



## Higher Education 2030 and Beyond: Curriculum, **Assessment and Digital Technologies**

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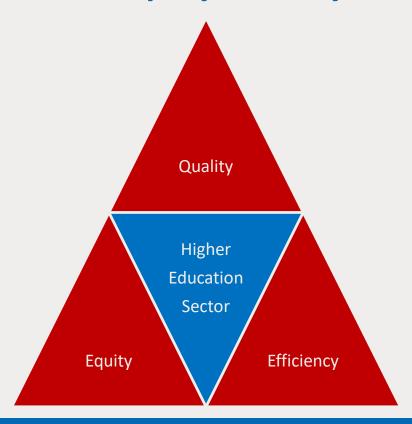
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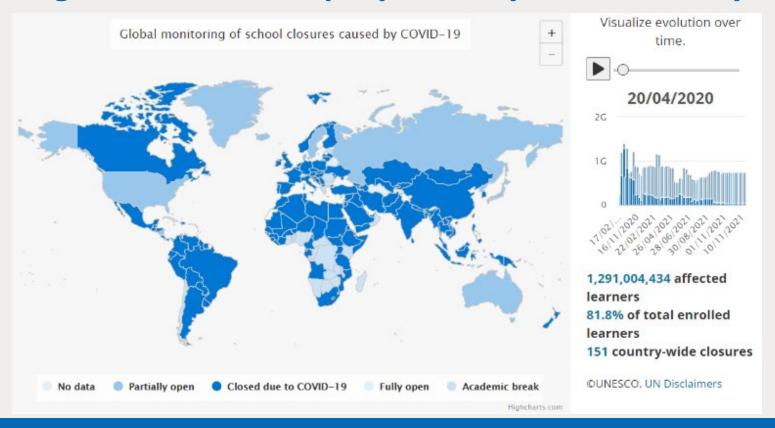
# 01

Digital Technologies Enabling
Higher Education Equity, Quality
and Efficiency

### **Higher Education Equity, Quality and Efficiency**



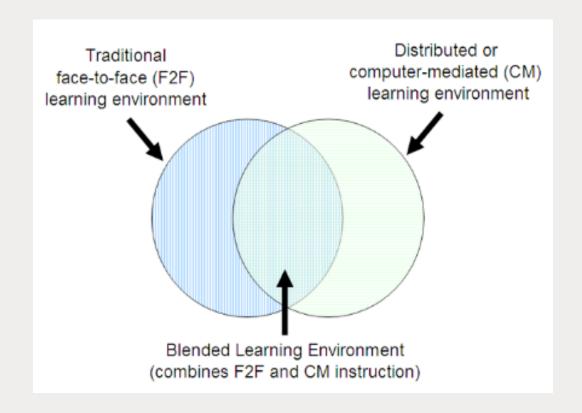
### **Higher Education Equity, Quality and Efficiency**



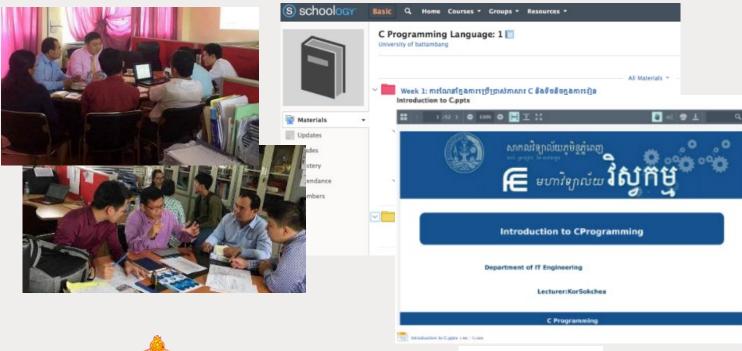
### Higher Education Equity, Quality and Efficiency

- Access to infrastructure, devices and resources
- Availability of online learning resources and strategies tailored to students from marginalised groups (special learning needs, remote areas, socio-economics limitations, gender and ethnicity)
- Quality of online teaching and learning
- Online learning support for students
- Modes of assessment
- Relevance of curriculum to changing demands of emerging industries and the future shape of the workforce post-COVID-19

#### **Technology-Enabled HE: Blended T&L**



### Technology-Enabled HE: Blended T&L











### **Technology-Enabled HE: Blended T&L**

- The online resources provided by the national "flagship" university ensured the quality of the content delivery across the three partner universities.
- Blended learning has provided more active and personalised learning among students.
- Teacher has played a pivotal role in making blended learning effective.
- The access of technology remains a hindering factor; the growing penetration of mobile technologies is changing such a situation but the speed still presents challenges for embracing blended learning.
- Teachers adoption of blended learning is constrained by the policies at the institutional/system level.

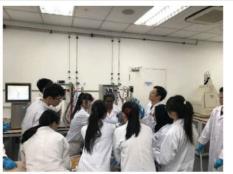








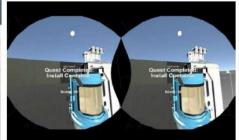
### **Technology-Enabled HE: Virtual Reality**





Chemical engineering students in lab session setting up and operating the single-use bioreactor.





### Technology-Enabled HE: VR/AR

In 2020, Mohawk College in Canada has implemented VR/AR technology in the delivery of learning modules for certain technician courses. This innovative approach was taken to accommodate students who, due to familial or financial circumstances, are unable to physically attend the campus.



Mohammed Awaiskhan Pathan wears an HTC Vive Virtual Reairly headset as he virtually works in a mock up of a refinery. Pathan is graduating in 2019 from the Electrical Engineering Technician/Power at Mohawk College's Stoney Creek Campus for Skilled Trades. (Photograph by Delia Rollins)

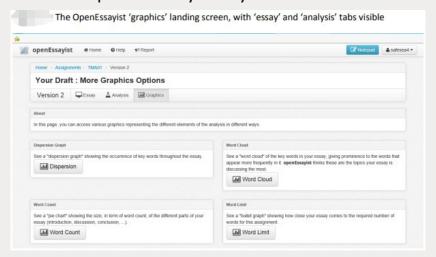
### **Technology-Enabled HE: Artificial Intelligence**

#### **Intelligent tutoring systems:**

Computer-based systems that leverage AI to provide personalized, adaptive instruction that mirrors the benefits of one-on-one tutoring, and their objective is to monitor and provide support to learners.

#### **Example 1**

The Open University (UK) – OpenEssayist is an ITS that is specifically designed to offer constructive feedback on preliminary essay drafts.

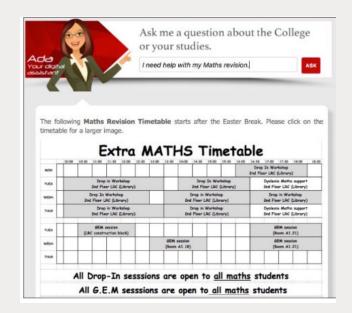


### **Technology-Enabled HE: Artificial Intelligence**

**Chatbots** provides a form of personalized learning and support by replying to students' enquiries and redirect them to the right content and resources.

#### **Example 2**

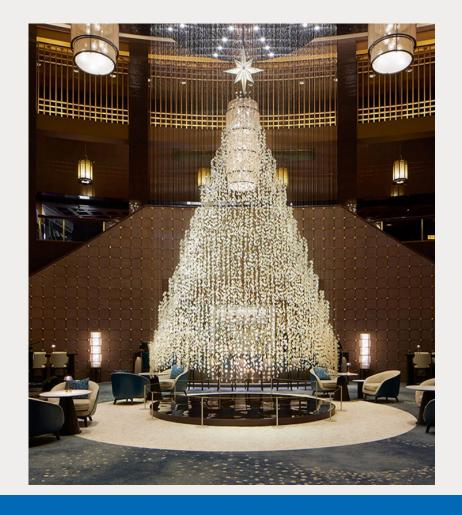
Bolton College, Ada is a campus chatbot assistant that is designed to cut staff workload by answering questions about the campus, timetabling and can support students by responding to day-to-day questions about the college and campus services. Learners can access the chatbot in College and also at home, via an app on their mobile phone.



# 02

**Rethinking AI in Higher Education:** 

**Emergence of ChatGPT** 



Date:

24 December 2022

Time:

1130hrs

Venue:

Intercontinental Hotel Lobby Lounge in Seoul, South Korea

#### In Attendance:

2 Professors of EdTech from Seoul National University

1 EdTech Specialist from World Bank

1 Director from Asian Development Bank Me

#### Why does education technology fail in the education sector?

ChatGPT Poe

mes fail to

Education technology, also known as EdTech, can sometimes fail to have a significant impact in the education sector due to a variety of reasons:

- Lack of Pedagogical Considerations: Effective education technology should be designed with pedagogy in mind. However, some EdTech solutions focus more on the technology itself rather than on how it can enhance teaching and learning. If the technology does not align with educational goals or fails to engage learners effectively, it may not deliver the desired outcomes.
- 2. Insufficient Teacher Training and Support: Teachers play a crucial role in integrating technology into the classroom. If they lack proper training and ongoing support to effectively use the technology, they may struggle to incorporate it into their teaching practices. Without adequate guidance, teachers might not fully understand the potential benefits of the technology or how to leverage it optimally.
- 3. Limited Access and Infrastructure: Education technology requires access to reliable internet connectivity, devices, and appropriate infrastructure. In many regions, especially in developing countries or underserved communities, there may be a lack of these resources, hindering the widespread adoption of EdTech solutions. Unequal access to technology can exacerbate educational inequalities.
- 4. Implementation Challenges: The successful integration of EdTech often requires careful planning and implementation strategies. Poor execution, resistance to change, or inadequate support from school administrators can hinder the effective use of technology in classrooms. Lack of coordination among stakeholders, such as teachers, administrators, and IT staff, can also impede the adoption and implementation process.
- 5. Lack of Personalization and Adaptability: Education technology should cater to diverse learning needs and preferences. If EdTech solutions are not flexible enough to accommodate individual learners' variations in pace, style, and interests, they may fail to provide personalized learning experiences. Onesize-fits-all approaches may not effectively address students' unique requirements.

- 6. Insufficient Evidence of Effectiveness: While many EdTech solutions claim to improve learning outcomes, the evidence base supporting their efficacy may be limited. The lack of rigorous research and evaluation of EdTech tools makes it difficult to gauge their true impact on student learning. Without convincing evidence, educators and institutions may be reluctant to invest in or adopt new technologies.
- 7. Cost and Sustainability: Implementing and maintaining EdTech solutions can be expensive, especially for cash-strapped educational institutions. The cost of purchasing devices, software licenses, and technical support services can strain budgets. Moreover, ensuring the long-term sustainability of EdTech initiatives may be challenging without adequate financial planning and commitment.
- 8. Ethical and Privacy Concerns: Education technology often involves the collection and analysis of student data. Privacy concerns arise when data security measures are insufficient, or when data is used for purposes beyond its intended scope. Concerns about the ethical implications of data usage can lead to resistance and hesitancy among educators, parents, and students.

It is important to note that while education technology faces challenges, it also holds immense potential to transform teaching and learning when designed and implemented thoughtfully, with consideration for pedagogy, teacher support, accessibility, personalization, evidence-based practices, and ethical considerations.









Talk to ChatGPT on Poe







# Why does EdTech fail in the education sector?

- Lack of pedagogical considerations
- Insufficient teacher training
- Limited access and infrastructure
- Implementation challenges
- Lack of personalisation and adaptability
- 6. Insufficient evidence of effectiveness



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Procedia CIRP 00 (2022) 000-000



33rd CIRP Design Conference

Reconceptualizing ChatGPT and generative AI as a student-driven innovation in higher education

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Dai, Y., Liu, A., & Lim, C.P. (2023). Reconceptualizing ChatGPT and generative AI as a student-driven innovation in higher education. *Procedia CIRP*.

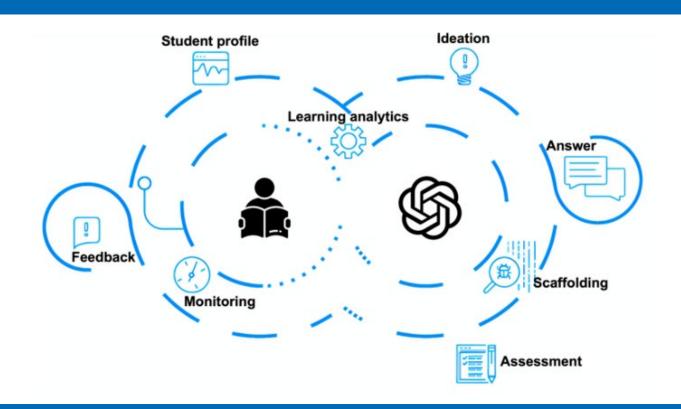
School of Machanical and Manufacturing Engineering, University of New South Wales, Sydney, Australia
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- ChatGPT is an example of generative AI designed to generate new content rather than analyze or manipulate existing data.
- ChatGPT has a large and steeply increasing user base since its launch in December 2022 with 100 mil users in the first two months and 25 mil daily visits.
- The user interface of ChatGPT is a simple dialogue format that affords conversations initiated and controlled by users.

#### Question

As ChatGPT empowers students, do students have the capacity to carry out and manage the inquiries? What competencies are needed from students as they plan, organize and personalize their learning process?

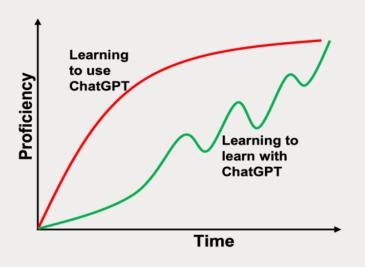


- Learning analytics for personalized learning
- Real-time assistance for customized scaffolding and feedback (learning partner)
- Ideation facilitator
- Enhancing education access and resource for social justice

#### Question

How can we as teachers/professors design a learning environment to take up the affordances of ChatGPT as an enabler for higher education equity, quality and efficiency?

- Shifting from learning via ChatGPT to learning with ChatGPT
- Learning to learn with ChatGPT



#### Question

Do students and teachers/professors know how to learn? How do we scaffold lifelong learning?

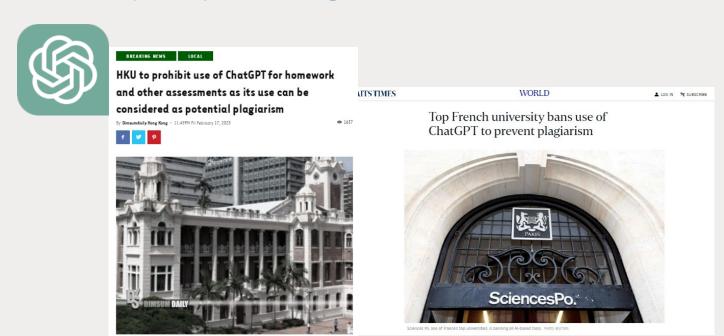
# 03

**Impacts on Higher Education Curriculum and Assessment** 

### (Gen)AI in Higher Education T&L

- Adaptive: As a component of intelligent tutoring system, gen-Al provides tailored or adaptive assessments and feedback based on student performance.
- 2. Automatic: Al technologies like ChatGPT can provide just-in-time, almost instantaneous and continuous feedback assessment and evaluation automatically. Rather than stop-and-test, Gen-Al can be built into learning activities for an ongoing analysis of student achievement.
- **3.** Advanced: All can introduce more sophisticated assessment strategies, such as analyzing student responses in natural language, and assessing problem-solving strategies.

### (Gen)AI in Higher Education T&L



#### Can you please explain why some universities ban ChatGPT?

#### M ChatGPT Poe

As an Al language model, I don't have access to real-time information or specific details about recent events. However, as of my last knowledge update in September 2021, there were no widespread bans on using AI language models like ChatGPT in universities. However, it's possible that individual universities or academic institutions may have implemented restrictions or guidelines on the use of AI models for specific reasons. Some potential reasons why a university might consider banning or limiting the use of ChatGPT or similar models could include:

- 1. Academic integrity: Universities have strict policies regarding plagiarism and maintaining academic integrity. If students were using AI models to generate essays or assignments without proper citation or acknowledgment, it could be seen as a violation of these policies.
- 2. Unequal access to resources: Al language models like ChatGPT require substantial computational resources to run effectively. If some students or departments have more access to these resources than others, it could create an imbalance in the educational experience. Universities may implement restrictions to ensure fair access to resources.
- 3. Ethical concerns: Al models are trained on large datasets. which can include biased or unethical content. If universities have concerns about the ethical implications of using AI models without proper oversight or regulation, they may choose to restrict their use
- 4. Misuse and abuse: Al models can be used for malicious purposes, such as creating fake news, spreading misinformation, or engaging in harmful activities. Universities may ban or limit the use of AI models to prevent such misuse and ensure responsible AI usage.
- 5. Lack of human interaction: Some educators and institutions may argue that relying too heavily on AI models for educational purposes could diminish the importance of human interaction, personalized feedback, and critical thinking skills







#### Why do some universities ban ChatGPT?

- 1. Academic integrity
- 2. Unequal access to resources
- 3. Ethical concerns

- 4. Misuse and abuse
- 5. Lack of human interaction

# Rethinking T&L and Assessment Practices



#### **Guidelines for Specifics Assessments & Instructional Resources:**

- Lecture Enhancement: You can utilize Al-powered tools to create visually engaging
  presentations, such as interactive graphs, visualizations, or simulations. You can also use Albased language models to generate real-time examples, case studies, or scenarios to
  enhance lecture delivery and illustrate concepts effectively.
- 2. Assessments and Exams: While AI tools can quickly generate a large number of questions, it's important to review and modify these questions as needed and to ensure the level of learning being assessed is appropriate. AI can also be used to create simulations or interactive assignments that require students to apply what they have learned to solve real-world problems. These can be generated by instructors for formative or summative assessments or by students for self-assessment.
- 3. **Plagiarism Detection:** Exercise caution while utilizing AI plagiarism detection tools, as their accuracy is not guaranteed and there may be instances where they fail to detect plagiarism. Additionally, be aware that individuals could potentially exploit AI technologies to circumvent detection software. Vigilance and mindful use of these tools is recommended.
- 4. Student Support: You can integrate AI chatbots or virtual assistants to provide timely and automated responses to common student queries, freeing up instructor time. You can also use AI systems to suggest supplementary resources or personalized study plans based on individual student performance.
- 5. Critical Thinking: Provide guidance to help students identify biases and misinformation associated with Al. Develop activities that prompt students to participate in iterative, inquirybased thinking while using Al tools.
- 6. Student Correspondence. Instructors should consider incorporating language into their emails or email signatures to disclose the use of Al-generated text when communicating with students. For example, "The content of this email might include Al-generated responses; however, they have been examined and confirmed by the sender."

### **Transforming Curriculum**

- The University of Florida launched a comprehensive AI across the curriculum initiative in the Artificial Intelligence Academic Initiative Center, known as AI2 (AI squared), to guide the university's re-accreditation process and its comprehensive five-year work plan, specifically focusing on integrating AI into the curriculum.
- **University of Auckland**, also initiated the curriculum transformation framework in facing of the evolving landscape of Gen-AI.

### **Research Supervision**

Dai, Y., Lai, S.C., Liu, A., & Lim, C.P. (In Press). ChatGPT and its impact on research supervision: Insights from Australian postgraduate research students. *The Australasian Journal of Educational Technology*.

#### **Research Supervision**

- Accelerated research progress, enhanced research quality, improved scholarly development and professional skills, enhanced critical thinking, increased student confidence and autonomy, and a deeper supervisory relationship.
- Shift in the roles and responsibilities of supervisors and students: the former provides strategic direction and high-level guidance, while the latter transits from apprentices to autonomous researchers due to the independence fostered by ChatGPT.

### **Research Supervision**

- Strike a balance between utilizing AI for productivity and preserving the integral human endeavours of research, which includes iterative ideation, investigation, and communication of innovative knowledge.
- Develop robust ethical guidelines and safeguards to ensure the responsible and fair use of these powerful tools.

04

Institutions' Responses to Gen-Al

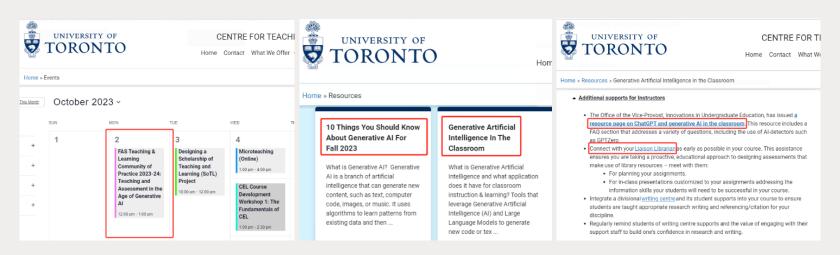
#### **University of Toronto - Policy**

At the University of Toronto, we remain committed to providing students with transformative learning experiences and to supporting instructors as they adapt their pedagogy in response to this emerging technology.

While many generative AI systems have recently become available, ChatGPT is currently the most prominent, garnering worldwide media attention. This is an AI tool that uses predictive technology to create or revise written products of all kinds, including essays, computer code, lesson plans, poems, reports, and letters. The products that the tool creates are generally of good quality, although they can have inaccuracies. We encourage you to try the system to test its capabilities and limitations.

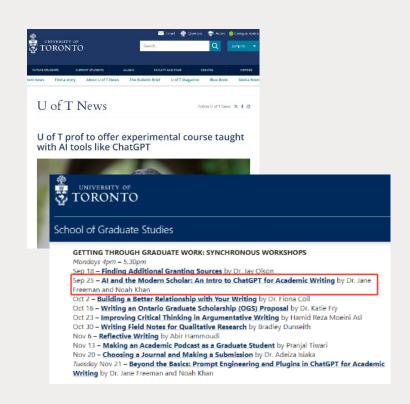
#### **University of Toronto - Capacity Building for Staff**

- 1. Workshops
- 2. Guidelines: related to academic integrity and the use of AI generative tools
- 3. Recourses recommendation: webinar recording videos, readings
- 4. Manpower support: Services offered by the library to support teaching and research



#### **University of Toronto - Student Support**

- Experimental course: The course will utilize cutting-edge technologies such as generative Al and large language models
- Workshops: to demystify ChatGPT and explores some of its potential uses in academic writing
- 3. Guidelines: related to academic integrity and the use of AI generative tools
- 4. Recourses recommendation: webinar recording videos, readings
- Manpower support: speak with a librarian or consult the course instructor



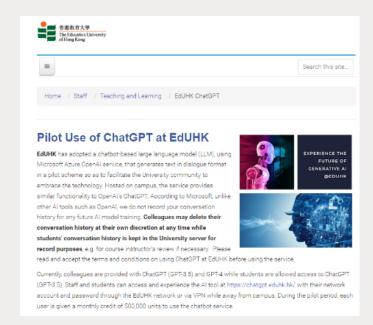
#### **Education University of Hong Kong - Policy**

The Education University of Hong Kong (EdUHK) released a set of pedagogical approaches on the use of Artificial Intelligence (AI)-enabled generative tools, encouraging faculty to enhance learning and teaching quality through the use of the new technology in May 2023.

Considering that these tools can be instrumental in nurturing independent and innovative thinking, the University strives to guide students to use them with a positive attitude. Students may make use of AI-enabled generative tools in their coursework, as long as they make a declaration and articulate their reflections during the learning process.

#### **EdUHK - Capacity Building of Staff**

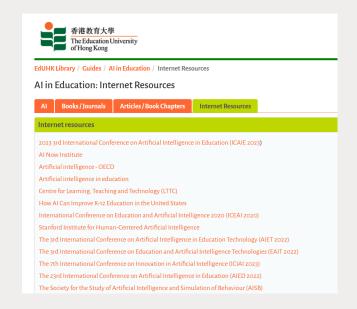
- Guidelines and sharing session of guidelines for colleagues, with proposed pedagogical approaches on AI-tools
- 2. Pilot use of ChatGPT-4 for staff
- 3. Open resources online, readings and webinar recording videos



#### **EdUHK - Student Support**

- 1. Workshops and seminars related to ChatGPT
- 2. Pilot use of ChatGPT-3.5 for students
- 3. Recourses recommendation





# 05

Holistic Approach Towards

Higher Education Innovations
and Digital Technologies

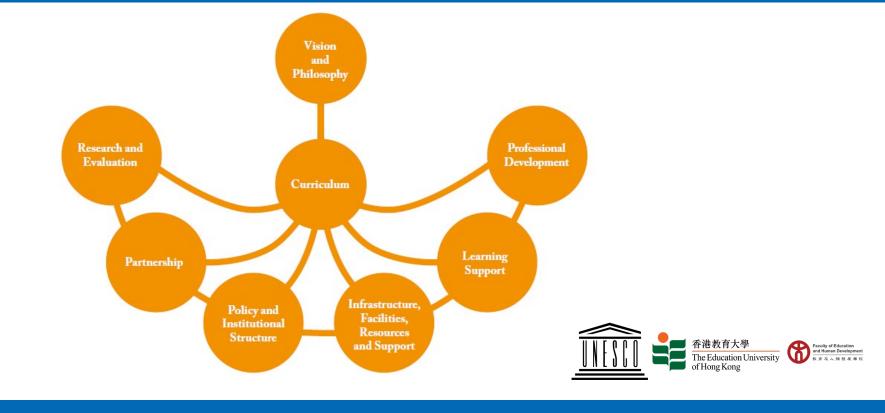
### **Issues and Challenges**

- Lack of scale: Isolated promising practices
- Lack of capacity of teachers to engage in teaching and learning innovations
- Lack of capacity of students to learn to learn with technologies
- Lack of institutional understanding and support
- Lack of partnerships and collaborations

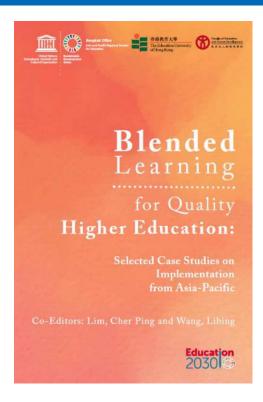
### **Issues and Challenges**

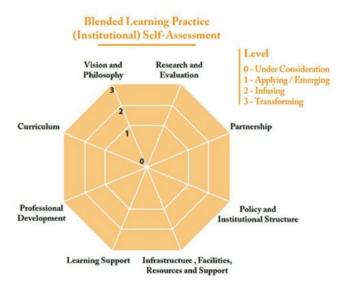
- Introducing an innovation requires simultaneous innovations in pedagogy, curriculum, assessment, and institutional organization.
- The changes caused by the interactions between digital technologies and the institution system not only determine how technologies are adopted, but also affect the operation of the institutional system.
- Therefore, the dynamic co-adaptation and co-evolution of students, teachers, institutional leaders, and other stakeholders with technologies and the system determines whether the opportunities of technologies for engaging students can be realized in higher education.

### **Holistic Approach Towards HE Innovations**



### **Holistic Approach Towards HE Innovations**

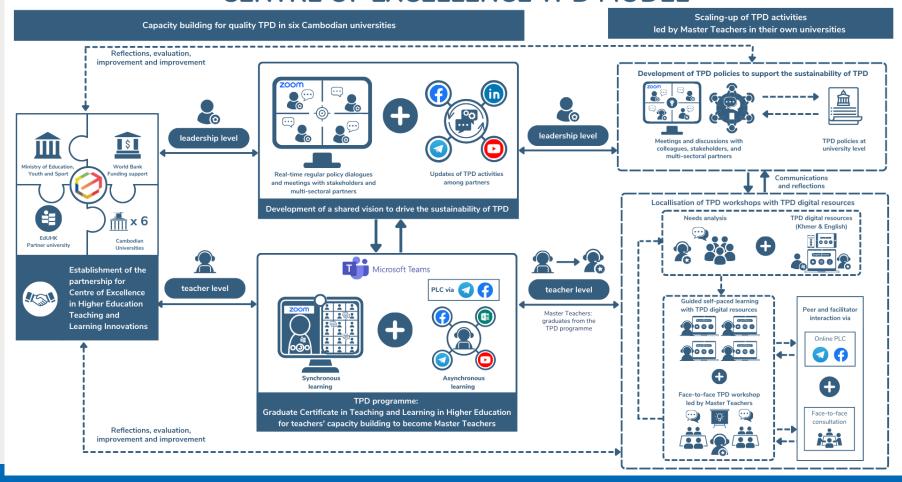








#### CENTRE OF EXCELLENCE TPD MODEL





#### Order Journal

Journal Metrics

CiteScore: 5.79 ①

More about CiteScore

Impact Factor: 4.238 (i)

5-Year Impact Factor: 5.130 🛈

Source Normalized Impact per Paper

(SNIP): 3.914 <sup>(i)</sup>

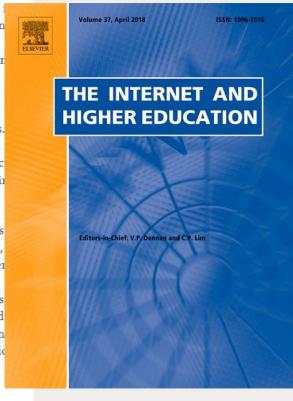
SCImago Journal Rank (SJR): 2.825

(i

The Internet and Higher Education, a is quarterly journal devoted to addressing contemporary issues and future developments related to online learning, teaching, and administration on the Internet in post-secondary settings. It is peer-reviewed journal intended to be a vehicle for scholarly presentation and dissemination of contributions, theoretical and applied, significantly addressing innovative deployments of Internet technology in instruction ar reporting on research to demonstrate the effects of the Internet and information technology (IT) on instruction in various contexts in higher education. The journal is international and interdisciplinary, inviting contributions from across the globe and from various academic disciplines, journal provides a venue for theory papers, research studies, critical essays, editorials, reviews, case studies, and social commentary contributions. Specissues are often devoted to specific topic areas with guest editors assisting in editorial process.

The scope of the journal is broad in terms of the range of issues and trends be addressed, for example, innovations or best practices in online teaching, learning, management, and administration. Other issues may include: Inter technology design and use; instructional models in online courses; online course development and instructional design; interaction in online courses collaborative learning; usability and evaluation of online environments and portals; online communities of practice; institutional policies, standards an assessment; accessibility standards in online instruction; internationalization and cultural aspects of online classrooms; and issues and trends in synchronous, asynchronous, and hybrid online learning.

Hide full Aims & Scope





# Thank You!

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