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Fakultät für Naturwissenschaften und Technik
Facoltà di Scienze e Tecnologie
Faculty of Science and Technology

10th ICA Rectors and Deans Forum 2020

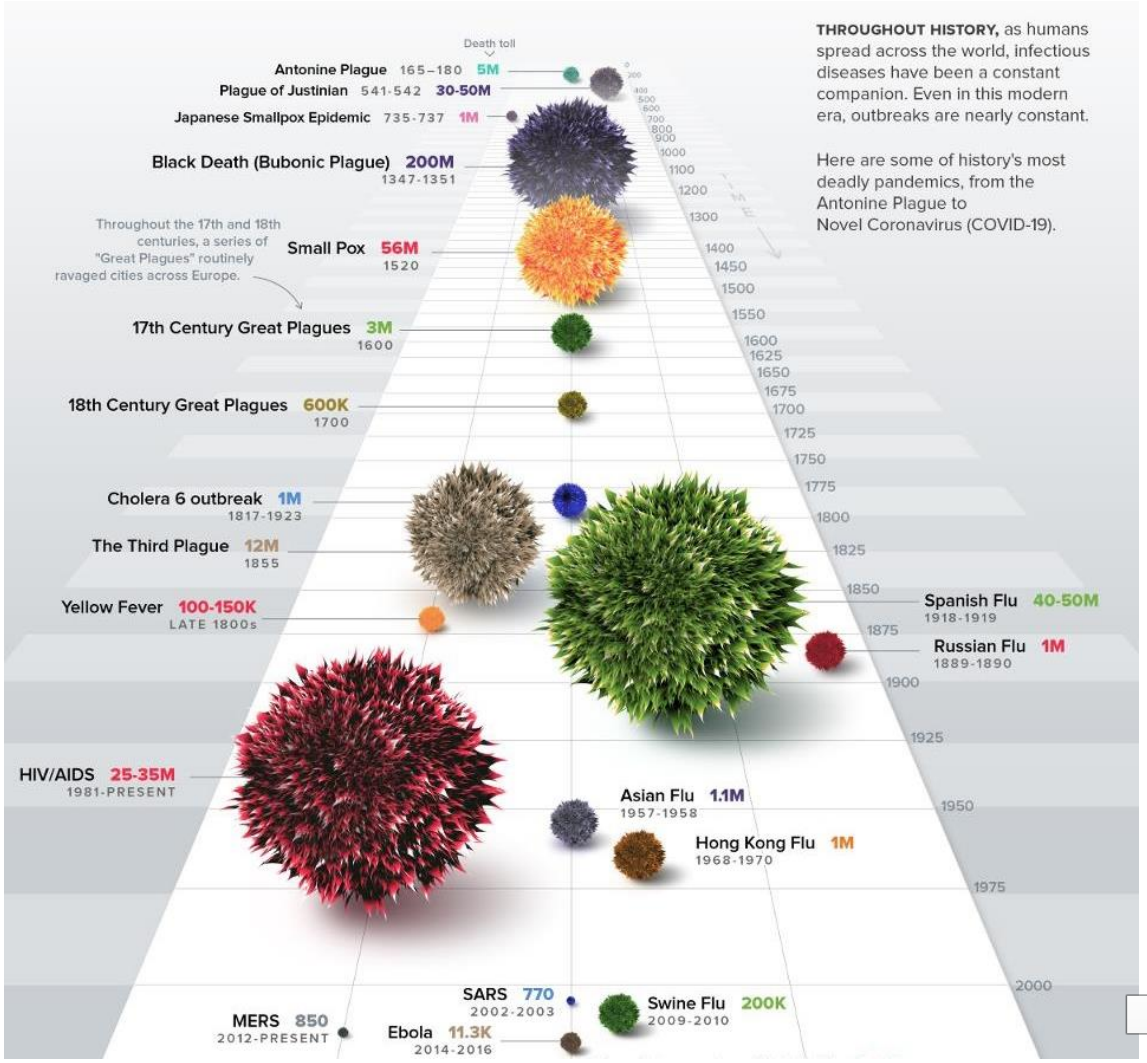
Will the disruption of Covid-19 irreversibly change teaching and learning in our traditional European universities?

3 challenging questions

- **What have universities learnt from the experience of COVID-19?**
- **Students value the on-campus experience – has COVID-19 provided an opportunity to enhance and review this?**
- **What have been the particular problems faced by our students during the lockdown?**

History of pandemics and epidemcs

… not if it would happen but rather when it would happen



Source: Virtual Capitalist

Impact of COVID-19 on societies

- **All caught off-guard** (Webster, 2020)
- To prevent the spreading of the virus: **social distancing rules** and **stay-at-home measures or lockdowns** (World Health Organization, 2020)
- **Severe disruptive consequences on** many sectors (Gössling et al., 2020; Fernandes, 2020)

In April 2020, schools and universities were closed in 191 countries and these measures affected over 1.5 billion learners (i.e., 90.2% of total enrol[illegible]d learners) (UNESCO, 2020)

Impact of COVID-19 on the higher education (HE) system

- **The "traditional" HE systems totally unprepared for the lockdown** (no plans for a massive shift to online teaching)

- **The HE systems reacted in a quick and effective way** with few or no additional resources (Strielkowski, 2020) **replacing all face-to-face teaching with online teaching** (Gonzalez et al., 2020; Study EU, 2020; Toquero, 2020)

- After the COVID-19 shockwave reaction, **profound reflections** are needed to define future HE strategies and adequate responses (Adda et al., 2020; Baldwin and Weder di Mauro 2020)

Challenges and open issues for online education

- **Need to reflect on the challenges and open issues, as well as on the potential benefits** of online teaching and the lessons learned **for "the new normal"** (Toquero, 2020)

- Six aspects worth considering:
  1. Pedagogical issues
  2. Organization of teaching activities
  3. E-learning software
  4. Broadband network infrastructure and hardware devices
  5. Diversity and inclusivity
  6. Other issues

1. Pedagogical issues for Online teaching

- **Some competences are not easily taught online** ("applying knowledge and understanding", "making judgements", and "communication skills"). More severe issues in technical-scientific programs (e.g., Life Sciences Universities, in which practical activities are particularly important)

- Some research activities were completely stopped and/or significantly affected by social distancing measures

  → How can the **link between research and teaching** be maintained?

- **COVID-19 lockdown** had a **significant positive effect of on students' performance** (Gonzalez et al., 2020)

2. Organization of teaching activities

- **Exploitation of different online teaching formats**: synchronous teaching, asynchronous teaching and online communities of practice (Bao, 2020)

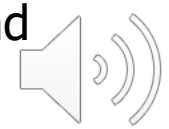
  → *Asynchronous activities have both advantages and disadvantages*

- **Restructuring of courses and study programmes** to make them more suitable for being offered online (Witze, 2020)

  → *Online teaching is more energy demanding for students*

- **Study programs and curricula update considering the increasing importance of some subjects and competencies** (e.g., Industry 4.0, digitalization, smart farming)

- **Strengthening of the student support services** (including medical and mental health services)



3. E-learning software

- **Video-conference software** for synchronous online teaching: Microsoft Teams, Cisco WebEx, Google Meet, Blackboard and Zoom

  → *The choice of the most suitable online platform needs to be done in a systematic way*

  → *It is preferable to adopt the same system platform for all courses of a University/institution*

- **Proctoring software:** Mercer Mettl, ProctorU, Examity, ProctorExam, Conduct Exam, and Proctorio

  → *Some universities are testing these systems for the first time during the COVID-19 emergency*

- **Other software:** learning management systems, learning content management systems, and **online forums**

  → *These systems would require attention by HE institutions in the "new" normal stage*

- Characteristics of the different **generations of students and teachers**

  → *"digital immigrants" (Baby Boomers, Generations X and Y) teaching digital natives (i.e., Generations Z and Alpha)* *(Prenksy, 2001)*

4. Broadband network infrastructure & hardware devices

- **Pre-requisites for online teaching:**

1. Availability of broadband network infrastructure

The European situation significantly improved in the last 5 years (from 78% households with internet connection in 2015 to 88% in 2019)

There are still some critical situations in certain countries (e.g., Bulgaria with 75%, Greece and Portugal with 78%) and regions/geographical areas (Eurostat, 2020)

2. Availability of hardware devices

The situation still varies significantly by country, with a leading position of Switzerland, US, Sweden and Denmark (Sawe, 2017)

Competition for technical resources (network connectivity, speed/quality of the broadband internet connection) **and the availability of hardware devices** within the household

Family budget availability!

5. Diversity and inclusivity

- **Online teaching is more inclusive** (working students, parent students, and students living in remote areas)

- But… **RISK** that the **economic inequalities decrease the accessibility to HE** (Murphy, 2020; Farhadi, 2019; Braga et al., 2013) ……**Economic recession**

  → *Might cause a significant reduction in the number of newly matriculated HE students*

- **Less international students → significant drop in the revenue of many US, Australian and UK Universities** (Witze, 2020)

  → Again, a big challenge for Universities is to remain inclusive

6. Other issues

- **Not only lessons…** but also communication, friendship, sport and community activities, collaboration skills, tolerance & respect, interpersonal skills, self-discipline, passion, supervision/mentoring, and rules (Bao, 2019)

  → **Student Experience**

- **Need to strengthen the medical services (including infrastructure)** with increased emphasis on monitoring and implementation of public health practices

- **Need to prioritize the academic, career counselling, and even the medical services and programs**

Challenging Question 1

- **What have universities learnt from the experience of COVID-19, will it change forever the teaching and learning strategies of our universities and of our students' approach to learning?**
  - **Pedagogical issues** → not all competencies can be taught online
  - **Organization of teaching activities** → not only synchronous teaching!
    → need to re-organize the programs!
  - **E-learning software** → broad offer. Need to carefully decide which to adopt
  - **Pre-requisites for online teaching** → broadband network infrastructure and hardware devices
  - **Diversity and inclusivity** → blended learning can help!
  - **Other issues** → student experience is crucial!

Challenging Question 2

- **Students value the on-campus experience but has the experience of managing COVID-19 provided an opportunity for enhancing the on-campus experience?**

  - **Blended learning** as a great opportunity! → working students, parent students
  - **Asynchronous online teaching** for theoretical "standard" contents
  - Need to prioritize the **academic and career counselling** services and programs
  - Need to **strengthen medical services** with increased emphasis on monitoring and implementation of public health

Challenging Question 3

- **What have been the particular problems faced by our students during the lockdown and how should we prepare to address these challenges in a changed learning environment through 2021 and in the future?**

  - **Internet connection** and **devices** → government investments
  - **360° student and campus experience**
  - **Laboratories and practical activities**
  - **Stress and mental issues** → support services

Conclusions

- COVID-19 has **irreversibly changed teaching and learning** in our traditional European universities → **No going back point!**

  → This change is not easy, but it will **be for the better**

- **Four stages of Universities** (Wissema, 2009; Strielkowski, 2020; Witze, 2020)
  - Medieval universities
  - Humboldt-type universities (i.e., research universities)
  - High-tech science and technology entrepreneurial universities
  - **"Online and digital universities" (University 4.0)**

Conclusions

- **"Traditional" universities should not become an alias of the current online (or telematic) universities**

They should be able to address the current challenges by innovating their missions (teaching, research and third mission), but without renouncing their identities and traditions

University as the place where the boundaries of knowledge are transferred to the new generations

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Thank you for your attention!

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