Massive distance Education in formal schooling: barriers, challenges and potential

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- Taiwan has not been affected by COVID-19 a lot. The schools run regularly across different levels of schools with very few exceptions.
- National Taiwan Normal University had two confirmed cases in April, so we had about 2-3 weeks of totally online teaching.
- Based on my little experience and as the Co-Editor of *Computers & Education,* I share some ideas about massive distance education from the pandemic in light of more theoretical perspectives.
- I may not have many practical solutions for you, but provide you with some reflections for your future implementations.

Background

- Covid-19 pandemic
- High risk society
- Massive distance education across different regions and countries in the world
- Massive distance education, not MOOCs
- Educators, clearly, encounter the barriers and challenges
- We can also get some future potential of online learning because of the pandemic

Barriers for technology integration in education

- In 1999, Ertmer proposed a framework elaborating first-order barriers and second-order barriers for technology integration in education.
- The first-order barrier includes some external factors that may constrain integration, such as lack of adequate access, time, training and institutional support. These factors are extrinsic to teachers.

- The second-order barrier, which is more intrinsic to teachers, includes teachers' pedagogical beliefs, technology beliefs, and teachers' willingness to change; these are teachers' personal beliefs that may facilitate or hinder the implementation of technology integration in classrooms.

Source: Ertmer, P. A. (1999). Addressing first- and second-order barriers to change: Strategies for technology integration. *Educational Technology Research and Development,* 47(4), 47-61.

Three-order barrier for technology-integration instruction

- Tsai and Chai (2012) proposed the third-order barrier: the teachers' design thinking.
- Our argument as well as observation are: If a teacher has sufficient facility, rich digital instructional resources, positive attitudes or strong beliefs toward technology integration, he/she may not have successful implementation.

- As classroom context and students are quite dynamic, the teacher should rely on some design thinking to re-organise or create learning materials and activities, adapting to the instructional needs for different contexts or varying groups of learners.
- Source: Tsai, C.-C. & Chai, C. S. (2012). The “third”-order barrier for technology-integration instruction: Implications for teacher education. *Australasian Journal of Educational Technology*, 28(6), 1057-1060.

Re-examine the barriers for massive distance education

- First-order: the devices from home (for each child), the Internet connection from home
- Second-order: teachers' beliefs about the quality of distance education; government's policy about distance education; parents' beliefs and acceptance about distance education

- Third-order: design of teaching strategies.
- Traditionally technology-integration instruction is designed as a part of face-to-face teaching.
- Researchers also developed few platforms for totally online teaching. The systems/platforms are easily implemented if they could be integrated with traditional face-to-face instruction before the pandemic
- Teachers, even for some professors from OUHK, did not have rich experiences of totally online education or teaching

Third-order barrier

- The teachers and schools should use design thinking to meaningfully transform traditional teaching, technology-assisted instruction or blended learning to totally online teaching
- For different subject matters and learners, teachers should use design thinking to implement distance education properly and effectively.
- No one-size-fits-all model

2&1/2 (2.5) barrier?

- Classroom management for totally online teaching
- How to ensure each learner's engagement?
- The need of the theory of e-pedagogy
- E-pedagogy can address the 2.5th and third barriers.

Challenges

- Shifting blended learning to totally online teaching
- Various online platforms or the fear of monopolies of certain platforms
- The ways of expression through the online manner; the usage of different modalities to enrich teaching or course materials
- How to use good online tools developed before into such massive distance education setting

Challenges

- Timely solve students' technical problems
- Skill-based courses?
- Internship courses?
- How to use new technologies (such as automatic analysis) to detect students' engagement, boredom, frustration or success or failure of learning?

Challenges for learners: Are they ready?

- Expression in the online setting, including using various tools of verbal, written or visual representations
- Fluent communication by different modalities such as text, verbal, facial expression, social media, etc.
- Self-regulation
- Sourcing ability for online information

Sourcing ability

- “Sourcing, the act of looking first to the source of the document before reading the body of the text” (Wineburg, 1991, p. 77).
- “Sourcing is the process of establishing authorship and understanding the perspectives, goals, intents, and relationship of the author to the event” (Goldman & Scardamalia, 2013, p. 259).
- “To clarify some of the usage issues that occur across disciplines and media formats, we propose that sourcing be used to refer to the processes of identifying and representing metadata, including the author(s) or spokeperson(s) who created the information resource, their purpose in creating it, the intended audience, where and when it appeared initially (i.e., where it was published—YouTube, NY Times, etc.), as well as subsequent publication” (Goldman & Scardamalia, 2013, p.259).

- Sources: Wineburg, S. S. (1991). Historical problem solving: A study of the cognitive processes used in the evaluation of documentary and pictorial evidence. *Journal of Educational Psychology, 83*(1), 73–87.
- Goldman, S. R., & Scardamalia, M. (2013). Managing, understanding, applying, and creating knowledge in the information age: Next-generation challenges and opportunities. Cognition and Instruction, 31(2), 255-269.

Challenges for government

- The investment about the infrastructure of massive distance education
- Technical support in different levels (for learners, teachers, schools, and parents)
- Parents' concerns, opinions and time management
- The concern about the quality of online learning (but how does the government ensure the quality of traditional learning)

Potential

- Big data from massive distance education
- Precision education (personalized learning or individualized learning)
- To propose full ideas of e-pedagogy
- MOOCs for k-12 education
- For higher education, use existing MOOCs coupled with some course-based online learning activities.
- Skill-based or internship courses, immersive VR might be a potential means

- Thanks for your participation
- My website: www.cctsai.net