

Teacher Education for the Fourth Industrial Revolution

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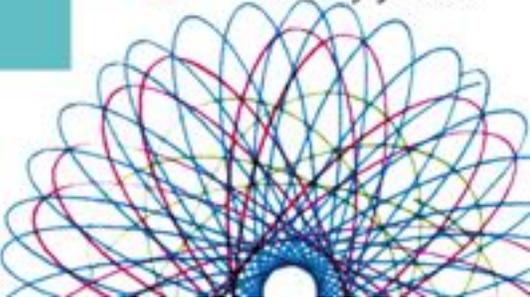
**SEAMEO-TSUKUBA
Symposium VII**



University of Tsukuba

**Reform and Development in Teacher
Education for the Digital Economy**

10th ²⁰¹⁹ **February** University of Tsukuba,
Tokyo Campus



VIETNAM NATIONAL UNIVERSITY, HANOI
VNU UNIVERSITY OF EDUCATION



9:15 AM

SciApp

SCIENCE ROOM 04

BRIDGE THE GAP

Mr. Rubio

Monday, May 14

98 Grade Science

9:11 am

Question of the Day

Strongest type of bridge?



Assignment

Test

Calendar

Class Resources

Announcements

Class Dates

The Classroom of
the Future



Learning Through Three Dimensional Images

Artificial Intelligence



Robotics

Neuro-Technological



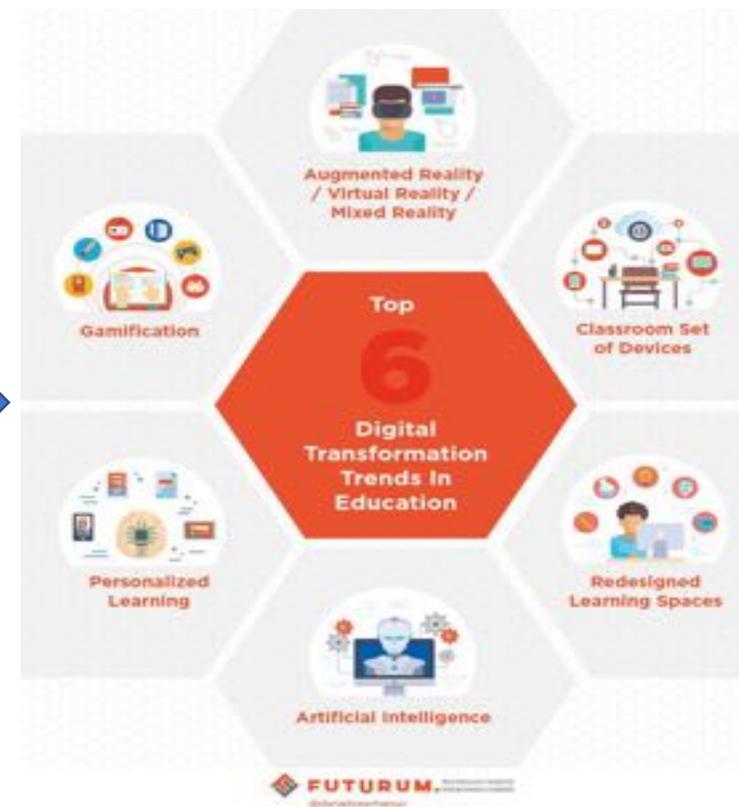
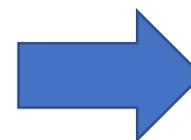
Self Driving Cars



Automation



Mobile Supercomputing



Contexts of Change in the 21st Century (Lee, 2018)

There is an emergence of Industrial Revolution 4.0 which is exemplified by “artificial intelligence, robotics, the Internet of Things, autonomous vehicles, 3D printing, quantum computing and nanotechnology”.

High-speed mobile internet; artificial intelligence; widespread adoption of big data analytics; and cloud technology” would become drivers of change and there will be a change of employment types and a call for reskilling of labor from 2018 to 2020.

Contexts of Change in the 21st Century

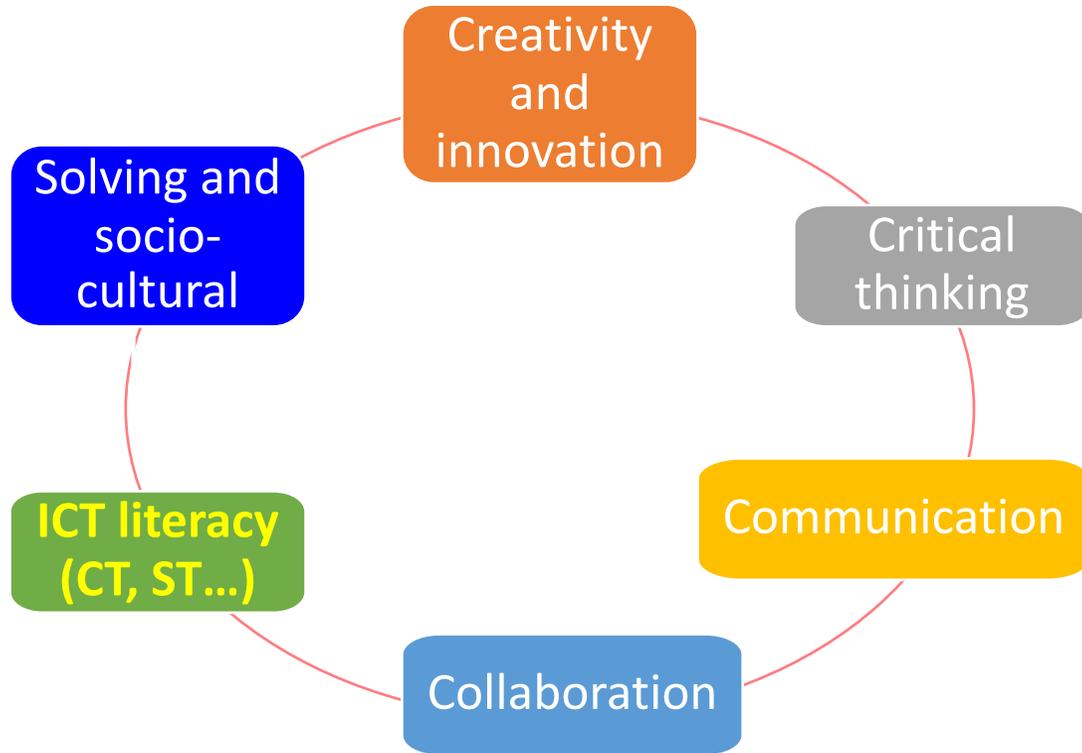
- By 2030, there may be **eight permutations, or scenarios**, for the future of work: Workforce Autarkies, Mass Movement, Robot Replacement, Polarized World, Empowered Entrepreneurs, Skilled Flows, Productive Locals and Agile Adapters.
- World Economic Forum (2018) urged for a **basic education and education systems reforms** that prepare students with both digital and soft, employability skills including communication, creativity, collaboration, critical thinking and problem-solving.



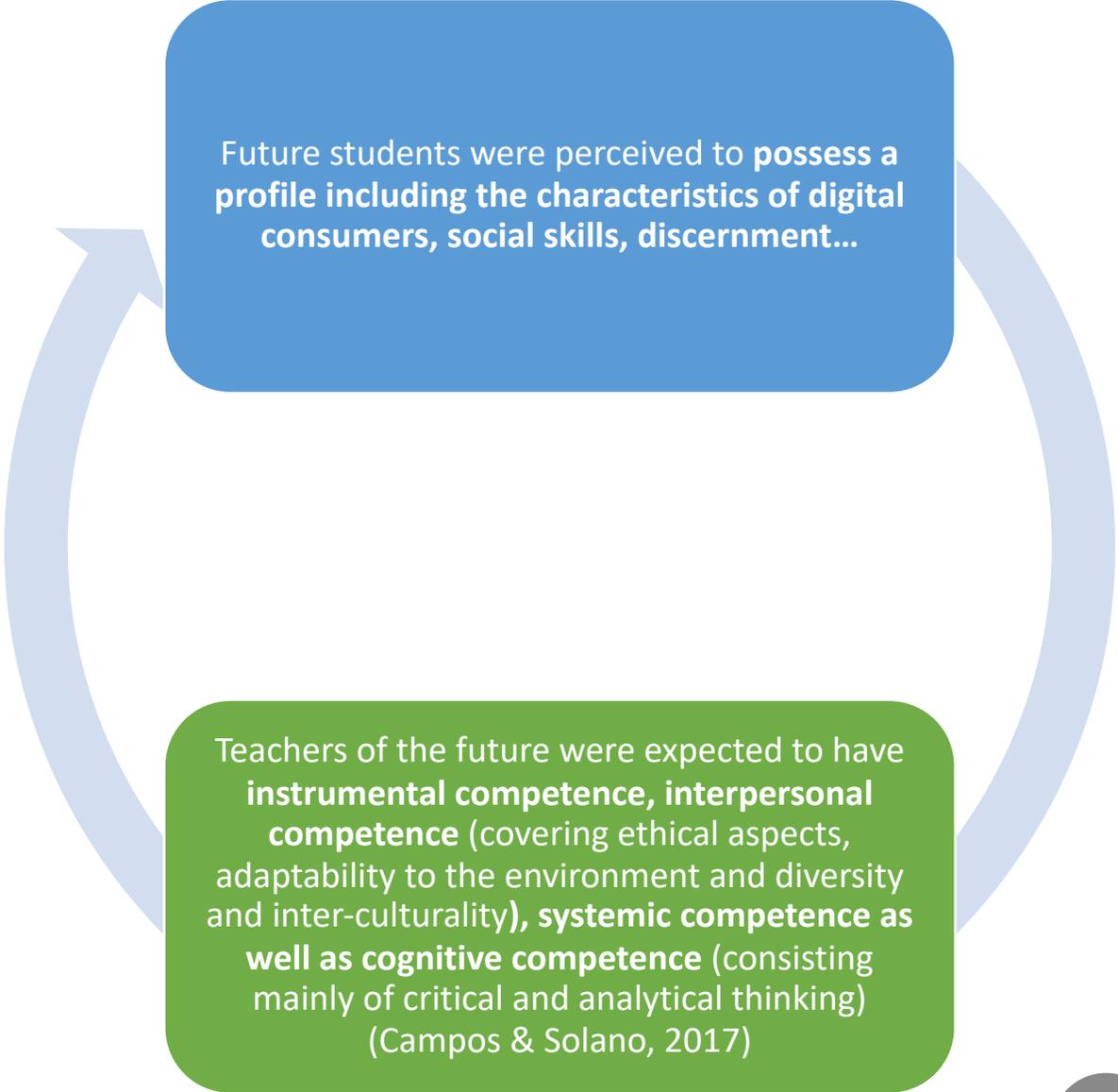
"2 Billion Jobs
will disappear by 2030"

Thomas Frey, Futurist at TEDxRe

Commonly identified 21st Century Skills



Contexts of Change in the 21st Century (Lee, 2018)



Future students were perceived to **possess a profile including the characteristics of digital consumers, social skills, discernment...**

Teachers of the future were expected to have **instrumental competence, interpersonal competence** (covering ethical aspects, adaptability to the environment and diversity and inter-culturality), **systemic competence as well as cognitive competence** (consisting mainly of critical and analytical thinking)
(Campos & Solano, 2017)

Different and possible innovative media are used in the future classes by a today teacher (Abdelrazeq et al, 2016)



Contexts of Change in the 21st Century

It is imperative for education to adopt **blended learning approaches** as well as to enhance the professional role of teachers to cope with the rapidly changing contexts.

Future-looking curricula should **place more priority on linguistic, mathematical and technological literacies.**

Diversified Pedagogies

Teachers need to be cultivated to **change roles and adjust teaching strategies according to contexts.**

Pre-service and in-service teacher education could consider **embedding the opportunities for teachers to adopt these diversified strategies for achieving better students' outcomes.**



STEM



Diversified Pedagogies in STEM (or STEAM)

- The use of robotics in teaching and teacher education, especially in connection with Science, Technology, Engineering and Mathematics **(STEM) education has gained popularity and significance.**
- The findings of an US study showed that while STEM teaching using robots was conducive to stimulate elementary pre-service teachers' affective and emotional engagement (e.g., interest, enjoyment) in STEM, **more may be required to explore and enhance how teachers' behavioral and cognitive engagement** (Kim et al., 2015, p.26).

Revitalizing teacher education

- To reform teacher education curriculum into competence's based approach
- To innovate pedagogy in delivering curriculum
- To pay more attention to practicum during training
- To integrated knowledge
- To standardize teacher standards within ASEAN countries
- To use ICT and modern equipment in pre-service and in-service teacher training
- To enhance teacher profession in society
- To enhance collaboration within ASEAN countries and beyond

Society 4.0

Education 4.0?

Smart school?





Concluding remark

While the future development of our world and society is still dynamic and unpredictable, teacher education programs may need to be reframed from a futuristic and learner-centered paradigm that not only tap the potentials of e-learning and AI elements but also **render enriched learning experiences for our teachers' self-regulated and peer learning that forges collaborative partnership with different agencies and professionals both locally and globally.**