learning each with its particular focus. The emergency situation that we experience has dramatically affected the future of education towards the adoption of more energetic policies to enhance the optimal use of ICTs in learning. Shifting pedagogies, redesigning curriculum and assessment methods and providing more autonomy to local schools are among the most important steps for integrating technology into classroom teaching. Succor for school administrators and the community at large is crucial if technology is to be used with success.

In addition, educators must have adequate access to advanced technological equipment and sufficient teaching support. New teachers must acquire all the necessary skills and be well-prepared in the delivery of education programs to satisfy the demands of a rapidly growing number of online students. They should possess proper pedagogic training aptitudes for implementing the blended learning model of teaching by taking advantage of ICTs not only as a source of information but also as a vital part of the core learning process[34]. The sheer magnitude of the pandemic comprises a wake-up call for humanity in its attempt to create a solid system of public schools characterized by flexible delivery models and scheduling as an essential component of the global economy. Let's all hope that the lessons drawn from the current predicament that we experience will make those involved in education (from teachers, parents and students to educational leaders and policy-makers) to rethink the significance of providing a qualitative instruction, ideal for meeting the global challenges arising in the near future.

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18 Withdrawal to Smart Homes

Florian Rötzer
Philosopher, online magazine Telepolis, Munich, Germany

18.1 People live

This need is an existential one, adequate housing is also treated as a human right, homelessness, on the other hand, is seen as a desperation. Up until the corona crisis, the rising costs of housing and the fear of homelessness dominated the discourse, but with the curfews and contact bans it suddenly became clear again what living in all its ambivalence means: protection from dangers, a secure space for the intimate and personal, but just also a prison and a space of isolation, which is also a meaning of a gated community. Quarantine in one's own apartment means nothing other than that it becomes a prison or a monad, which especially affects singles and people who live closely together and need the outside world as extended living space.

The aspect of protection from the outside world and the distance to others makes it clear why the inviolability of the home is protected by the constitution almost as high as the dignity of the person and equality before the law. When the apartment or house becomes a castle again, which is supposed to protect against dangers and ensure safety, the prescribed retreat into one's own or rented four walls transforms them not only to the immediate vicinity, but practically to the whole world, despite historically unique media connections at the same time into a trap as soon as the free oscillation between inside and outside is restricted. Anyone who also has to live in small, overcrowded, dark apartments or who has followed the hype and lives in so-called "Tiny Houses" or micro-apartments will find out in times of quarantine and curfews that an appropriate size and condition of the interiors must be guaranteed in order to stay longer Do not experience staying in this quickly as oppressive.

18.2 Smart Home

In the digital age, the apartment, the house, is anything but a place of retreat for people, the private space, separated from the public by walls, doors and windows. With the so-called "Smart Homes" we bring machines into the private space as supposed servants who monitor us and monitor or control our behavior. "Smart cities" and "smart homes" could also become independent via artificial intelligence, and as residents we would then become prisoners - and also set up ourselves with theories about simulation in digital prisons based on the example of the Platonic allegory of the cave.

18.3 Digital Prison

In contrast to earlier times, the digital prison is no longer an occasion to find a way out, but rather to lock oneself even better, which corresponds to the demand for "gated communities" and "gated nations", i.e. for controlled borders, preferably with walls - a life in fortresses that are secured with high-tech externally and internally. Now so-called "preppers" who anticipate wars or catastrophes are preparing for them privately by means of bunkers and other protective measures, while the holiest of digital societies, the server farms and data centers, are becoming the best protected places, the fortresses of digital societies in which the immaterial sounding "cloud" is housed.

18.4 Disinfection

Living is interwoven with behavior towards guests. After the age of dirt and epidemics prescribed by scientists at the time, people defended their homes with vehement means, especially from the 19th century, against unwanted guests. The sanitation of living conditions that has been taking place since then, the great cleaning, goes hand in hand with the disappearance of the servants in the middle classes. One lives self-sufficient, the families shrink to the point of single existences, the subleases as well.

In the meantime, the disinfection is also affecting the gardens and the land beyond the enclosed and protected space. The paradise garden that has been created is being depopulated, the houses are aseptic, approaching the life-repellent clean and "clean rooms" in which semiconductors are produced and server farms are housed. In the interiors protected with surveillance technology, the windows of which have to be hermetically sealed for reasons of climate protection in order to prevent heat and air exchange, further cleaning techniques are now moving in during the corona crisis with HEPA air filters and robots that disinfect surfaces with UV rays, while we wash ourselves frequently, cover our mouths and noses, and with a vaccination that strengthens the immune system, chase the enemy out of the body or keep them away. As early as 1866, the American hygienist Lewis Leeds declared in view of the dangers of disease transmission in rooms: "Man's breath is his greatest enemy."

In smart homes and smart cities, people no longer withdraw from nature and from their fellow human beings into buildings, the first artificial environments to be created. Here, in principle, they are directly connected to the world, the apartment is becoming a globalized element that can be controlled, viewed and hacked from anywhere. At the same time, the resident is integrated into the entire world, into the global data sphere, and more public than in the always local public space, even if he is still surrounded by walls or material boundaries such as windows. People do not go into cyberspace, they are woven into cyberspace along with their material lifeworld. A paradoxical existence between transparency and privacy, previously determined by the enclosed space and legally secured by the inviolability of the apartment.

18.5 Privacy

Apartments and houses were once bastions of the private. That is long gone, as living is fundamentally changing with smart homes. With the move into intelligent dwellings, the illusion of privacy is finally over, but not the defense against the immediate environment. In times of pandemic, control over the entrance becomes even more important. Life does not necessarily take place in public, but the home becomes more or less a subject that reacts to the residents and influences their behavior. The first traces can be found with the digital assistants such as Alexa, with whom we control our networked devices from vacuum robots to heating or lighting to TVs or alarm systems and start talking to the house. This can also lead to relationship and communication disorders, especially if the house becomes too independent as a personal counterpart.

At home you are no longer alone since the phone that pounded the first hole in the walls. The resident himself becomes a guest who, in addition to the diverse interactions with his home Internet of Things and the dialogue with the "home server", the new speaking and understanding servant, takes part directly in the world public and lives in the virtual metropolis. Today it is no longer old palaces, castles or crumbling buildings that are haunted, but the cold, clean, perfect housings that are controlled by computers and become a living counterpart - and the new guests in the form of viruses or Trojans the flats.

Published in „Die Furche“, Vienna January 20, 2021

https://www.furche.at/gesellschaft/smart-homes-digitale-gefaengnisse-4561484

19 COVID-19 Pandemic and its Impact on Oman's Economy

Kaneez Fatima SADRIWALA
University of Nizwa, Oman
MARUF Fatima,
Sir Padampat Singhania University, India

19.1 Introduction

COVID-19 Pandemic posed enormous threats in all facets of economy, including human life, all over the globe and Oman is no exception to it. The first case of virus was detected in Oman on 24th of February 2020 when two Omani citizens were detected positive for COVID-19 after returning back from Iran. Oman government took several measures to reduce the spread of COVID-19, the onus lies on the shoulders of the citizens and residents of the country also to abide by the rules and regulations formed by the government and support the government financially and non-financially and mitigate the spread of virus and help the vulnerable in the Society.

19.2 About Oman

Oman officially called the 'Sultanate of Oman (سلْطنةُ عُمان)' is a country situated in the south eastern coast of Arabian Peninsula in Western Asia. The neighboring countries are United Arab Emirates, Saudi Arabia & Yemen. The country also has the coast comprising of Arabian Sea, Gulf of OMAN and strait of Hormuz. The total area of the country is 309,500 Square kilometer and the population is estimated to be 4,492,963 comprising of 61.1% Omanis and 38.9% expatriates [1], as per the NSCI, Oman, with nominal GDP of $ 62,305 billion and per capita income of $14,423 (as per 2020 estimate) [2]. Like other gulf countries Oman has one of the hottest climates with summer temperature average in 30 to 40°C, with very scanty rainfall. The country has one of the most diverse environments in Middle East with a mixed terrain of mountains, hills, desert along with the coast of almost 1700 km. Oman has absolute monarchy, with all judiciary powers vested in the Sultan. The official language of Oman is Arabic. The basic religion followed is Islam (approx. 85% people are Muslims) and sharia law is applicable in the country [3]. Yet, the national economy is based on justice and follows principles of a free economy. It is an oil and natural gas dependent country with its span into other sources of income like fisheries, tourism, minerals, agriculture and industry. Oman has high literacy rate of around 98% between the age 15 and 24. Essential health services in Oman is relatively high than the world's average, above 99% of Omani children have consistently been receiving vaccination. Oman's health spending to GDP has been at an average rate of 4.3%. Oman's culture dates back to tradition of shipbuilding and seafaring people, the male national dress is dishdasha, an ankle length gown with full sleeves with a headgear. Women wear traditional costume with vivid colors and vibrant embroidery and decoration, most of the garments are long tunic, Women also wear loose black cloak called Abaya over their personal choice of dresses. Women also wear Hijab (face cover), but in public offices face cover is forbidden.

19.3 Covid-19 Timeline and Oman Government efforts

The Oman government was proactive in preventing the infection, immediately after the discovery of two positive citizens in the last week of February 2020, they placed 2367 people

under quarantine in the first two weeks of outbreak in Oman [4]. Travel restrictions and entry requirements to the sultanate were issued, detailed information on the description of coronavirus, symptoms and risks involved along with prevention and care was advertised by government and public health authorities. The schools and universities also announced and advertised directives to wear mask in public and to restrict themselves from meeting and greeting people. Special awareness campaign was run in schools to inform the young students and thereby to spread the news to families to take care. By the end of March 2020, Oman was announced to be in the 'community transmission stage' and the virus spread among the society with leaps and bounds [5]. By the end of March 2020, approximately 7500 suspect coronavirus patients were put under Home quarantine. The confirmed cases were 192 by then with 34 recoveries and no deaths. Meanwhile, Oman government airlifted 255 citizens from around the world and brought them home safely. The ministry of health took serious measures and directives were issued to install sanitizers in all schools, colleges shopping malls, in every retail outlet and in supermarkets. Sultan Haitham immediately formed a supreme committee to deal with the pandemic. Tourist visas were canceled, and no new visas were issued for the citizens of the country, all sports activities, conferences & seminars and the annual exhibitions and fairs were canceled. Beaches and public parks were closed there was a restriction on wedding gatherings and even prayers in the mosque were stopped.

The nation was shocked by the news, waves of social media messages turned in, every person talked about only coronavirus, yet seriousness did not prevail. The major reason of community transmission may be attributed to the Omani culture of greeting each other. The traditional way of greeting is by kissing the hand, touching the nose or handshake. Another obvious reason is family gathering, the normal family size being 8 to 10 members. The first death in the Sultanate was recorded on April 1, 2020. Immediately the government started taking action, the outpatient appointments and surgical appointments in government hospitals were suspended until further notice, a part of nation's capital Muscat was isolated. The only public sector university in Oman Sultan Qaboos University (SQU)decided to implement e-learning from April 12, 2020. The other higher education institutions followed SQU and they also implemented e-learning, an immediate halt to all educational institutions was implemented. By the end of April 2020 in a 'return campaign' some 3,746 citizens were brought back to home from different parts of the world [4].

In the beginning of April 2020, COVID-19 tests were made absolutely free for all the people and no legal action to be taken against individuals who had visas or permits expired. The majority of cases came from expatriates during this period. New announcements and directives were given every day, the number of confirmed cases, recoveries and deaths were reported on daily basis. It was the first time the country experienced nationwide ban on social and cultural gatherings and activities during the month of Ramadan. The country is divided in 11 governates and transfer from one Governate to another Governate was also banned. The impact on commercial businesses and retail outlets could now be noticed. Entry to shopping malls was restricted. Special permission was given to businesses like vehicle repair, Stationary, electrical appliances etc. Restaurants, hotels, eating Joints were limited only to carry home orders. Heavy spread of coronavirus was seen due to community transmission. By the end of May 2020, the lockdown was extended to the industrial areas and punishments and fines were announced for violators. By the end of May 2020, the treatment of coronavirus patient was also done through plasma treatment. The infected cases sored over 10,000, with death of 49 people. After mid Ramadan and during Eid holidays, the number of COVID-19 cases went up unexpectedly, as the people did not follow social distancing rules and were still continuing with family gatherings and traditional greetings. Schools & colleges were all shut down for students, and the staff attendance was reduced to 50% physical presence. Government offices reduced the employee presence to 30%. Public transport was also heavily affected, the restriction on passenger taxi was imposed and only 2 to 3 passengers were allowed in one taxi. Public buses also reduced their seating capacity. A lot of preventive measures were also taken, Hotel rooms were converted to relief houses and quarantine shelters. The Oman Royal Army took hold of emergency plans and their teams started

disinfecting and sterilizing roads and public places across the nation. By the end of June there were 40,070 cases in the country with 176 deaths and approximately 23,000 recoveries [5].

From July 25 to August 8 the government announced nationwide curfew from 9 PM to 6 AM during which all nonessential moments were stopped and all the businesses and retail outlets to be closed. The public, both citizens and residents followed the rule obediently. The ban on public gatherings, Friday prayers, visit to public parks and beaches remain closed. Face covering became mandatory at all places. All domestic and international flights remained suspended with exception of flights between Muscat and Khasab airports. Foreigners were still prohibited from entering Oman but permit for international travel was unclear. Only Omani nationals were allowed to enter the country with a mandatory 14-day quarantine. Even with all these precautions the total number of infections did not come down, although July August was the period of high infection and spread of coronavirus. During September the total active cases in Oman went down but again saw a drastic increase in October. Again, overnight curfew was imposed in Oman as part of efforts to prevent the coronavirus spread. The public places, beaches, retail outlets were again closed end authorities continuously announced through social media to maintain social distancing and punishment to the violators was also implemented. But November bought some relief as the total COVID-19 patients in ICU declined by 33%. The total number of Covid cases in Oman reached 218,503 with total related deaths of 1310 and total recovery of around 92%. Muscat health center and other health committees continued their training course for medical professionals and stressed on the importance of educating students and teachers about taking preventative measures and what to do when symptoms persist. Many health-related videos were also disseminated. By the last week of December Oman authorities closed all the land, air and sea boarders amidst concerns over newly detected strain of coronavirus, but the other measures remained the same as wearing of protective face mask in public spaces and public transports and 50% workforce capacity. But curfews were lifted and restriction on several commercial and industrial activities was also lifted [6].

19.4 Impact on Oman Business and industry

Oman economy has been hit hard due to the COVID-19 pandemic as there has been a substantial retrenchment in the economic activities. The indenture in economy was around 9% in 2020. As per the world bank data the fiscal and external deficit will remain under pressure and thus there will be need of high external borrowing.

As per the World Bank, Economic update for Oman [7],

"The drop in oil prices and COVID-19 are placing unprecedented strain on Oman's economy. While no official data are available yet on the economy in 2020, preliminary data issued by the authorities indicate that Oman's nominal GDP has contracted by 3.9% in Q1/2020 (y/y); non-oil activities contracted by over 6%. Inflation has reached negative territory with -0.4% (y/y) in Q2/2020 reflecting weak domestic demand. The sharp drop in oil prices in 2020 will take a heavy toll on public finances. Latest data reveals that total revenues declined by 22% in Q2/2020 (y/y), of which 20% comes from a decline in oil receipts. The economy is projected to sharply contract by over 9% in 2020, owing to depressed global demand for oil and the pandemic hit to the non-oil sector".

"The new OPEC+ oil cut agreement is putting significant pressure on the hydrocarbon sector, which is expected to contract by over 12% this year. The non-oil economy also faces significant pressure amid ongoing restrictions, with tourism and hotel sectors are among the hardest hit. Gas field development has been critical to meet growing domestic and global demand, but it is not on a scale that is transformative in its own right. Inflation will likely pick up to around 3% in 2021, reflecting the recovery of domestic demand and the introduction of VAT."

The private sector income contraction has led to low job creation. But on the contrary, there has been a considerable resilience in the banking sector of Oman as per the financial stability report 2020 by the Central Bank of Oman (CBO) [8]. Due to falling oil prices the demand for credit has increased and thus the banks' lending and assets have expanded, although liquidity has tightened up as the repayment of loan is under strain. In the beginning of the COVID-19 pandemic, in March 2020 Some Omani banks (Bank Dhofar, National Bank of Oman and Bank Nizwa) also came forward with handsome financial help and support to the government in fighting against the pandemic. The CBO also announced to inject additional liquidity of more than OMR 8 billion ($20.78 billion) into the economy.

Kenneth Macfarlane, Partner in Charge for KPMG in Oman, commented that due to digitalization new jobs in the financial sector are coming up [9]. Oman is also working on alignment for cross-border tax evasion and some more regulatory reforms regarding corporate governance and transforming culture into carefully managed strategic asset. Above all during the pandemic only Oman government came up with new bankruptcy-law which came in effect from July 7, 2020. According to this law, bankruptcy proceedings may not end up in liquidation, but the law gives clear and definite measures to help businesses in stress [10]. This was taken up as a great relief measure during difficult times of COVID-19 in preventing businesses to shut down as restructuring was possible. In November 2020, The Oman Chamber of Commerce and Industry OCCI also called upon the SMEs and other private companies to report their financial and non-financial issues due to COVID-19 to the Chamber so that solutions can be found [11]. Oman also plans to introduce value added tax (VAT)from April 2021, the implications and the challenges during the pandemic are yet to be witnessed [12].

19.5 Banking Measures by Central Bank of Oman (CBO)

The government of Oman took key economic and tax measures for giving relief to the Small & Medium enterprises (SMEs). One of the most important decision was to inject additional liquidity into the economy. The lending ratio/ financing ratio was increased by 5% to provide funds for productive sectors especially the healthcare sector [13]. All the banks were issued notices to except request for deferment of loans /interest (profits in case of Islamic Financial Institutions) particularly for SMEs. The capital conversion buffers were lowered by 50%, from 2.5% to 1.25%. Apart from this the CBO asked to do for the rest the classification of loans related with government projects for another six months [14]. All the local banks were asked to reduce the existing fees for various banking services and saw enter bank transfer of money was done at zero charge among other reduction or exemption of fees. Interest rate on discounting the government treasury bills was decreased by hundred basis point to 1%, the foreign currency swap operations interest was already used by 50 basis point and the tenure of swap facility was increased to a maximum period of six months. Interest rate on re-discounting of promissory note was reduced by 125 basis points to 3.5%. Other than this, all basic facilities for customers visiting the bank branches to be provided like Face masks, temperature check and sanitizers free of cost. CBO also asked the banks to identify most critical functions, provide for suitable staff and have flexible working hours and allow working from home [14].

19.5.1 Tax Relief measures by the Government

The tax measures announced by the government were a great relief for the pandemic hit Oman as the government announced tax relief measures on 31st of March 2020, which exempted tourist and municipality tax 04% for restaurants and when is the penalty tax of 5% for commercial establishments up to 31st August 2020. The tax return filing and payment of tax was deferred by three months from the due date and exemption from all fines and penalties related to such deferred filing and tax payment was given. For all the donations or contributions made towards COVID-19 pandemic were allowed as tax deductions, in accordance with the

income tax law and executive regulations. Some other measures include flexible tax payment mechanism, extension of timelines for filing objections against tax assessments, additional time for submitting support documents and clarifications for proceeding [14], [15], [16].

19.5.2 Some other Relief measures

The Omani customs authority give relaxation to the importers for inability to produce necessary documents/ certificates from the exporting countries and yet their goats will be cleared. The current requirement to obtain guarantee for the non-submission of original legalized documentation has also been waived until further notice. For SMEs, the loan installments/premiums like fees payable to Al Raffd fund, Oman Development Bank was deferred to next six months. Rent exemption was provided to factories in industrial cities for a period of three months, commercial registration renewal fees were exempted for the next three months, auto mobile sale agencies and finance companies were asked to postpone installment/premium of cars for a period of three months [14], [15].

19.6 COVID-19 impact on tourism and hospitality

The highest hit sector due to pandemic in Oman can be attributed to tourism and hospitality industry, Direct losses to this sector were estimated to be half billion Omani rials ($1.3 billion) at the end of September 2020. The country was landlocked immediately after the declaration of COVID-19 pandemic in last week of February 2020. Flights were canceled from entering Oman from March 2020, followed by closure of all restaurants. The entry of cruise ships with tourists were also banned. There were massive cancellations of bookings. The resuming and shut down of international flights played hide and seek. Although the hot layers supported the lockdown and emphasized on the safety of guests and other stakeholders, yet the eyes shed tears due to immense impact on revenues. The tourism ministry in December 2020, endorsed a ‘recovery plan’ to encourage reopening of tourism activities, the entry visas for tourists from 103 different countries was waived. This decision by the government has given a boost to the tourism sector as hotels and travel agents in Oman have reported rise in bookings. The quarantine time for the visitors was also reduced. But since the pandemic situation continues not much could be done for this sector. The government’s tourism arm, the ‘Omran group’ promoted local tourism through participating hotels and resorts which offered good accommodation packages yet following precautionary health measures against COVID-19 [17]. But from time to time, the entry to public places like parks, beaches cinemas were restricted, even the local tourism got affected. Oman is a bliss for tourists and has numerous natural places to visit so the tourism industry is a promising one, “Once the vaccines are distributed across the world and the number of cases go down with substantial rate the international travel will resume once again,” say is Mr. Siraj Memon, Director of sales and marketing in Oman for Anantara. The minister of heritage and culture Mr. Salim Al Mahrouqi, in a tweet said that the popular tourist site, Green Mountains (Jabal Akhdar) is witnessing development of specific projects during this break down. However, the hotel occupancy in the sultanate in 3-to-5-star hotel category fell by 60.2% until the end of October 2020 the hotel occupancy rates declined by 50%, as compared to the same period in 2019, as per the national Center for statistics and information data (NSCI). The total number of guests in Omani hotels dropped by 54% in the first 10 months of 2020. With the recent, February 2021 issued new guidelines of institutional quarantine for the entrants in Oman, some relief will be seen in the hotel industry [17], [18], [19].

19.7 COVID-19 impact on Higher education

Since the announcement of COVID-19 pandemic in March 2020, the Supreme Committee for COVID-19 was established by the royal directives and they enforced strict safety measures in all sectors across Oman. The Ministry of Higher Education immediately announced lockdown

for all public and private schools and all higher education institutions in the sultanate from 15th March 2020. The physical presence of all the students in University came to a halt and emergency remote teaching plan was adopted by the colleges and universities. For many colleges e-learning environment wars totally new and the adoption and implementation of e-learning was a challenge not only for students & teachers but also for the institutes. The institutes which had E-readiness to deliver the courses, like e-infrastructure and e-learning know how, it was easy for them to shift to e-learning, but many others had to rely on free and open-source E learning systems (Al-Harthi, 2020). Lack of clear policy on teaching and assessment, financial, training and logistical difficulties were among some more challenges faced by the higher education institutes. The ministry issued several guidelines for public and private sector schools in which, students from Grade 1 to 11 in schools were promoted to higher grades based on their performance before the lockdown. Alternative assessment and statistical measures were advised to assure fair and accurate prediction of students' performance. For the higher education students, the delivery of the course was done through the E-platforms, like Eduwave/Moodle (Osman, 2020). For synchronized online classes google meet what is the most preferred platform. All the safety measures were taken by the universities like availability of sanitizers and temperature check at every entry point, and entry without facemask was banned. The faculty presence in the university was reduced by 50%. At the time of lockdown, the higher education institute were in the sixth or seventh week of spring semester. An immediate emergency remote teaching (ERT) plan was implemented. There were many challenges faced by the faculty and the students. Many faculty members and students living in rural areas or mountainous region did not have strong Internet connectivity, many of them did not have laptops/ Smart phones. The universities contacted the telecommunication companies to restore network coverage in the marked areas. Students were provided assistance in purchasing new laptops. Students with special needs were the most vulnerable group and so special care was taken towards assisting them with the required technology. A weekly monitoring was done for the online courses imparted to ensure quality and consistency. Especially workshops were organized for the faculty and students in relation to ERT implementation. The assessment methods were re-designed. But overall Oman has a positive attitude towards learning and research, so the implementation of ERT plan was smooth. Thereafter, e-learning and blended learning form was adopted. By Spring 2021, the students and faculty members were well acquainted and equipped with the required technologies for online teaching and learning. The universities and colleges witnessed a very high adoption rate of e-learning. However, the experiential learning can always be improved upon by further investigation and research.

19.8 COVID-19 impact on society

The population of Oman is a mix of approximately 61% Omanis and 39% expatriates. The major chunk of expatriates is formed of Indians, Bangladeshis and Pakistanis. The majority of them are blue-collar workers and professionals. Coronavirus had a significant impact on the lives of Omani population as it has on other countries across the world. The world health organization declared it as a pandemic in March 2020. The primary apprehension of everyone is to minimize the spread of virus, take prevention measures, follow the rules and guidelines issued by the government in preventing the spread of virus, help the vulnerable in the Society. Due to the lockdown and closure of businesses and industries, there was a severe drop down in the revenues, with ever-growing expenses. As a measure to cut down costs many people lost their jobs or saw a reduction in their salaries. The most vulnerable in the society were the expatriate work force which was laid out of job. Oman government was proactive in taking preventive health measures yet, at one point of time there were no ICU beds available [20]. Heavy fines were imposed on people not following the government rules and regulations like wearing of facemasks in public, maintaining social distances, following the restriction on visiting public parks and beaches, social gatherings, during Eid and other occasions, Friday mosque prayers, observing the night curfews, ban on travel from one city to another, restriction on social gatherings, parties, picnics and death & wedding ceremonies. The main reason

perhaps for spread of coronavirus in Oman may be attributed to the cultural behavior of people in meeting and greeting, which is usually by handshake, touching of nose and shoulder. Another reason maybe not observing social distancing and not wearing facemasks all the time. The average household size in Oman is 6-7 people [21]. As the number of cases and deaths increased in Oman the fretfulness, hopelessness and depression among the people also increased. In a web-based, cross-sectional study conducted on Predictors of psychological distress among the public in Oman amid coronavirus disease 2019 pandemic, using governmental and private institutional e-mail systems and social media platforms. It was found that there was increased level of anxiety and depression among the society as compared to the normal situation. (Sinawi et. Al, 2021). As the number of cases and deaths increased in Oman the anxiety and depression among the people was also affected. The most vulnerable are the elderly and the children, due to the restriction on public places they are restricted to the house, thus they fell stress and anxiety. However, on the positive side coronavirus has increased the social solidarity and more and more people and organizations have extended their arms towards charity, donation, financial and non-financial help. Overall observation of the Omani society is that they are very friendly, obedient and ethically very sound people. During times of difficulty, they are the first one to come forward with whatever possible contribution they can. Another noticeable feature of Omani population is that they are penetration of mobile phone users in the world is among the highest which is around 173% [22], pandemic gave them an opportunity to share their ideas, achievements and accolades on social media. The bonding among people has increased due to this attitude.

19.9 Conclusion

COVID-19 pandemic landed with a shockwave all over the world and as the virus traveled from one country to another the whole world was jeopardized. All the countries learned from the experienced of each other and came forward with their own strategies and ideas. Each day something new developed and required adoption. Although the unpreparedness of the world regarding such health crisis was revealed but, simultaneously it gave an opportunity for more awareness and research in the areas of health, education and well-being of society. A positive impact was seen on the environment. The overall pollution of the world reduced, the air quality in some cities improved due to the low omission of industries generated pollutant gases, reduction in the number of flights and in city commuting. The water quality also increased. Although these may be temporary changes but what can be done towards maintaining and preserving the environment.

The new strain is here again and posing threat more vulnerable than before. The businesses and industries especially the tourism sector will be restored only after the pandemic is over and the reach of vaccination is to the last resort. Oman has a strong economy, E readiness and preparedness, advanced infrastructure with excellent roads, modern Airport, a good network of hotels and amazing tourist places. With its rich culture and heritage, Oman is truly a peace destination.

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20 Covid-19 Impact on Education at Universities and Higher Education in Sweden 2020

Fredrik STOHM KRONFELD
Ministry of Health, Stockholm, Sweden

20.1 Introduction

A text of some aspects how Covid-19 affected university education and higher education in Sweden 2020 when covid-19 became widely known in Sweden during winter 2020. The big impact coincided when it was winter holiday for primary and secondary school in the Stockholm area week nine 2020. During this winter holiday many had been for skiing in the Alps and were suspected brought the infection back home. A general spread of infection in Sweden was known from the middle of March 2020. [1]

The general way to prevent the spread of infection was - to keep the distance to other people - to wash your hands often - and to stay at home at slightest disease symptoms. Another official exhortation was to work from home if possible to reduce congestion in workplaces and public transport. [1]

20.2 Covid-19 impact on educations at Universities and higher education

During the month of March 2020, it was reported that schools were closed in many countries in Europe and in many countries in the rest of the world. In Sweden, the government reported March 17 that from March 18 the teaching at universities and higher levels not would be conducted on school premises but instead by distance learning in order to reduce the spread of infection. The decision to close the teaching premises at the universities to instead switch to unprepared distance learning meant a major disruption for both students and teachers to find new forms of work. [2,3,4]

During the summer of 2020, the spread of infection decreased to increase again during the autumn and new measures were decided before the autumn term. On 15 June, the government announced that the recommendation would be eased so that university studies are partly conducted at a distance. [5]

The Swedish universities are state-owned and the education is free of charge, apart from course literature that the student has to pay for. In addition to student loans of SEK 72,424 per term, full-time students can receive study grants of SEK 18,106 per term. The student loan where previously limited with regard to the student's other income [6]. Due to covid-19, the rules were changed so that the student's other income did not affect what the student could receive in financial study support [7]. The purpose of this was that people who became unemployed due to covid-19 would be given the opportunity to further their education in universities and colleges.

The total cost for the state-owned universities was approximately SEK 74 billion before covid-19. In the next few years, more students are expected to apply to the university to start an education or to retrain and develop previous skills. The government will therefore provide SEK 223 million to universities and colleges from 2020, which is estimated to correspond to approximately 2 600 full-time students. In the first instance, new funds should be used for educations where it is judged that there is a lack of competence, but funds can also be used

to expand educations where it is judged that there will be an increased demand for study places. The increased resources should also be used to expand education that can make it easier for people who need to adapt to new conditions in the labor market. In response to the pandemic, the government is investing a total of SEK 310 million, including student funds, so that more people will have the opportunity to study at the university. From 2021, approximately 620 million SEK will be added for more students at the university, including study grants, which is estimated to correspond to just over 5,200 full-time students. [8, 9]

The reason for the increased funding was that 13% more people applied for training places at universities as a result of the labor market becoming difficult in the wake of covid-19, especially for young people without higher education. [8]

A student in Sweden is offered approximately 11 hours per week during the first term at the university, which is among the lowest in Europe. The number of teacher-led teaching varies between different courses from about 15 hours per week in certain social science subjects down to about 7 hours per week in literary studies and history. [10]

"Universitetskanslersämbetet ", Ukä, is a government agency that mainly examine is the quality of higher education, by monitoring and analyzing trends in higher education. UKÄ has been commissioned by the government to follow up the consequences for the activities in universities in connection with decisions and initiatives taken in connection with the new corona virus. The follow-up shall include the effects of the transition to distance education and the initiatives that have been decided by the government with regard to, for example, the expansion of the activities that to be hold by the universities. [11, 12]

In the autumn of 2020, UKÄ reported that nine percent more graduated and that five percent more novice students start to study at universities and colleges compared with the previous academic year. Among the explanations that UKÄ has mentioned for the increased number of students is an increased tendency to graduate due to the labor market in new employment more and more requires a degree, but also due to Covid-19. [13, 14]

20.3 Impact on students

Sveriges förenade studentkårer, SFS, is an association of around 50 student unions at Swedish universities and colleges, which together represent approximately 340 000 students. In December 2020 the SFS left two reports, one about how Covid-19 affected students and in another report with the title ”Högskolan kommer inte att vara sig lik - covid-19 påverkan på högre utbildning 2020 och framåt” or translated "The University will not be the same again-covid-19 impact on higher education in 2020 and beyond" [15, 16]

A survey at the University of Stockholm showed that 63% of students considered lack of social contacts was the single most important factor that affected their studies most negatively. [17]

A survey of students conducted by the University of Stockholm showed that the motivation of students had dropped from 89 percent at the beginning of the course to 68 percent when the course ended. According to the same survey, 75 percent of the students had considered that they had been as involved in the conducted online teaching as they had been in an teacher-led teaching. [17]

The report "How will the Corona Pandemic affect students" or translated "How does the Corona Pandemic affect students?" is an SFS compilation of questionnaire responses from students at ten Swedish universities in the spring of 2020. [16]

The focus has been on the student's well-being. The report concludes that many students experience negative stress, increased loneliness and anxiety. It is also judged that there is a declining study motivation and declining quality of education, but that the higher education institutions generally handle the situation based on the conditions well. (11)

In the report ”Högskolan kommer inte att vara sig lik - covid-19 påverkan på högre utbildning 2020 och framåt “of SFS, the students think: [15]

- Practical elements has been more difficult
- Deficiencies in legal certainty at examinations
- Deficiencies in students' work environment
- Loneliness and mental illness among students
- Educational shortcomings
- Difficulties in adapting teaching for students in need of special educational support
- Impaired opportunity for interaction
- Lack of communication from universities and teachers
- Lack of technical prior knowledge among teachers and students
- Lack of technical equipment, poor internet connection and Zoom problems

In the future the students will see the following changes will remain:

- Digital and pre-recorded lectures
- Less traveling
- Higher workload for students
- Changes in the pedagogical structure of courses

In the future, students see the following changes will be heard:

- Practical moments via Zoom
- Exam via Zoom
- Total lack of campus-based elements

The students see great advantages in being able to take part in lectures that are recorded with the opportunity to watch complicated sections several times and be able to skip what was considered less interesting. Distance education provides the opportunity to study where you live without to have to move to cities where the universities are located which is economically advantageous and provides opportunities for more students to participate in higher education. [15]

SFS also report that students at universities see that universities may need to upgrade the premises.

The partnership between universities could be improved to enable training package where lectures and examinations not occur at the same time to increase the opportunity to bring in international lecturer. Changed view of the role for teacher from knowledge transferor to knowledge facilitator. Higher Education units should be given increased resources to handle the dual task of strengthening the teachers in their pedagogical and digital teaching skills. Legal obstacles as far as possible to be removed to open and share course materials to bring various digital learning management system to counter the emergence of a closed community knowledge. University management should, to a greater extent than today, systematically ensure that higher education credits correspond to students' workload and not funding allocation, focus is needed on students with special educational support. [16]

SFS also mentions that the purpose of higher education is not only for the acquisition of knowledge but also for the students to acquire a network and to stay in a broader academic environment with the generic knowledge it entails. [16]

20.4 Impact on teachers

At the University of Stockholm with 27,000 full-time students, the university decided to switch to digital teaching and digital exam as far as possible. The goal was that courses could be completed as far as possible. The course management had to prepare new forms of examination where it was possible to do so. The universities were given the opportunity to extend the time for exam of the spring semester's courses, which started around January 20, 2020 and normally ended on June 7 2020 until 31 August 2020. The following day September 1, 2020 the autumn term started. [18]

The Swedish magazine “Universitetsläraren” had on the September 23, 2020 an article “Universitet och högskolor klarade omställningen”, translated " Universities and colleges managed transition" where it was judged that the transition to distance learning has worked beyond expectations. [19]

One reason why it has worked well has largely been due to the teachers. For the teachers, it was important to be able to provide good education. One big concern the teachers have had was that the exam was to be hold at a distance and that could lead to cheating. There have also been quick decisions at universities in general. [20] During the term most of the teaching switch to online teaching. Of the teachers at the Stockholm University 69%considered that entailed an increased workload. [19]

“Karolinska Institutet” – a Swedish medical University noticed that in the year 2020 the percentage that passed the exam on distance has been higher than the corresponding written exam earlier years. They also state that the number of disciplinary cases and suspensions has been many times more compared to the same period last year. [21]

The Swedish magazine "Universitetsläraren" has an article in which Birgitta Bergvall-Kåreborn, principal of Luleå University of Technology, is predominantly positive about how the education could be carried out despite covid-19. Several universities in Sweden has already, before Covid-19 conducted courses as distance learning even with distance exam. By this the universities and students had the resources and experience to solve problems for courses that not were scheduled for distance education and exam. [20]

Several new unexpected collaborations have been taken place within the universities to solve the problems. Previously, the attitude was that in the education sector it is difficult to implement new technological ideas to educate but covid-19 has shown that it is possible. Anna-Karin Andershed vice-principal at the Örebro University tells to the Swedish magazine "Universitetsläraren" that she believes that covid-19 will lead to a permanent change in how decisions can be made internally and in many new ways of working. [20]

20.5 Discussion and conclusions

As in many other sectors in our society, this pandemic will probably lead to long-term changes because they have now been forced to try something new where some things have worked out well and others have not.

Distance education have been around for a long time, so the concept is not new, nor has a combined distance learning with a lesson/laboratory approach been something new. What has happened is that virtually all teaching and examination has been converted with a short foresight as well as large parts of other administrative work, which has been done with satisfactory good results.

The students at Swedish universities are prepared for the fact that a large part of the studies are self-study. Since restrictions were imposed in mid-March 2020, the teaching for that spring term had been running for about two months. During this two month the students had started their studies and personally met their teachers and come into personal contact with other students with whom group work would be carried out. These circumstances and a general digital habit allowed students quickly to embrace an expanded digital way of working. For the students, covid-19 did not mean an unmanageable major change in teaching in general.

UKÄ has been commissioned by the government to investigate the consequences and future effects that the pandemic will have for higher education in Sweden. So far, most of the material that is easily accessible now is articles and survey of students. In the surveys that exist, the answers may not only reflect the students' experiences of the changed form of school. The responses have probably also been influenced by the general recommendations not to meet other people, as well as restrictions on entertainment and travel.

It appears that it has been an increased workload for teachers to change the form of teaching and ensure a legal certainty for examination. The number of reports of cheating has increased and the number of students who pass the exam has increased when the examination takes place at distance.

It has even been possible to have regular examinations in practical subjects such as chemistry because the education is not limited by the general restrictions it does not count as meetings and therefore practical elements can be hold on the school premises.

During the month of May 2020, the restrictions for conducting campus studies decreased, but there was still expected that as much of the education as possible should be distance learning. Laboratory work and teaching could be carried out on campus if it was carried out in an infection-proof manner. This was clarified in the autumn of 2020. The reason for this was that the teachers could observe that the students had enough knowledge and that there was no cheating.

One way of teaching that I believe will increase in the future is the one that is similar to the concept " flipped classroom " [22] where much of the theoretical teaching will take place via digital media that can be pre-recorded. In my guess, this will be interspersed with Workshops to be able to reflect more and process the material either on campus or digitally. The format of the lectures will probably also change from being the usual 2 x 45 minutes to being shorter and touching on one part per section or clip. Not all education/courses are the same in terms of teaching and it will probably affect how teaching is conducted, for example between the difference between how teaching in economics and medicine is done.

What I have noticed when reviewing courses with distance learning in previous years is that several of them have had a exam on Campus in addition to assignments individually or in a group. There have also been distance courses with only cross-examination questions, hand-in assignments, group assignments, home exams and regular exams. The exams had a time limit where the answers must be sent in by e-mail with a shorter time for response than for traditional regular exams. With the new technology, it has been possible to monitor the students when they complete the degree exam, for example through video or audio recording. Even if the technique will be improved for monitor the students writing exams at distances, I still think regular exams in a monitored room will be necessary in the future as well. If there is opportunity will the ones with wrong attitude will cheat and it easier to find loopholes in the technology when writing exams on distances.

There are different conditions to take into account, for example such as different educations have different conditions for distance education and that students have different preferences for what the is best way of learning. For example, students have chosen to stay after lessons in the school 's premises to discuss, solve problems, or just to socialize outside of class. Other students have chosen to skip the optional lectures and just attend examinations. The students have different preferences for learning and that will continue to exist regardless the pandemic. I believe that it may be more digital to be good for some students and some students may

prefer traditional lectures. On the lectures other ways of teaching may be needed to make the full use on digital classes as well technical equipment as microphone.

In many ways, I believe that the traditional teaching will be the standard in the near future because there is a tradition of that and that the majority of the teachers are used to that and that they have a ready-made teaching material ready. For students that participate on the campus where there are premises it can be easier to know that the students are committed students because they have set aside time to attend. The students can feel connected and bring the opportunity to discuss with other students and that can give the students more than just what is learned in the course material. My experience from the Swedish "Linnéuniversitet" that have both programs and courses that use distance learning as well as traditional teaching. The students can choose to take part in the lectures or via the link. Both alternatives had worked well. The "Linnéuniversitet" have courses with regular compulsory modules on campus. That could be one module per month. I think that more Swedish universities will follow the approach that is used at "Linnéuniversitet' or approaches similar to “flipped classes”.

In my opinion, the digital tools need to be improved in terms of microphones and speakers for more dynamics in the voices in order to better enable discussions in groups so perhaps more students can speak at the same time and make it is possible to overhear others and be able to read other people's body language and facial expressions.

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21 Music Life During and After Lockdown

Li YUNZHONG
Impresario, Wuhan, China

Musicians in China have experienced a unseen situation since ever in the year 2020. In the central part of China-- Wuhan, a mega city with over 10 Mio. people the breakout of a Corona-pandemic which was then officially named Covid-19 changed the life of everyone.

21.1 Lockdown

End December 2019. We heard cases of a unknown pneumonia in Hankou (one of the three major parts of Wuhan) connected with a sea food market close to the railway station. Newspapers did not report much about it. According to the radio news, some patients are under observation, the reason of infection is not clear yet. Media told people that it is not dangerous and a human-to-human transmission is not confirmed.

My daughters and I joined a group of parents and children going to Singapore for a one-week winter camp. I remember very clear, that we got temperature measurement one by one at airport. Those who have critical values have to wait in a separate room “cooling down” before boarding.

When we arrived in Singapore, we saw astonishing TV news in the Hotel lobby, headline was “Wuhan pneumonia outbreak”! It was reported that in Thailand, Japan and South Korea there are some first cases of a very dangerous corona virus infection and people died of it!

Figure 1: Picture taken in the lobby of our Hotel in Singapore on 16.01.2020. Foto: Li Yunzhong

We shortened our trip in Singapore for one day and came back to Wuhan on 20th January 2020. As soon as we arrived Wuhan airport, we noticed that most of the people were wearing masks. 3 Days later the city of Wuhan where at least 8 Mio. people are still living* was locked down, an action that has never taken before in the history of the city. Though the announcement of lockdown was made in the night, but still at least 200,000 to 300,000 “night cats” noticed the news in the first moment and rushed away to other cities in that night, with

every possible means of traffic: private car or public train and plane. By 10:00 o'clock of the 23rd January 2020, all traffic connections to and from the outside world got blocked.

*Wuhan is the city with the largest number of University students. The average digit is about 1.2 Mio and of course due to its traffic position linking east and west, south and north a city with permanently travel workers. This makes about in total some 3 Mio. During the spring festival (January-February) more than 2 Mio. People leave Wuhan for visiting parents in other provinces.

I could have escaped because I got the announcement early in the morning. My 7 seat car would easily carry my whole family for leaving. I need maybe 30 Min to get on the highway and another 2 hours to be in a neighborhood city.

But I did not even turn on the car. Instead, I decided to stay in Wuhan and prepare for a quarantine of a unknown duration, just like the majority of the people in town, we love our city and families. Afterwards, this is proved to be the right choice.

21.2 Survive

No one had any idea how long it would take to be at home. First it was told 14 days quarantine, when the numbers of new infections went under control. But fact was it went higher, we had to stay another 14 days, and extended again and again. In the end, it was 77 days in total when the city reopened on 8th April 2020.

Staying at home means no income for freelancing musicians, because they could not perform. Professional musicians of state-owned ensembles like the city symphony orchestra or the province opera house got a so-called basic salary which is different from case to case, but roughly it would be some 60% of the whole. Privat companies are very different, though there was a governmental guideline, but what it finally matters is the moral standard of the bosses. Tens of thousands of private training and education centers were closed over the country, because there was no teaching any more, no gain for the runners, yet the rent must be paid, and the staff members must be paid too, even when a reduction up to 30% legally accepted.

School Children could not go to school campus, instead they got online class. From middle February 2020. With today's telecommunication technology and home PC, the whole thing was quite easy. There are also enough online meeting software available. In China, the most used class application is the Tencent meeting.

Some musicians began to give online class too, esp. those teachers of music departments or conservatory who have students on regular base. In general, with the Covid-19 approach, online teaching has been a more and more popular and wide spread way throughout China. Countless musicians have opened their own spaces in the social media with now the most active function – live streaming connected with paying system. In that way lots of musicians have even earned money. Another musicians even learnt to sell products in their spaces.

Through the 77 days, none of my family members, that means not only my wife and children, but also my brothers and sister and their families and children as well as my parents and parents in law who we all stayed in Wuhan, was ever infected, thank God! My wife works in the province opera house, she has a basic salary. My company as artist and concert manager made not a single cent money and still paid my staff a 100% salary, for them life must be even harder. During the quarantine, daily life things got very expansive, price of vegetables, meat and food simply got doubled or tripled.

Figure 2: My wife Ma Yaqin taped and recorded several songs at home. Foto: Li Yunzhong

As musician or people from music business, we feel that we have a kind of duty to encourage our fellow Wuhan people who suffered the most during the pandemic where over 3000 people lost their lives. My wife recorded piece by piece seven or eight songs of different composers, dedicated to the people dangered by the pandemic. During the quarantine she recorded everything with cellphone and sent the voice track to studios for post edition. The songs were broadcasted in the mobile cabin hospitals or through public radio. Three or four of them got prizes afterwards.

I was invited to give an online lecture on the topic “music that heals” in collaboration with the province library, sharing music from east and west that heals the soul which should help people to overcome their fear and sorrow and see the hope of life. The feedback was totally positive. I am asked to do this kind of music sharing even more frequently in the following months. I talked about German music to students of Wuhan University, gave online lecture in cooperation with local theatre. Most significantly, the IMHI web, a new founded platform of classical music promoting broadcasted a series of lectures about very different topics, from Celibidache, over Chinese and western operas to Carmina burana, and right to the season, Chritmas music. Now I have a constant group of followers of 2000-3000 music lovers.

Figure 3: Li Yunzhong talked about Verdi’s La Traviata at IMHI, Shanghai, Poster by IMHI Shanghai.

21.3 Melting

When we came out of our living community in April, we immediately think of making concerts for the suffering people. But concert halls and relevant venues were still closed. So we decided to do online.

The very first concert with a quite comprehensive program including singers, pianist, Chinese instrumentalists live streamed on 10th May 2020, the mother's Day, was a complete success, we got over 200,000 online viewers in the first moment, free of charge naturally. But this encouraged us immencely.

Following up, some of the members of the Motropolis orchestra, a Project Orchestra founded by me few years ago asked me to make music for free. I certainly could not refuse. Instead, I persuaded a very high ranking online education platform of China to offer free live streaming for us. We chose the dragon boat's festival (25 June 2020) , a fest dedicated to the famous poet Quyuan, as our concert day. I paid the technical staff for taping and recording, as well as the beautiful venue – a music bar by the famous east lake of Wuhan – once the Xingyinze where Quyuan as Emperor's Officer in charge of rites and sacrifice and education 2000 years ago used to take a walk along the waterside. We presented a chamber concert with works of Franz Schubert, Robert Schumann, Antonin Dvorak, Sergey Rachmaninoff, Ennio Morricone, Astor Piazzola as well as Chinese and Japanese pieces. It was a wonderful experience for all participants, the concert link is still acceccible today.

Figure 4: A dragon boat's festival concert in the motto "Bring love hoime".F.l.t.r.: Narrator Li Yunzhong, Trumpeter Yue Dan, Pianist Li Sida, Clarinetist Huang Siqi, Soprano Yan Dongkui, Violinist Zhang Yimi, Cellist Xiong Jingxian, Saxophonist and Conductor Qiu Genghua. Foto: Li Yunzhong

With this experience, we then opened a series of six chamber concerts in Wuhan. Luckily, the Tanghu theatre, which is designed for traditional opera gave us the shelter and support. We did not sell tickets, instead, we invite audience: doctors, nurses, firemen, volunteer workers, students, music lovers etc. The program was sponsored by the government. The musician got even paid, not much, but 800 Yuan[35] per person every performance is quite reasonable.

we presented Duos, Trios, string Quartet and brass Quintet as well as mixed up, beyond that a evening with film songs and last but not least a Liederabend. The first concert was given on 19th July and the last one on 6th November, I worked as narrator and communicator. The reaction from the audience is so positive, that the Director of the theatre could not wait to ask me for another series of concert in the coming year!

[35] 800 Yuan is app.100 Euro.

Figure 5: The stage at Tanghu theatre in a very Chinese style. Foto: Li Yunzhong

21.4 Reborn

The allowed seating rate of concert venues in China was adjusted from 30% as of 13th May to 50% by 10th August 2020 as regulated by the Ministry of Culture and Tourism, this means a lot! Most of the state sponsored orchestras and music ensembles restarted their music season. Some music festivals reactivated. The well-known MISA festival in Shanghai invited, as a special gesture the Hubei opera ensemble to perform an opera in concert form in the Shanghai Symphony Orchestra Hall, an overwhelming success!

Figure 6: A press conference announcing the world premiere of the Symphony “Reborn” in Wuhan.F.l.t.r.: Zhang Shouzhong, Intendandt of Wuhan Philharnonic Orchestra, Mme.Tang Yu, Head of Artistic Dept, Wuhan City Culture Bureau, Composer Guan Xia, Composer and Conductor Shao En, Composer Yang Fan, Composer Huang Kairan. Press foto by Wuhan Announces

The Wuhan Philharmonic Orchestra commissioned some elite musicians of China to create a piece dedicated to the suffering and battle of Wuhan people during the pandemic. 15th August 2020, in the golden Qintai concert hall, a symphony in four movements by four composers with the title “Reborn” is world premiered:

I. Lento triste by Guan Xia, 16 min.
II. Allegro con Moto, Shao En, 8 Min.
III. Moderato caldo, Yang Fan, 10 Min.
IV. Allegro glorioso, Huang Kairan, 8 Min.

The concert was live broadcasted so that 2.8 Mio people watched it. In the concert hall the composers were saluted by a never ending standing ovation!

21.5 Hope

Figure 7: World premiere of Symphony "To 2020" opening XXIII. Beijing International Music Festival on 18.09.2020 at Poly Theatre. Press foto by CNTV.

After the summer, or exactly by 18th September, the concert halls are allowed to be filled up to 75%, this means quite some performances can cover their cost or even be profitable.

Two remarkable works must be mentioned.

As the grand opening concert of the XXIII. Beijing International music Festival, on 10th October 2020, a very special work is played as its world premiere: a symphony with choir in 8 movements titled "To 2020". It is far not an accident, that all major creators are born in Wuhan: Librettist Tang Yuesheng (Shenzhen) , Composers Zou Ye (Beijing) and Fang Shi (Wuhan) have to communicate permanently online because they work in three different cities. The singers are soprano Zhang Li ping (Central Conservatory, Beijing) and bariton He Leiming (Wuhan conservatory). The choir is sent by the Wuhan conservatory, strengthened by the Collegues of Beijing music association, the Wuhan Philharmonic orchestra is joined by musicians from Beijing symphony orchestra and China Philharmonic orchestra. Composer at residence of China Philharmonic, Zou Ye took the baton himself. Interestingly this work is commissioned by the China Philharmonic and Shanghai Symphony orchestra. The whole piece is about 70 minutes long with the movements:

I. Awakening
II. Suddenness
III. Cradle light in a cold night
IV. Butterflies' flying
V. The last happiness
VI. The falling cherry blossoms
VII. The dawn
VIII. Reborn

The concert was live transmitted by the CNTV and live streamed in social media and touched millions of people, just like those at the site of Poly Theatre Beijing, who came to tears during the concert, by reexperiencing the dead and life of Wuhan people.

One week later, another even more gigantic work, a two and half hours opera in two acts – “An Angle’s Diary” is world premiered at Qintai Grand Theatre, Wuhan! An absolute audio and visual impact!

Figure 8: A scene from the world premiere of the opera “An angel’s Diary at Qintai grand theatre Wuhan on 17.10.2020, Foto by Hubei opera house.

It is almost a one to one reproduction of the whole process of Wuhan’s monumental 77 days lockdown. All the scenes we see and the people at stage are based on actual life. The title role is a chief nurse who lost her husband, a doctor infected in his hospital when treating patients. This is the real story of the Director Liu Zhiming of Wuchang hospital, born 1969 and died at the age of 51 on 18th February 2020. His wife Cai Liping, chief nurse at Wuhan Third Hospital could not even see him a last moment. Through social media, tens of millions of people in China still remember watching a scene where she was running after the vehicle with his husbands body leaving the hospital to the crematory, how she cried and collapsed, one of those unforgettable and heartrending moments of the tragic year.

Figure 9: Ma Yaqin in the title role, Chief nurse Lan Zhilian, Foto by Hubei opera house.

The opera shows first the fear and hopelessness and isolation, but then determined battle and support by the outside world and finally the triumph promising sunshine.

On the premiere night, over 2000 visitors filled the Qintai grand theatre. With the hyperreal sound effect, the one to one ICU station at stage, the panoramic city skyline projection as well

as the dramatic actions of doctors and nurses, but especially the very common man and woman like among us – student, businessman, farmer, professor or a dump girl, the audience got touched to tears again and again. Yet a smile appears by the ending scene, “the song of angels” a waltz by the choir, joined by some of the audience who already learned to sing during watching:[36]

Where is the angel ‘s place?天使在何方？
Who has ever seen its face?谁曾见过天使的模样。
That you took my hands 只因**你拉住我的手**,
Like the spring’s wings 像春风的翅膀，
The withered dreams 让凋零的梦想，
Rebuild flying streams 从此重新飞翔。
Through the sorrow in our minds 穿越心的忧伤，
To the spring warmth and flowers of its kind.去往春暖花**开的**远方。

Figure 10: A closing scene from the world premiere of the opera “An angel’s Diary at Qintai grand theatre Wuhan on 17.10.2020. Foto: Li Yunzhong

In Autumn 2020, all schools were re-opened!

In collaboration with the International Chopin Society Vienna (ICG) , Poly Hele education organized upon my initiative a music contest – The Federation Cup China International Chopin Music Competition (FCICMC). We started the preliminary round already in May, where we collected videos of participants all over the country. Poly group has a large network of customers in China through its real estate and culture companies, so that we could easily get interested children to take part in the competition. By the end, it was over 2000 contestants. The jury finally chose 30 finalists.

We want to have a real finale where the children can play at stage in front of a jury. We carefully waited till the time when inner-China travel became quite liberal. We then declared the finale to December 26. Due to the travel ban between Europe and China, the invited jury members from ICG, including Mme. Clara Biermasz and some other pianists could not come to China. Mme.Biermasz was appointed the honorary chairwoman of the jury, she addressed the participants per video. Also the main patron, Prof. Dr. Theodor Kanitzer, Chairman of IFCS (International Federation of Chopin Societies) and ICG sent his salute in video.

[36] a translation of Li Yunzhong

Figure 11: The jury board of FCICMC. F,l,t,r.:Li Sida, pianist and supervisor; Fang Jun, Anhui Piano society; Prof. Igor Demchenkov, Academy of arts Novosibirsk; Prof. Misha Namirovsky, chairman of the Jury; Yan Lan, associate Prof. at Central conservatory, Beijing; Wei Lin, Prof. at Hebei Normal University; Chen Lin, Doctor of Hannover conservatory; Zhao Ying, pianist and Chopin prize winner in Russia. Foto by Poly Hele Education Wuhan

The grand Finale took place in the beautiful city Tangshan, once famous by a tragic earthquake on 28th July 1976 where more than 240,000 people died and over 160,000 injured.[37] A highly professional jury of seven members, consists of free pianists or professors at conservatory or experienced piano educators, headed by Prof. Misha Namirovsky, a Russian-Israel-American pianist, listened to the young players aged from 6-18 and awarded gold, silver and bronze medals to three age groups. For Poly Hele education, the competition is on the one hand a measure of spreading the music essentials of Chopin, on the other a promotion of young talents in China. After the competition, the prize-winners not only had chance to play a concert together with their jury, but also got a masterclass from them where those long years teachers shared their experiences in learning and performing. The competition is supposed to follow up. At the same time to the competition, the string quartet of Metropolis Orchestra toured Taizhou and Shanghai, playing four concerts with a classic-romantic program. The highlight marks a concert at Shanghai Technological University organized by the German Culture Centre, its over 100 years old concert hall, with only 150 seats provided an authentic and pure acoustic. Both Audience and the musicians enjoyed the concert.

Figure 12: Architecta Quartet at Shanghai Technology University on 24.12.2020. F.l.t.r.: 1st Violin Chen Shi, 2nd Violin Yu Tianle; Viola Zheng Ye, Cello Jiang Junhao. Foto by Shanghai Technological University

[37] a detailed report is published at „Wiener Chopin Blaetter 2020“

Upon a prompt invitation of the city Nanyang, I organized almost over the night 35 musicians playing a New year's concert there, which is also the grand opening of the new built Concert hall and theatre, parts of a complex with Museum and Library, in top modern architecture.

Musicians are grateful that they can play again, especially in front of audience. Music is never just a show, music is simply our life.

2020 has been a year extraordinary tough and difficult for the musicians in Wuhan, in China and all over the world. Hopefully, the corona pandemic will find soonest an end, or at least get controlled so, that people from different continents can exchange and visit each other again, because the world is smaller and closer with today's technology, we need to be connected and work together more than ever, just like in a single village.

I am sure, this will not last long.

The Hope is there, the good day is to come, and very soon, I am sure!

22 2020: Distant Learning Outcomes in Russia

Vladlena E. ZAREMBO
Saint Petersburg State University of Economics, Russia

22.1 Abstract

The pandemic became the key for a rapid transition to distant learn-ing. The author considers matters of distant learning at schools, higher schools and ex-tended education during the pandemic, and describes the main results. The conclu-sions were maid based on the investigated progress of massive introduction of elec-tronic means and on the own experience of the author in the field of learning and teaching online.

Keywords: pandemic, e-learning, motivation, distant learning, distant commu-nication means, communication

2020 turned to be one of the toughest years of the last decades. The problems caused by the pandemic demanded super-fast reactions and solutions, which impacted the development of e-life generally. Clearly, the pandemic enabled the digital break in Russia. This one could be expected obviously under the normal life in several years only. Companies and establishments trying to survive started transiting their business-processes into e-field intensively. Education is in there, too.

Numerous instruments for distant communication started developing and be-came popular in 2020. The platforms and means used earlier by the education flagmen only became wide spread with different success of their mastering. The discussion about merits and demerits of e-learning has been held for many years. Can education be completely automatic, without human participation? How effective video-courses with or without feedback are? And many others. But no one may hesitate answering the question about whether education transits to e-media. And this answer is yes. More or less e-learning has been being realized with introduction of the Internet. The first archetype of Moodle existed in Germany, for example in 1998[38] already, but surely dis-tant learning tools were then just loading of materials and tasks by teachers and stu-dents, and e-testing. For the past 20 years, the developed countries have provided their education process with electronic means and platforms for educational comfort. In 2012 in Iceland, many courses were tried on and completely transferred into Internet. Many teachers have made their choice for distant learning with or without contact hours (7). Recently, the online-universities became very popular, offering no other communication but distant one, but just few of them offer fundamental education and state diplomas[39].

The pandemic made realization of the massive experiment with distant e-learning in Russia much earlier than the overall technical and moral readiness to such a transi-tion was provided. Nowadays, certain conclusions of this experiment may be done based on the information from the open sources.

In April 2020, e-learning came almost to every school, higher school and ex-tended learning units of Russia. And these three fields resulted completely different. Many elementary and secondary schools had to finish their academic year earlier than planned (4). On one hand, through the necessity to provide safety of students and teachers. On the other hand, through

[38] Personal experience of the author during studying at the HTW Dresden, BRD.
[39] In Russia, state universities and diplomas have much more acknowledgement than private ones

the fact, that the school experiment deemed to be a failure. Troubles with no modern computers, no chance to find a quiet place for studying and working, several different-aged children in one family, no motivation and many other complications. Many had to face those and could not overcome. Trou-bles of technical unreadiness blocked development of learning processes. But this is one component only. The school distant learning failed due to many reasons, including socialization and communication need. Direct contact means a lot. Although many schools and teachers tried to arrange almost fully-featured classes using Zoom, the problem of the direct contact remained unsolved. Any online communication remains virtual, not alive (3). It is obvious that the correct contact communication contributes much to keeping motivation of students and their readiness to learn extra information and make home tasks. How one can do it with e-resources only? There is no straight answer yet.

In the higher education field, this transition to distant learning was comparative-ly easier. Above all, there are Universities in Russia offering distant learning with state diplomas at graduation. One of those is the former University of History of Cultures, now Educational Medium Higher School. 23-years of working experience demon-strates effectiveness □5□ and makes a sort of paragon for other higher education estab-lishments. But it is more exclusion. In general, one can say that universities and higher schools reacted faster upon the restrictions and could transfer the educational process into Internet not losing time and quality. For example, at the Saint Petersburg State University of Economics the teachers received recommendations to use next to Moodle also BBB[40], Adobe Connect[41], which used to be applied during classes with disabled students, and Zoom too. Thanks to it, the summer semester continued without signifi-cant troubles; the fall semester also started in this format[42]. Many higher schools have distant classes only. But there are higher schools with directions, which do not assume intensive application of e-learning, for example, medical universities. Skills received with application of video-conferences will be doubtful. In both cases efficiency of the online education depends on motivation of students.

A certain concern is required for foreign students in Russia studying here within the frames of academic exchange. In spring, some foreign students were unhappy about online-courses, but it was hardly connected to the course quality, but with im-possibility to contact each other in and out classrooms[43]. Education in Moscow or in Saint Petersburg gives foreign student a wide range of choices for studying, learning culture and history and employment. According to the survey of foreign students, 84.3% of them is interested in employment in Russia, 16.2% is ready to work during studies. 72.1% is ready to work in the region of studies. 86.3% of foreigners would like to combine working and studying, and 10.3% would like to work at the University (1). With online education, the choices and intentions of employment in Russia de-crease significantly. The same applies to Russian students studying abroad. So online education although being available is much less interesting for students than contact learning.

And finally, extended learning. Distant learning has been flourishing here since long ago. The market divides into two categories: contact and contactless educational services. Many e-courses, e-trainings and others may be found in the Internet with par-ticipation online only. In other words, people making decision about taking part in this course understand completely, that the contacts with the coach or teacher will be re-stricted by the Internet. Motivation of the participants of these courses is very high, because in most cases these courses are not mandatory.

Summing up what has been mentioned, one of the first conclusions is as fol-lows: efficiency of online-education depends mostly on motivation, responsibility and disciplines of students. The more informed choice was, the higher the probability of efficiency of e-learning is. Age means a lot too: the younger the student is, the more complicated is concentration for him/her (2) and

[40] Moodle tool for video-conferences.
[41] Software for web-conferences.
[42] Excluding first year students who had contact hours in September based on a special schedule (5)
[43] Personal experience of the author at realization of the online-course of Management in SMEs in English in April-May 2020 at the Saint Petersburg State University of Economics.

the faster he/she loses interest in the subject. The second obvious conclusion is, that the motivation “on the other side”, meaning by the teacher shall be very high too. Online-education requires new ap-proaches to arrangement of educational processes to make classes mote effective and insightful even under the pandemic.

22.2 Conclusions:

1. Motivation of students and teachers being participants of e-learning means a lot.
2. For the elementary and secondary schools, online-education is a possible but more auxiliary form, because it does not provide necessary processes.
3. For higher education establishments, online-education may be effective provided correct approach to its arrangement by management and teachers considering specifics of certain higher education establishments. But it is too early to speak about readiness and advisability of total transition to e-learning.
4. For foreign students, online-education opening chances to take part in world-wide courses almost close chances of employment abroad.
5. For extended learning (self-learning), online-education is very attractive, be-cause usually students are highly motivated and ready to overcome difficulties.
6. For arrangement of harmonized online-education at elementary, secondary and higher schools, it is required to think over not technical, but social components too, because contact communication means for participants a lot.

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23 Digital Onboarding of Russian Higher Education under Pandemic

Vladlena E. ZAREMBO
Daria A. STEPANENKO
Saint Petersburg State University of Economics, Russia

23.1 Abstract

The article describes research of education levels' rankings as a primary aspect of development of economics based on diverse indices. The conclusion of applicability of GII for evaluation of elements of higher education quality provision under pandemic was made. The higher education innovation research demonstrates predominance of innovations by necessity. The review of digital educational technologies speaks for their diversity and effectiveness under pandemic.

Keywords: innovations, innovation activities, higher education, quality, digitalization, pandemic.

The worldwide concerns of determination of the higher education quality under pandemic has raised especially badly under the pandemic. The research of education level is a primary aspect of indication for development of economics in any country. Since 1980, twice a year in line with the Development Program of the UNO the combined parameter of Education Index has been calculated. The Index considers education of adults (2/3 of the total weight) and total part of education of students (elementary, secondary and higher education) (1/3 of the total weight). It is widely accepted that the developed countries shall have minimum index value of 0.8, although many of those have 0.9 and beyond [6].

In 2018 (the data were published in 2019), Russia took the position 33 with the Index value of 0.832. It enables considering Russia as a developed country. But some other countries, for example, Lithuania (18), Estonia (19), Latvia (22), Georgia (26), Belarus (30) have higher positions in the ranking. It poses questions.

Practically, this Index has a row of restrictions:

- It does not reflect the quality of education itself. The latter may be in some cases very low or essentially restricted;
- It does not show complete difference in education availability due to age requirements' and tutorial duration difference;
- No average duration of education or expected duration of education is considered which is an important issue in evaluation of the education level;
- It does not consider students studying abroad, which may distort the data in some small countries.

Additionally, the Ranking of Countries in Global Education Expenditure may be applied [7]. It is subject to annual calculation as a total volume of state and private expenditures for education pronounced in percent of GDP.

Since 2012, several times a year, the British International Company Pearson has been calculation the Global Index of Cognitive Skills and Educational Attainment [8]. The proceedings developed by the company The Economist Intelligence Unit considers 2 groups of indices: cognitive skills and education level. With it, cognitive skills shall be evaluated by the

elementary school students and the educational attainment is subject of evaluation by educated students of secondary and higher education.

The level evaluation of digital transformation of higher education and education in general is difficult. The following rankings based on the following indices are mostly wide spread:

– The ICT Development Index — IDI;

– The Digital Economy and Society Index — DESI;

– The Economics Digitalization Index of the Boston Consulting Group (e-Intensity);

– The Networked Readiness Index — NRI;

– The Global Innovation Index — GII.

The analysis of the existing international indices and rankings enabled Goloventchik G.G. [1] to put Russia to the position 39.3 worldwide in 2018. Based on the GII data for the year 2020, Russia takes the position 17 with the subindex 2.2. Higher Education in close proximity to Switzerland (18) and Republic of Korea (16), and the United Kingdom (15). Figure 1 demonstrates the progress of the Subindex 2.2.

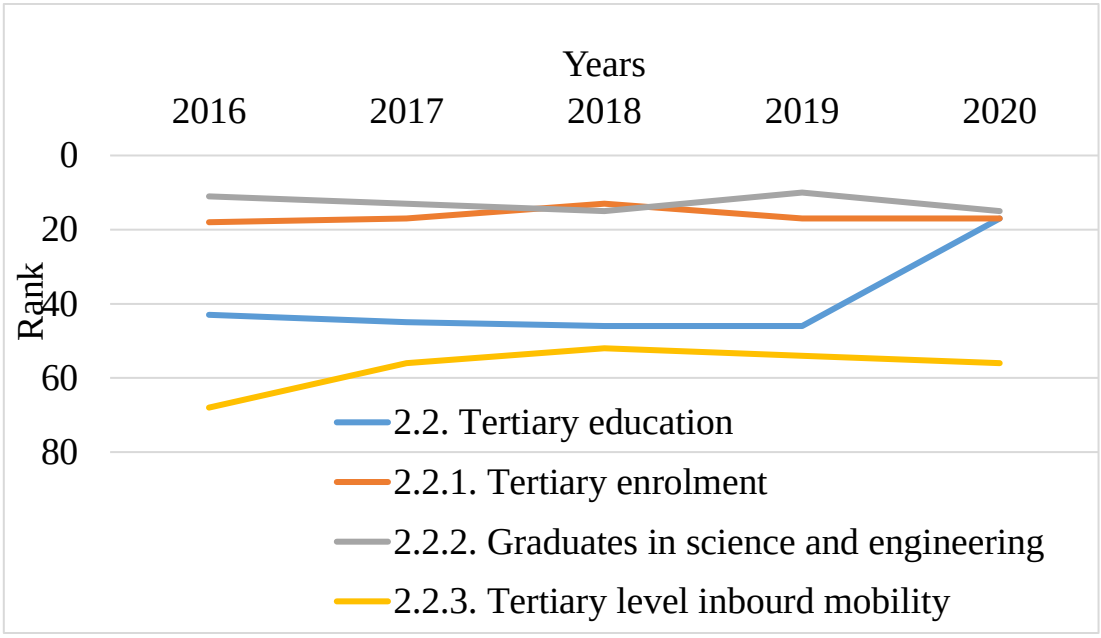

Figure 1: Russian Ranking with the Subindex of Higher Education for the period of 2016-2020 [9]

The figure shows that during the period of 2016-2019 the higher education system took the positions of 43 to 46, and in 2020 Russia raised to the position 17! The analysis of the components enables no detection of obvious reasons of this break, because the amount of matriculated, graduated students of technical and scientific directions and the part of foreign students studying in Russia do not demonstrate any rapid changes. The number of graduates of technical higher schools remains strength of the Russian higher education. In 2019, Russia took the position 10 in this index.

Under the pandemic, the influence of digitalization upon the level of development of higher education may be evaluated with application of digital technologies. One of the components of the evaluation of innovation activities of the regions is the Subindex 3.1. Information and Communication Technologies.

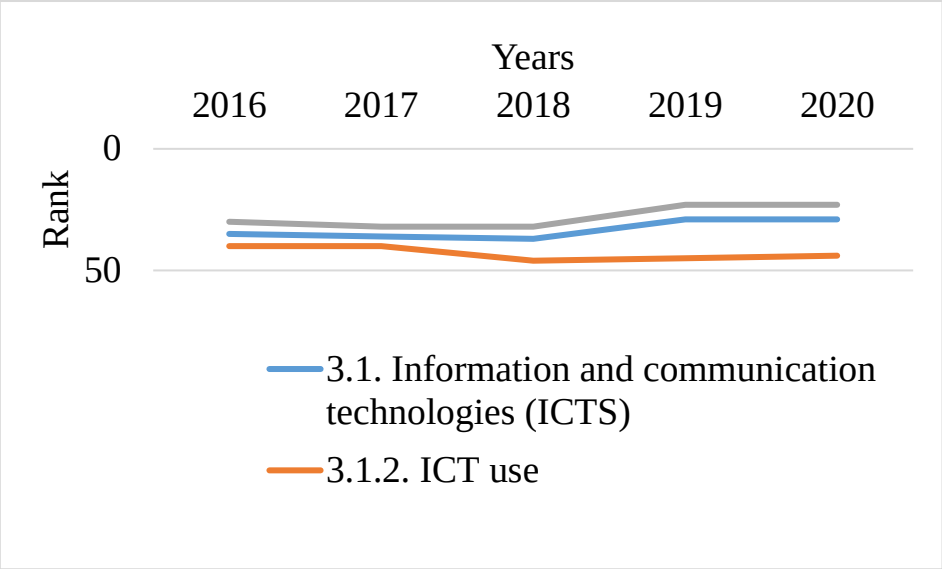

Figure 2: Progress of Russian Ranking with the Subindex of Information and Communication Technologies for the period of 2016-2020 [9]

The figure shows that within the last 2 years Russia has increased its ranking in application of ICT mostly due to the quality in the presence stage of e-government.

The research of innovations applicable in the system of higher education under the pandemic based on the classification offered by the authors [5] shows as follows:

- educational innovations by necessity, with their evaluation criteria and well determined tasks to be solved by the innovation;

- academical innovations: the innovation shall be created first and then it shall be determined where to apply it.

Due to the COVID-19 pandemic, the digital technologies in different spheres of activities gained rapid growth. The education sector demonstrates especially high growth. The modern educational establishments used to apply distant technologies. Their application although was a supplement to existing methods. For today, the distant learning made a break with implementation of innovations by necessity.

Y. Somov, the Director of the Mathematic Center of the Physics and Mathematics Lyceum N 239 [12, p. 85] acknowledges two models of the online-education: learning guides and services. The first type of learning guides provides quality during building of the contents. The second type of services means a process approach to building contents in higher education. The services contribute to provision of skills, competences and knowledge of students. Lectorium, Universarium, OpenEdu and partially Stepik represent the Russian market of higher education in the segment of massive open online courses. With it there is a trend to leave a part of education programs (not profile ones) for outsourcing. For example, Skyeng teaches English for the students of the Tomsk University [13].

No research of digital technologies for higher education is possible without consideration of influence of the state. In 2015, the project of Modern Digital Educational Environment in the Russian Federation started [11]. It could not attract enough users. But the higher education Figure 3 shows progress of managerial tasks' digitalization in higher professional education.

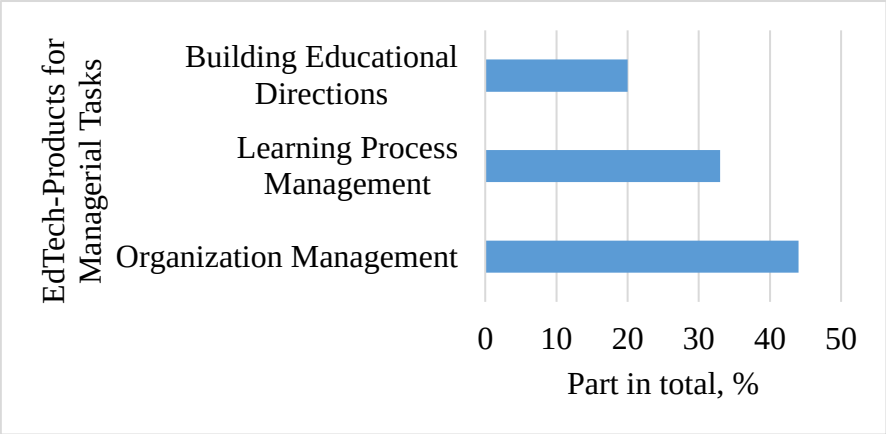

Figure 3: Progress of EdTech-Products for Managerial Tasks in Professional Education abroad, 2019 [7]

The higher education establishments in the Russian Federation have been using the software before too. But these products were of interest for just few of teachers. Now under the pandemic they gain more demand. The most popular software products for today belong the following: Zoom, Skype, Discord, Microsoft Teams. The analysis of the higher education efficiency online demonstrates that it depends on the feedback directly [4, 3]. This is possible in the service model only.

The understanding that the university online courses may become services turned to be false: The education quality through acquiring educational courses of other higher schools demonstrates negative results. For example, once the students of one regional higher school took part in the profile course purchased from a higher school in the capital, the students could demonstrate no good knowledge.

The research of the Russian online-education market demonstrates its diversity. The higher schools use the instruments of the massive open online courses and introduce actively simulators [14], adaptation courses [13], own systems of proctoring [10], analytics of digital traces and phychometrics [2]. Most of the higher schools which intended to comply with the modern trends of online-education created internal systems of digital learning with no innovative power at all. Gamification and VR-simulation are introduced in several high schools only.

Recent application of digital technologies has changed approaches to arrangements of educational process. Different education establishments did it their own way. Considering influence upon the quality of education one can trace direct dependency upon qualification of a teacher and how skilled he/she is in information services and also upon his/her learning abilities in this direction. Skills of rebuilding programs for distant classes matter too. There are many free of charge additional services, which may contribute to harmonization of the learning process and with its correct organization increase the interest of students. The current students belong now to so called Z-Generation raised in the information technology age. Once building classes, one has to consider their interests as much as possible. Application of online-technologies in education has brought its problems too: a teacher has to spend more time for monitoring and in front of a computer. But there is an option to supplement and enhance, and harmonize courses and create wonderful distant courses.

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24 Biographical Notes on Contributors

ALTMAN, Steven

New York University, USA. Steven A. Altman is a Senior Research Scholar at the New York University Stern School of Business and an Adjunct Assistant Professor in NYU Stern's Department of Management and Organizations. Mr. Altman is also Director of the DHL Initiative on Globalization at NYU Stern's Center for the Future of Management. His research focuses on globalization and its implications for business strategy and public policy. Mr. Altman holds a PhD from the University of Reading, an MBA from the Harvard Business School, an MPA from Harvard's John F. Kennedy School of Government, and a B.S. in Economics from the Wharton School of Business at the University of Pennsylvania.

ANDONE, Diana

Diana Andone is the Director of the eLearning Center, Politehnica University of Timisoara, Romania, responsible for planning and implementing eLearning. She runs the team who developed and assure daily integration of the university award winning Virtual Campus CVUPT. In 2017 she led the team in developing the first Romanian MOOCs platform, called UniCampus. She is also lecturer at the Politehnica University of Timisoara, in the area of multimedia and web technologies. She is passionate about the ubiquitous access to technologies and how they can be used to improve people's life. More professional information can be found at: http://elearning.upt.ro. Diana Andone holds a PhD in Designing eLearning Spaces for Digital Students with University of Brighton, UK, an MA in European Studies, an "Learning about Open Learning", postgraduate distance education course at the Herriott-Watt University, Edinburgh, UK; an MSc in Artificial Intelligence at the Politehnica University of Timisoara, Romania. She attended different specialisations in universities in UK, France, Finland, Greece, Germany. Since 1998 she teaches course modules in universities from UK, France, Finland, Italy and Greece. The publication list comprises 8 books and over 90 papers presented at international conferences, she is reviewer for 12 International Conferences, 3 journals, she received 8 best paper awards at different conferences and since 2010 Co-chair at the IADIS WWW/Internet International Conference. In the last years she was involved in 21 EU funded projects. In 2012 she received the EDEN Fellow Title (European Distance and E-Learning Network). She is also involved extensively in several professional organisations and associations as well as acting in the Board of local Romanian NGOs (Pentru Voi Foundation) and a member of Rotary International.

Phillip BASTIAN

Phillip Bastian is a Research Scholar at the New York University Stern School of Business. Mr. Bastian is based in the school's DHL Initiative on Globalization at its Center for the Future of Management. His research interests include international economic policy, data science, statistics, and data visualization. Mr. Bastian holds a Master of International Affairs from Columbia University School of International and Public Affairs and a B.A. from Pacific University.

BIJAK, Anna

Poland

1995-2000 English Filology at the University of Silesia 2002-2003 European Studies within Erasmus Plus Project in Sweden University of Stockholm. 2017 EcoMedia Europe.net board member and speaker at the conferences in Norway and Romania. Since 1999 High School teacher of English and European Projects Coordinator

EGRON-POLAK, Eva

Former Secretary General IAU, past Council Member, MCO, Canada. Eva Egron-Polak, former Secretary General of the International Association of Univeristies (IAU), was educated in the Czech Republic, Canada and France. Having studied French Literature, Political Science and International Political Economy, her post-graduate research focused on early stages of European Union policy in higher education. She held the position of IAU Secretary General from 2002 to 2017. Prior to joining IAU, for almost 20 years, she served in various senior positions at Universities Canada (former AUCC), including as Vice-President, International. As Secretary-General of IAU, Eva Egron-Polak launched a number of initiatives in various areas of higher education policy, positioning IAU as an important global actor in research and policy development concerning, for example, internationalization of higher education, provision of equitable access to and success in higher education, institutional autonomy and ethics in higher education as well as the contribution of higher education to sustainable development. She greatly expanded the Association's convening role, consolidating the Association's capacity as a clearing house of information on the systems and institutions of higher education around the world. Under her leadership IAU launched regular and systematic Global Surveys on internationalization, improved and expanded its communications with IAU Members and the higher education community, created the professional development program called LGEU and developed ISAS, an advisory service to review and assess institutional internationalization strategies. Eva Egron-Polak enlarged IAU partnerships to include many organizations and networks and made IAU highly visible. In addition to being an IAU Senior Fellow, Eva Egron-Polak is a member of many boards and advisory committees, including the Magna Charta Observatory, the GAPS initiative, and StudyPortals. She has written and presented many papers on higher education topics and continues to be actively involved in the field.

GHAZALI, Abdul Rasyid

Universitas Muhammadiyah Yogyakarta, Indonesia. Abdul Rasyid Ghazali was born in Cilacap, Indonesia, on 18 October 1993. On his 21st birthday, he graduated from Universitas Muhammadiyah Yogyakarta with a Bachelor in Education. Prior to his graduation, however, he had professionally worked as a teacher at MTs Muhammadiyah Kasihan, a private school in Yogyakarta, Indonesia. In addition to his main duty teaching junior high school students, Ghazali was appointed as the deputy Vice Head Master for Students Affair. After a year of work, in 2016, Ghazali got opportunity to continue his higher education in an Erasmus Mundus Joint Master Degree Programme in Research and Innovation in Higher Education (MARIHE). Ghazali underwent his Master's first semester in Austria (Danube University Krems), second in Finland (University of Tampere), third in China (Beijing Normal University), and last in Finland (University of Tampere). During his Master's study, Ghazali got to sharpen his knowledge and competence in Higher Education by working at the International Association of Universities in Paris, France, the National Accreditation Agency for Higher Education in Jakarta, Indonesia, and the Regional Ministry's Coordinator for Private Higher Education in Yogyakarta, Indonesia. After graduation in 2018 until present, Ghazali teaches at Universitas Muhammadiyah Yogyakarta (UMY), Indonesia. In addition, he was entrusted to manage ICoSI, the International Conference on Sustainable Innovation. ICoSI is the UMY's flagship academics community; where annually, UMY calls for papers from various disciplines from health, engineering, social sciences, law, etc. In 2019 and 2020, ICoSI successfully presented and published more than 1100 and 1200 papers/presentations respectively. Aside from his academics career, Ghazali also runs a translation and proofreading service, which he started since 2015. His clients are Journals or Institutions and personal-academia who wish to publish their works at International Journals.

GIANNAKOPOULUS, Iraklis

is a medical doctor currently professionally focused on Cosmetic Dermatology. Previously he has been an Internal Medicine Resident at “417 Army Equity Fund Hospital”, Greece and a Clinical Research Associate at Boehringer Ingelheim. He has been a research Fellow at Royal Free London NHS Foundation Trust, UK. He is currently pursuing an MSc in International Business and Management at Alba Graduate Business School, Greece. His research interests include health economics, digital transformation of health and the importance of clinical trials in healthcare.

GÜNTHER, Johann

Prof. Dr. Johann Günther, Jianghan University, Wuhan, China, Saint Petersburg State University for Telecommunications, Russia, Visiting Professor at Danube University Krems, Austria. Secretary General IAFeS (International Association for eScience). 2010 and 2011 vice chancellor University of Buraimi (foundation rector/president). 2007 – 2010 Director of Agency for European Integration, Office Prishtina, Kosovo. 2004 – 2007 Executive Director University of Applied Sciences St.Poelten, Austria. 1999 – 2004 Vice-president Danube University (Austria). 1996 – 2004 dean of “Telecommunication, Information and Media“. 1979 - 1996 lectures at the University of Vienna. 1986 professor of the State University of Telecommunication in St. Petersburg. After studies at University Vienna in several positions in industry. Publications: more than 50 books, 2 in seven languages, participation in more than 60 compendiums and more than 200 articles in specialist journals.

HALAPACZ, Magdalena

WSB Academy, Poland. 2005-2010 Polish philology at the University of Silesia in Katowice 2006-2009 German philology at the University of Silesia in Katowice 2016-2017 postgraduate studies at the WSB Academy in Dąbrowa Górnicza in the field of Autism, Asperger's syndrome and other comprehensive developmental disorders in children and adolescents 2020 - still postgraduate studies at the WSB Academy in the field of Education and rehabilitation of people with intellectual disabilities

JANUS, Mark-David

CSP., Ph.D. is the President and Publisher of Paulist Press, USA. Janus, Mark David was born on March 31, 1953 in Rochester, New York, United States. Son of Casimir Paul and Pearl Joan (Krajnik) Janus. Bachelor magna cum laude, St. John Fisher College, Rochester, 1974. Master of Arts, Catholic University, Washington, 1978. Doctor of Philosophy, University Connecticut, 1992. Clergy Catholic Information Center, Grand Rapids, Michigan, 1978-1979, Paulist Center, Boston, 1979-1983. Director research Covenant House, 1983-1984. Chaplain University Connecticut, Storrs, 1984-1989, lecturer clinical psychology, 1989-1990. Clinician University Connecticut Health Center, 1990-1991. Faculty Indiana University Medical Center, Indianapolis, 1991-1992, Ohio State College Medicine, Columbus, 1992-1998. Private practice, 1998—2003. Chaplain Ohio State University, 1998—2003. Director Catholic Information Center, Grand Rapids, Michigan, since 2003. Consultant Children's Hospital Sexual Abuse Team, Boston, 1979-1984. Research consultant Covenant House, Toronto, Ontario, Canada, 1985-1990. Presenter on adolescent and child sexual abuse over 40 juried presentations. Mark David Janus has been listed as a noteworthy Priest, psychologist, researcher, consulant by Marquis Who's Who. Book: Running for Their Lives: Physical and Sexual Abuse of Runaway Adolescents (Children of Poverty) Running for Their Lives: Physical and Sexual Abuse of Runaway Adolescents (Children of Poverty). Membership: Board of directors Robert F. Kennedy Action Corps, boston, since 1982, Madonna Hall, Marlborough, Massachusetts, 1984-1992. Active Pastoral Care Committee Diocese of Norwich, Connecticut, 1988-1992. Fellow American Orthopsychiat. Association; member APA, International Society Prevention of Abuse and Neglect, Missionary Society St. Paul The Apostle.

KALEMIS, Konstantinos

National Centre for Public Administration and Local Government, Athens, Greece. Council of Europe. Konstantinos Kalemis is an Instructor at the National Centre for Public Administration and Local Government in Adult Education and Lifelong Learning. Since 2017 to 2020 he had served as a Refugee Education Coordinator. His interests focus on the introduction of New Technologies as an alternative teaching process and the design of new curriculum plans for the open and d-Learning. His research interests also include the education of immigrant ethnic minorities focusing on the gifted and talented students and aim to advance the theory and technology of natural language and knowledge processing, especially semantic analysis that bridges the gap between language and knowledge, by the novel use of both machine learning and inference methods. Member of IAFeS. Member at the New Club of Paris, took place in the Mutual Learning Workshops (MLW) organized in Romania in the period October 2012 – May 2013 which have been developed in the frame of the Project "Quality Assurance in Higher Education through Habilitation and Auditing" initiated by the Executive Agency for Higher Education and Research Funding of Romania (EUFISCDI).

KALLINI, Konstantina

Dept. of Primary Education, Athens, Greece. Konstantina Kallini is a Kindergarten teacher with high experience in multicultural education and the inclusion of refugee students in the pre-school education. Having more than ten years of experience in pre-school education, she integrates ICT technology applications as an alternative educational process. She holds a master's degree from the National and Kapodistrian University of Athens in intercultural education and in the application of targeted and individualized Greek language teaching programs as a second or foreign language to foreign students. She has served as Head teacher in the kindergarten of the Malakasa Refugee Camp, with excellent work in the integration of these students into public education.

KETTLER, Karoline

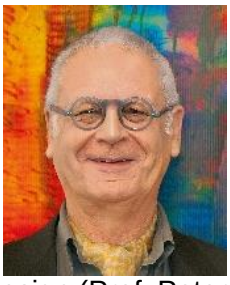
Karolina Kettler holds Ph.D. in philosophy. The main area of her research focuses on organizational culture and values, organizational structure, (new) work. She combines academic background with business and managerial experience in the tech startups. She is an author of several academic publications, but as well a speaker on business conferences and podcasts.

KOCH, Günter

Humboldt Cosmos Multiversity, Tenerife, Spain. Günter Koch as a professor is guest at Technical Universities in specific in Austria and at the “Danube University”, and permanent Adjunct Professor in Informatics at the IICM-Institute of the Technical University of Graz. He works as a consultant to governments, banks, industries, in specific software dependant or software producing industries. Professor Koch unites several and even divergent qualifications in his person: entrepreneur, manager and scientist. His last appointment as a manager of a big organisation was until the 1st half of the 1st decade of this century as the CEO of the Austrian Research Centers (ARC), Seibersdorf, today called Austrian Institute of Technology (AIT) , Austria’s largest applied research organisation, employing some 1200 people in many different disciplines, including material sciences, life sciences, information technologies, system research, medical technology, energy and environment etc. In his role as CEO in cooperation with a colleague from Graz University he developed the now widely used model ad method of an Intellectual Capital Report (ICR). This model served as the basis for even a law after which all Austrian universities must report their annual progress in respect to the development of their “intellectual capital”. In 2012 he built-up the Humboldt Cosmos Multiversity, a university complementary think tank in Tenerife, Spain, which became legal in

2014. Since then G. Koch ist its President. After having been assistant professor at Karlsruhe University's computer science faculty from on 1975, he became the founder managing director of a systems company specializing first in medical informatics in 1981 and later in automation and in software technology. He served in this function until 1993. In an extra appointment he was initiating and heading a Technology Center in the city of Freiburg / Germany.

KOTAUCZEK, Peter



Institut for Human Informatics, Austria, Danube-University Krems, Austria p.kotauczek@gmx.at. Systems analysts, engineer, artist, mechanical engineering, studies in economics, law, advertising and marketing, computer education at IBM. Founder of the BEKO group (Software and Engineering company), chairman of the board of BEKO Holding AG , supervisory board: BEKO Engineering & Informatik AG, Teletrader AG, president of the Austrian Software Industry Association (VÖSI). Service entrepreneur of the year 1993 of the economic magazine "trend". 1984-2000 lecturer at the University of Applied Art, master class for visual media design (Prof. Peter Weibel). 1996 founding member of the "Club of Vienna" at the Konrad Lorenz Institute for Evolution and Cognitive Research (Prof. Rupert Riedl). Masaryk award winner for innovative computer art. 1994: Entry in the Guinness Book of Records for the largest CALSI image output directly from the computer, at the Kunsthalle Wien-Karlsplatz. Initiator of fuzzy logic in Austria, focusing on computer-assisted large-scale image processing (CALSI) and media-spanning information processing, development of the REBUS perceptron (balanced scorecard).

KRAUSE, Julia

HTW Dresden, Germany. Prof. Dr. Julia Krause holds the professorship for International Industrial Sourcing and Sales at the HTW Dresden and deals in teaching and research with questions of holistic sustainability in corporate processes and efficient organizational management - from supply chain management to technical sales to sustainable business models. These interests are based on her extensive experience in international mechanical and plant engineering and in management consulting. She gives lectures on these topics at international conferences. Julia Krause heads the "Quality Infrastructure" working group in the initiative for technical regulation in the Eastern Committee of German Business. With her "Nightingale" project, she advocates the implementation of sustainability goals in various steps of global investment projects. Julia Krause also pursues sustainable goals in teaching - through an international, interdisciplinary, interactive approach that is cooperative with industry.

LÄHDENIEMI, Matti

Tampere University of Technology, Finland. Adj. Prof. Matti Lähdeniemi gained a Ph.D from the University of Turku, and is presently an Adjunct Professor at Tampere University of Technology and at the University of Turku. His special fields are automation, image processing, entrepreneurship, knowledge transfer, quality and impact evaluation and RDI processes. He is/has been the director and consulting tutor of numerous industrial projects, and a member of several groups evaluating the impact of RDI and quality at universities on a national level and RDI measures on a national and European level. He has prepared and analysed the international evaluation of RDI activities at Finnish Universities of Applied Sciences. He has written about 190 articles on the above-mentioned topics. Previous positions include Research and Innovation Director, Vice president and Dean (Satakunta University of Applied Sciences), professorships (Computer Science/Tampere University of Technology, Materials Science/University of Turku, Surface Physics/Humboldt-Foundation), project manager in different research and industrial projects in Finland, Sweden, Germany and Japan, and chairman or board member of several organisations and foundations.

LAINE, Kari

University of Applied Sciences, Pori, Finland. Dr. (tech) Kari Laine holds a position as Principal lecturer at Satakunta University of Applied Sciences, Finland. His research interests cover university industry interaction, innovation and entrepreneurship. He has published on these fields since year 2001. He also teaches electrical engineering and innovation management both in Batchelor and Professional Master programs.

LIESSMANN, Konrad Paul

University Vienna, Austria. Studied German, history and philosophy in Vienna. 1976 master's degree, 1979 doctorate, 1989 habilitation. 1995 Appointment as associate professor at the Institute for Philosophy at the University of Vienna. 2011 appointment to the professorship for methods of teaching philosophy and ethics at the Faculty of Philosophy and Educational Science from the University of Vienna. Numerous scientific and essayistic publications on questions of aesthetics, art and cultural philosophy, social and media theory, philosophy of the 19th and 20th centuries and educational theory. Since 1996 scientific director of the "Philosophicum Lech" and editor of the book series of the same name in the Zsolnay publishing house. 2002-2006 head of the "Friedrich-Heer-Arbeitskreis" of the Austrian Research Association and editor of the works of Friedrich Heer at the Böhlau-Verlag. 2004-2008 Director of Studies for Philosophy at the Faculty of Philosophy and Educational Science at the University of Vienna. 2008-2012 Vice Dean of the Faculty of Philosophy and Education at the University of Vienna. 2011 - 2015 Vice President of the "German Society for Aesthetics". Since 2010 Vice President of the "Society for Education and Knowledge". Founding member and chairman of the "International Günther Anders Society" since 2012. Since 2014 head of the university course "Philosophical Practice" at the University of Vienna

LYMPEROPOULOS, Fotios

Bachelor of Science in Computer Systems Engineering from Piraeus University of Applied Sciences. Post-graduate student (MSc) in Cubersecurity at University of West Attica. Software and firmware developer in various languages (C, C++, C#, Java, VB.NET, Assembly, Delphi etc.) with more than 25 years of experience in both desktop and embedded systems. Has worked in Ireland, England, China, Germany and India. Systems and Software Architect – Engineer Manager for the last 6 years in the German multinational company Bosch Lawn & Garden. Specialist in Risk Assessment, Functional Safety, DFMEA and code-reviewing processes. Co-inventor & development supervisor of the capacitive sensor switch technology for Bosch home & garden products. Founder and CEO of the startup company "Libepark", which was successfully funded in 2012 from the European Union "New Innovative Entrepreneurship" investment program under the General Secretariat for Industry. Conceived and designed several mechatronic and two renewable energy inventions. Single author of a 465 pages scientific treatise titled "Computers in biology: A technological, informatics and cognitive approach". Short story writer (published, awarded) / reverse engineering & hacking enthusiast / chess player. Favourite motto: "Life is what happens to you while you are busy making other plans".

MANDL, Lukas

Lukas MANDL (born 12 July 1979) is an Austrian elected official, who has been a Member of the European Parliament since November 2017 and was re-elected in 2019. He is Vice-Chair of the Subcommittee on Security and Defence (SEDE) and a full member of the committees on Foreign Affairs (AFET) and Civil Liberties, Justice and Home Affairs (LIBE) as well as a substitute member of the Employment and Social Affairs (EMPL) committee. Mandl is a strong advocate for the transatlantic alliance and aims to improve the relationship between the EU and Israel as the Chairman of the Transatlantic Friends of Israel group in the European Parliament. As Chair of the Korea-Delegation, he is also responsible for the

Parliament's relations with both South and North Korea. Another focus of his work is the promotion of EU integration of all six Western Balkan countries. In October 2019, he was appointed as the EPP-shadow rapporteur for Kosovo. Having been active on almost every political level, Mandl knows about the importance of subsidiarity. Prior to becoming a MEP, Mandl was a Member of the State Parliament of Lower Austria, where he was Chairman of the Committee on European Affairs. In addition, Mandl served as Vice Mayor of his home town Gerasdorf. Mandl holds a degree (Mag. Phil.) in Communications from the University of Vienna and was a Lecturer at the Vienna University of Economics and Business. He has three children.

MERTANEN, Olli

Executive Director at Federation of S-W Finland UAS (CoastAL), former Vice President of Turku University of Applied Sciences. He has long background as well in industry in the field of communications technology as in engineering education in the field of information technology. He received B.Eng in automation technology (1976) in Kotka Institute of Technology, M.Sc. in digital and computer technology (1979) in Tampere University of Technology where he also received Lic.Sc. in computer science and telecommunications (1985) and D.Sc. in computer communication (1992). His industrial background includes positions in Philips Data Systems and Ericksson telecommunications. During his university career he was mentioned among 100 finnish avantgardists in the field of industry and business and awarded the recognition of EIS / excellent educator in electronics. 2012 he got an Achievement Award by INEER organization for his excellent work in the field of education and for his contribution to the creation of entrepreneurial spirit among future engineers. At the moment he is active in the field of enhancing creation of innovations as a result of co-operation between industry and University and furthermore leading to entrepreneurship.

NIKITINA, Tatjana

St. Petersburg State University of Economics, Russia. t_nikitina2004@mail.ru. Prof. Dr. Tatjana Nikitina is professor at the Department of Banking, Financial Markets and Insurance at St. Petersburg State University of Economics. She has 25 years of teaching experience. Her special fields are Financial Markets and Financial Institutions, Monetary Policy, Insurance and Risk Assessment with particular attention to the European studies. She is also a guest professor at the Goethe-University of Frankfurt am Main, the University of Nuremberg and the University of Jena. Prof. Dr. Nikitina is participant of major international conferences and the author of textbooks and scientific articles. She is director of the Master's program "Banking and Asset Management", coordinator of the Russian-Swiss MBA program "Digital Finance" and the dual degree program with the University of Hagen (Germany) from the Russian side, as well as director of the International Center for Financial Markets Research (ICFMR) and Russian-German Center at St. Petersburg State University of Economics, Head of the Alexander von Humboldt Alumni Association in Russia.

RĄB Łukasz

philosopher, M.Sc. (2013) and Ph.D. (2015), works as an assistant professor at the Department of Philosophy of Morality and Global Ethics at Maria Grzegorzewska University in Warsaw (Poland). The main areas of the publisher's research are the contemporary faces of capitalism, i.e. "Surveillance capitalism" or "ecological capitalism", as well as the issue of global responsibility in the modern world, including the topic of the evolution of work in the times of the digital revolution and the problems it implies, such as: "precarization of life", "uberization of work". Research conducted by the publisher is reflected in numerous articles, incl. "Perspective of sustainable development in the post-pandemic world: surveillance capitalism and hopes" (2020), "Corporate social responsibility in the context of supervision capitalism" (2019).

RIZOS, Theodore G.

University of Patra, Greece. afidnes069@gmail.com. BACHELOR OF ARTS in International and Political Studies (Coventry University), MASTERS OF ARTS in Politics (Warwick University), PhD in Sociology (Panteion University of Athens, Date: 05/07/2018). Thesis title: “Theoretical Approaches of the transition from State Corporatism to Social Neo-corporatism”. Taking part in various conferences as a speaker in subjects related to industrial relations, political theories, educational affairs. Author of two books on industrial sociology and several articles on political theory, the use of new technologies, pluralism in education, etc. Teacher of International Relations at Pliroforiki for 3 years, Teacher of Modern History GCSE (A Levels) at Ekpedeftiki Anagennisi for 1 year, Teacher of English (tutorials) for 9 years, Teacher of Greek Language at a Refugee Camp in Malakasa, Sociologist at The Welfare Community of Dionysos. Lecturer of Political Sociology at the University of Patra.

RÖTZER, Florian

Florian Rötzer, born in 1953, after studying philosophy, worked as a freelance author and journalist specializing in media theory and aesthetics in Munich and as an organizer of numerous international symposia. Since 1996 he has been editor-in-chief of the online magazine Telepolis and publisher of the Telepolis book and eBook series. Among other things, he published “Die Telepolis. Urbanity in the Digital Age” (1995) and “From the cities becoming wild” (Birkhäuser 2006). His book “Smart Cities im Cyberwar” (2015) was most recently published by Westend.

SADRIWALA, Kaneez Fatima

University of Nizwa, Sultanat of Oman. Dr. Kaneez Fatima Sadriwala Associate Professor in Accounting, A/Head Department of Accounting Dr. Kaneez Fatima works in the field of Accounting, Business Statistics and Marketing, Her research span is multidisciplinary, spreading from - Financial Analysis, Accounting for SMEs, E-Learning, Entrepreneurship, student’s learning process and measurement of learning outcome to Accounting Ontology etc. She, along with her student team won TRC FURAP awards twice for best research project, one in year 2015, followed by another in year 2018. She has published two books, ‘Marketing Management’ and ‘Mall Management’ from Himalaya Publishers, with several research papers on national and international platforms. She is a renowned orator and has represented the university on various international platforms. Dr. Kaneez Fatima received her Master’s in Commerce (Accounting and Business Statistics) in 1991 and Ph.D. degree in Commerce (Business Administration) from Mohanlal Sukhadia university, Udaipur, India in 2004, and FDP from Indian Institute of Management (IIMA), India in 2009 and served as Professor cum Director at Aravali Institute of Management, Udaipur, India prior to joining University of Nizwa in February 2010.

SKALABAN, Maria

St. Petersburg State University of Economics, Russia. skalaban-mariya@mail.ru. Maria Skalaban is a young researcher. She earned a bachelor’s degree in Economics in 2020 from St. Petersburg State University of Economics, where she continued her studies as a Master student at the Department of Banking, Financial Markets and Insurance. Her special fields are financial and retirement planning, wealth management, long-term investment and financial literacy. She also had experience as an exchange student at the Technical University of Darmstadt (Germany), where she studied courses on applied econometrics and international economics with a special focus on European financial institutions. Since 2018, she was a volunteer at the Russian-German Center, St. Petersburg State University of Economics. Since 2020, she has been working at the International Centre for Financial Market Research (ICFMR), St. Petersburg State University of Economics.

STEPANENKO, Daria A.

St. Petersburg State University of Economics, Russia. **stepanenko.d@unecon.ru.** Senior lecturer, Department of Management and Innovation, PhD in Economics. Since 2018 - board member and arranger of the annual Student Scientific and Practical Conference of *Condition and Development of Certain Sectors of Economy and Business Entities under Economic Instability*. Since 2000 – senior lecturer at the Department of Management and Innovations at the St. Petersburg State University of Economics. Special fields are Innovations, Sustainable Development, Change Management. 2020 - Team Leader for the Oil and Gas League of the International Engineering Student Championship of *Case-In*. 2019-2020 – coworker of the European Studies within the Erasmus Plus Jean Monnet Project of *Sustainable Development: from Ecology to Multidimensional Approach*. 2018 - designer of short-term programs of extended learning of *Business from Scratch* and *How to Create a Business on the Internet*.

STOHM KRONFELD, Fredrik

Ministry of Health, Sweden. He received a M.Sc. and Dipl.-Ing. in Chemical engineering from the Royal Institute of Technology (KTH), Sweden, in 2012. He currently working at the County Administrative Board in Stockholm, Sweden, with permits and supervision of environmentally hazardous activities. Between 2012 and 2018 he worked at Ragn Sells a company involved in waste management, environmental services and recycling. The work was primarily with optimizing and development of treatment methods of ashes and other waste materials. He has an interest in environmentally friendly and profitable solutions.

VASIU, Radu

Professor Radu Vasiu, Dept. of Communications, Faculty of Electronics, Telecommunications and Information Technologies, Politehnica University of Timisoara, Romania. Director of the Multimedia Research Centre. President of the Politehnica University of Timisoara Senate. Radu Vasiu received his MSc and PhD degrees in Electronics and Telecommunications Engineering from the Politehnica University of Timisoara, Romania in 1982 and 1997, respectively. His research interests in the last years are in the area of open data, smart cities, mobile applications, e-learning, multimedia and web technologies. Since 1993 he was involved in more than 30 international projects (Tempus, Phare, Socrates, Leonardo da Vinci, Life Long Learning, FP6, etc), especially in the field of multimedia and e-learning, both as coordinator or as contractor. He is now the President of the Politehnica University Senate and the Director of the Multimedia Research Centre. He acted as invited professor in different universities from UK, Finland, France, Austria, Greece and Netherlands. The publication list includes 12 books and more than 100 papers presented at different international conferences. He was involved in 32 research or international cooperation projects. Currently, prof. Vasiu acts as President of the International Association for e-Science (IAFeS) that promotes at international level the use of ICT in science and technology. He is also a member of IEEE Computer Society and IEEE Communications Society, European Association for Telematics Applications (EATA), European Distance and E-learning Network (EDEN), International Association of Science and Technology Engineers for Development (IASTED) and of the Commission for European Integration of the Romanian Academy, Timisoara branch.

YANNAKOPOULOS, Panayotis

University of West Attica. Panos Yannakopoulos, Professor of University of West Attica, Department of Informatics and Computer Engineering since 2010, Faculty member since 1998. He has published 35 scientific papers in international refereed journals, 107 papers in international conferences and 11 in Greek ones. Member of the Governing Body of the University (2012-

2017), Member of the Hellenic NARIC Committee (2013-2016). Erasmus Institutional Coordinator 2017-18. He organised the NATO Conference on «Nuclear Radiation Nanosensors and Nanosensory Systems" in 2014, in Tbilisi. He has been teaching in postgraduate partnership programs with British and American citizens since 2000 and he is the Academic Coordinator of the Cyber Secuity graduate program. He is the author of four Academic books. He has participated at both National (THALES) and European research programs (Erasmus KA2, FP7 and currently H2020).

YUNZHONG, Li

After his study at Wuhan University majored German study, history, politics and management, he first serves in the foreign affairs office of Wuhan municipal government for 10 years, where he has been in charge of Human resource exchange projects and international cooperation. During this time he often visited Europe. From1994 to 2008 he is engaged as General manager of a German company in Wuhan in the fine-chemical industry, where he not only established a nationwide sales and marketing network leading to a still working success, but also managed to build a factory for the purpose of the industry. Since 2010 he gradually devotes himself completely to the world of culture. As Impresario and concert manager as well as artist agent, he makes concepts for music festivals and organizes concerts, masterclasses, workshops and tours of different artists and ensembles. A remarkable achievement is that he introduces the International Chopin Society Vienna (ICG) to China and helps to set up a close relation with Poly Hele education and Poly Development, that turned out to be a fruitful cooperation in a broad range. Projects such as the First Guangzhou International Chopin Festival, Inner Mongolia Art and Nature Summer camp “Friederik Chopin”, or the Federation Cup International Chopin Music Competition (FCICMC) are just some very representative examples. He runs the Wuhan Youth Symphony Orchestra (WHYSO) in the interest of the Cultural and Educational Ministries of Hubei Province and the private Metropolis Orchestra based in Wuhan. Recently he is entrusted to be the CEO of the famous Tiankong Choirs Wuhan, China. As vice Chairman of the Hubei province philharmonic union, but also as music critic, he has been promoting classical music since more than 30 years. He is the author of the only existing Celibidache biography in Chinese (shanghai music publishing house, 2001.)

ZAREMBO, Vladlena E.

Saint Petersburg State University of Economics, Russia. Assoc. Prof., PhD in Economics, LLM, Department of Management and Innovations. 2001 – master’s in economics, 2004 –doctorate in economics, 2008 – master’s in legal sciences, 2008 – graduation of the course of Internationales Wirtschaftsrecht, IHK Hamburg. Since 2009 – freelance counselor for managerial and legal issues (negotiations, concluding contracts, conflict management, mostly in construction and aviation industries). Since 2008 - invited professor at Higher Schools in France, Belgium, Finland, Germany and Great Britain. Since 2006 – invited professor at the International Department of the Saint Petersburg State University of Economics, teaching academic exchange students in English. Since 2004 - associate professor at the Saint Petersburg State University of Economics (former Saint Petersburg State University of Engineering and Economics) at the Faculty of Management. 2008 – 2014 – Vice-dean for International Affairs of the Faculty of Management at the Saint Petersburg State University of Economics. 2008-2012 - Head of the MBA program Management for SMEs at Higher School of Economics, Saint Petersburg. More than 50 publications, also in English and German 8 author courses in management and law for bachelor and master students.

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Publisher: IAFeS – International Association for eScience

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A 1010 Vienna
Austria

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