Teaching in times of pandemics: a threat or an opportunity?

Online panel discussion, November 16th, 2020

Prelude to the NESTET 2021 Conference
Panellists

Christian Stöhr
Associate Professor and Dean of Graduate Studies
Chalmers University of Technology
Department of Communication and Learning in Science (CLS)
Division of Engineering Education Research (EER)

Research areas:
• Both formal and informal aspects of learning, in particular technology-enhanced learning.
• Lifelong learning and public understanding of science.
• Massive Open Online Courses (MOOCs) and their pedagogy.
• Impact and relationship with society.
• Remote teaching.
• Flipped or blended learning models.

Website:
https://www.chalmers.se/en/staff/Pages/christian-stohr.aspx
Andreas Schleicher
Director for Education and Skills
Organisation for Economic Co-operation and Development (OECD)

- Initiated and oversees the Programme for International Student Assessment (PISA) and other international instruments.
- Worked for over 20 years with ministers and education leaders around the world to improve quality and equity in education.
- Past Director for Analysis at the International Association for Educational Achievement (IEA).
- Studied Physics in Germany.
- Received a degree in Mathematics and Statistics in Australia.
- Recipient of numerous honours and awards.
- Honorary Professor at the University of Heidelberg, Germany.
Teaching in times of pandemics – a threat or an opportunity

Christian Stöhr
Success factors during covid-19 crisis

- Institutions with clear strategies for online education
- Experience in online course delivery
- Support for teachers and students
- Educational technologists, course designers, media specialists
- Synchronous and asynchronous interaction
Problem areas

• Translating classroom teaching to online doesn’t work well
• Teachers and students who lack necessary skills and support
• Study skills
• Technical issues
• Home environment
• Social isolation
• Examination
What blend of traditional and digital methods and tools best support the learning outcomes of your course?
Creating safe spaces

- Community of trust
- Clear structure and rules
- Facilitation
- Socialisation
- Support

- Five stage model
  https://www.gillysalmon.com/five-stage-model.html
Synchronous interaction

- Simple socializing activities in the beginning and during the course
- Variety – mix input with discussion
- Focus on engagement (flipped classroom)
- Channels for communication – chat, polls, external tools (Mentimeter, Padlet etc)
- Breakout groups
- Breaks
Asynchronous interaction

- Do we really need so many Zoom meetings?
- Less stress
- Time to reflect
- Collaborative spaces
  - forums, storyboards, mindmaps
Video

• Recorded lectures
  - short
  - embedded questions (YouTube)
  - ask them to pause and reflect
  - lead into discussion

• Build relationships: welcome film, short weekly video summaries (vlog)

• Video feedback
  - screencasting tool
  - comment on students’ assignments

Photo by Ekaterina Bolovtsova from Pexels
Multi-modality and accessibility

- Different media
- Alternatives to video – text manuscript
- Subtitles
- Mobile-friendly
- More focus on low bandwidth asynchronous communication
- Ability to download for offline access
LMS – raise the bar!

- “Scroll of death”
- Hub for all course activity
- Multimodal arena: video, audio, sharing
- Active learning: forum, quiz, wiki etc.
- Integrated with media platform, Zoom, student web, admin systems
- Learning analytics

Photo by Randy Fath on Unsplash
Course design – getting the right blend

Production

Acquisition

Practice

Investigation

Collaboration

Discussion

Learning by

Constructing based on current understanding & practical application

Exploring, comparing, hypothesizing, synthesizing

Listening, reading, observing

Experimenting, applying theories in practice, followed by feedback

Articulating, challenging, responding

Discussing, practicing, producing towards a common goal


ABC Learning Design (University College London)
We’re all in this together

• Avalanche of guides to teaching/learning online
• Webinars
• Teacher support communities (Facebook groups)
• Sharing – open culture
• Creative solutions

Contact me: christian.stohr@chalmers.se
Thanks and credits to Alistair Creelman!
Schooling disrupted – schooling rethought

Teaching in times of pandemics

NESTed Andreas Schleicher
• **1.5bn** students locked out from school
• **Remote learning** has become the lifeline for learning but doesn’t address the social functions of schools
• Access, use and quality of **online resources** amplify inequality
• **Accreditation** at stake
• Huge needs for **just-in-time professional development**
• Re-prioritisation of curricula to embrace wider range of cognitive, social and emotional skills
• But lots of highly **innovative learning environments** emerging!
Present value of **lost GDP** due to Corona-induced learning loss (average 1/3 school year lost)

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Source: Hanushek and Woessmann (OECD, 2020)
...can distinguish between fact and opinion, based on implicit cues pertaining to the content or source of the information.
Innovation and alternative arrangements
What strategies will be used for school reopening? (Averages across 36 countries, May 2020)

Table 17

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Progressive return of students (e.g. by age cohorts)</td>
<td>80%</td>
</tr>
<tr>
<td>Classroom based teaching and learning in shifts</td>
<td>70%</td>
</tr>
<tr>
<td>Hybrid model of distance and classroom based teaching and learning</td>
<td>50%</td>
</tr>
<tr>
<td>Return to normal scheduling and student attendance</td>
<td>40%</td>
</tr>
<tr>
<td>Student and teacher returns contingent upon results of antibody testing</td>
<td>30%</td>
</tr>
<tr>
<td>Classroom teaching conducted in schools’ outdoor spaces</td>
<td>10%</td>
</tr>
</tbody>
</table>
Many online and distance learning and other innovative approaches such as AR, VR and AI were created, adapted and expanded.
Learning analytics

- Learning analytics helps educators personalise learning
  - in real time
  - as a reflective tool

- Data come from sensors, learning management systems and digital activities of learners
  - When should you shift to a new activity?
  - Are you losing the attention of learners?
  - How do you structure instruction time (lecture, small group, discussion, assessment, practice, etc.)?
  - Which students do you talk to and support the most?
Assessments and exams

New types of assessments through simulations and games
Adaptive assessments
Hands-on assessment in vocational settings
Increasing reliability of machine rating for essays
Predictive models may disrupt the
Instructional resources used (Averages across 36 countries, May 2020)

- **Existing online instructional resources**
- **Online instruction delivered by the same teachers of the students learning**
- **Instructional packages (textbooks, worksheets, printouts)**
- **Educational television**
- **Radio education**
- **Online instruction provided by private tutors**
An effective online learning support platform is available

The school has sufficient qualified technical assistant staff

Teachers are provided with incentives to integrate digital devices in their teaching

The number of digital devices for instruction is sufficient

Teachers have sufficient time to prepare lessons integrating digital devices

Teachers have the necessary technical and pedagogical skills to integrate digital devices in instruction

Effective professional resources for teachers to learn how to use digital devices are available

The availability of appropriate software is sufficient

Digital devices at the school are sufficiently powerful in terms of computing capacity

The school’s Internet bandwidth or speed is sufficient

The number of digital devices connected to the Internet is sufficient

The number of students in schools whose principal agreed with the following statements

OECD average

Percentage of students in schools whose principal agreed with the following statements

OECD average
Students’ online learning environment at home

- Advantaged schools
- Disadvantaged schools

A link to the Internet at home
A quiet place to study at home
A computer for school work at home

Fig V.9.1

OECD average
An effective online learning support platform is available

Percentage of students in schools whose principal agreed or strongly agreed that an effective online learning support platform is available
Teachers have the necessary technical and pedagogical skills to integrate digital devices in instruction

Percentage of students in schools whose principal agreed or strongly agreed that teachers have the necessary technical and pedagogical skills to integrate digital devices in instruction

- Average
- Disadvantaged schools
- Advantaged schools

Fig A9
Teachers do not rely heavily on distance learning.

Percentage of lower secondary teachers who participated in selected types of professional development (2018)

- Courses/seminars attended in person
- Online courses/seminars

Countries included in the graph:
- Lithuania
- Latvia
- Slovenia
- Australia
- Austria
- Estonia
- Netherlands
- Belgium Fl.
- New Zealand
- Turkey
- Russian Federation
- Iceland
- Czech Republic
- Israel
- United States
- Italy
- OECD average
- Korea
- Chinese Taipei
- England (UK)
- Shanghai (China)
- Sweden
- Norway
- Denmark
- Saudi Arabia
- Spain
- South Africa
- Finland
- Portugal
- CABA (Argentina)
- Brazil
- Belgium
- Slovak Republic
- Hungary
- Colombia
- Chile
- Mexico
- France
- Japan
- French Comm. (Belgium)

Note: The graph compares the percentage of teachers participating in different types of professional development across various countries.
How do teachers collaborate with their peers?

Deeper form of collaboration are less prevalent than simple exchanges and co-ordination between teachers.

61% of teachers regularly discuss the development of students with colleagues.

47% frequently exchange teaching materials.

But only 28% teach classes as a team at least once a month.

And only 9% routinely observe colleagues and give feedback.

This kind of deeper professional collaboration is associated with higher job satisfaction, self-efficacy, and the use of innovative practices.
The future likes to surprise us!
We must explore and learn from alternative futures

Some events are foreseeable and have a small impact...

- Climate change
- Economic shocks
- Natural disasters
- Data breaches
- Ageing

...others are unexpected and can be highly disruptive!

- Energy cuts
- Internet disrupted
- (cyber) war
- General Artificial Intelligence
- Pandemics

(OECD 2020), Back to the Future: Four OECD Scenarios for Schooling
Scenario 1: Schooling Extended

Participation in formal education continues to expand. International collaboration and technological advances support more individualised learning. The structures and processes of schooling remain.

Educational monopolies remain: Schools are key actors in socialisation, qualification, care and credentialing.

International collaboration and digital technologies power more personalised teaching and learning practices.

Distinct teacher corps remain, although with new divisions of tasks and greater economies of scale.
Scenario 2: Education Outsourced

Traditional schooling systems break down as society becomes more directly involved in educating its citizens. Learning takes place through more diverse, privatised and flexible arrangements, with digital technology a key driver.

Fragmentation of demand with self-reliant “clients” looking for flexible services.

Schooling systems as players in a wider (local, national, global) education market. Diversification of structures: multiple organisational forms available to individuals.

Diversity of instructional roles and teaching status operating within and outside of schools.
Schools remain, but diversity and experimentation have become the norm. Opening the “school walls” connects schools to their communities, favouring ever-changing forms of learning, civic engagement and social innovation.

Strong focus on local decisions; self-organising units in diverse partnerships. Schools as hubs function to organise multiple configurations of local-global resources.

Flexible schooling arrangements permit greater personalisation and community involvement.

Professional teachers as nodes of wider networks of flexible expertise.
Education takes place everywhere, anytime. Distinctions between formal and informal learning are no longer valid as society turns itself entirely to the power of the machine.

Traditional goals and functions of schooling are overwritten by technology. Dismantling of schooling as a social institution.

Open market of “prosumers” with a central role for communities of practice (local, national, global).

(Global) governance of data and digital technologies becomes key.
<table>
<thead>
<tr>
<th>OECD Scenarios for the Future of Schooling</th>
<th>Goals and functions</th>
<th>Organisation and structures</th>
<th>The teaching workforce</th>
<th>Governance and geopolitics</th>
<th>Challenges for public authorities</th>
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<tbody>
<tr>
<td><strong>Scenario 1</strong></td>
<td>Schools are key actors in socialisation, qualification, care and credentialing.</td>
<td>Educational monopolies retain all traditional functions of schooling systems.</td>
<td>Teachers in monopolies, with potential new economies of scale and division of tasks.</td>
<td>Strong role for traditional administration and emphasis on international collaboration.</td>
<td>Accommodating diversity and ensuring quality across a common system. Potential trade-off between consensus and innovation.</td>
</tr>
<tr>
<td><strong>Schooling extended</strong></td>
<td><strong>Education outsourced</strong></td>
<td>Fragmentation of demand with self-reliant “clients” looking for flexible services.</td>
<td>Diversification of structures: multiple organisational forms available to individuals.</td>
<td>Diversity of roles and status operating within and outside of schools.</td>
<td><strong>Schooling systems as players in a wider (local, national, global) education market.</strong> Supporting access and quality, fixing “market failures”. Competing with other providers and ensuring information flows.</td>
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<td><strong>Scenario 3</strong></td>
<td>Flexible schooling arrangements permit greater personalisation and community involvement.</td>
<td>Schools as hubs function to organise multiple configurations of local-global resources.</td>
<td>Professional teachers as nodes of wider networks of flexible expertise.</td>
<td>Strong focus on local decisions. Self-organising units in diverse partnerships.</td>
<td>Diverse interests and power dynamics; potential conflict between local and systemic goals. Large variation in local capacity.</td>
</tr>
<tr>
<td><strong>Schools as learning hubs</strong></td>
<td><strong>Learn-as-you-go</strong></td>
<td>Dismantling of schooling as a social institution.</td>
<td>Open market of “prosumers” with a central role for communities of practice (local, national, global).</td>
<td>(Global) governance of data and digital technologies becomes key.</td>
<td>Potential for high interventionism (state, corporate) impacts democratic control and individual rights. Risk of high social fragmentation.</td>
</tr>
</tbody>
</table>
Thank you

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– All publications
– Country notes
– Videos
– The complete micro-level database

Emails: Andreas.Schleicher@OECD.org and TALIS@oecd.org
Twitter: SchleicherOECD and #OECDTALIS
Wechat: AndreasSchleicher