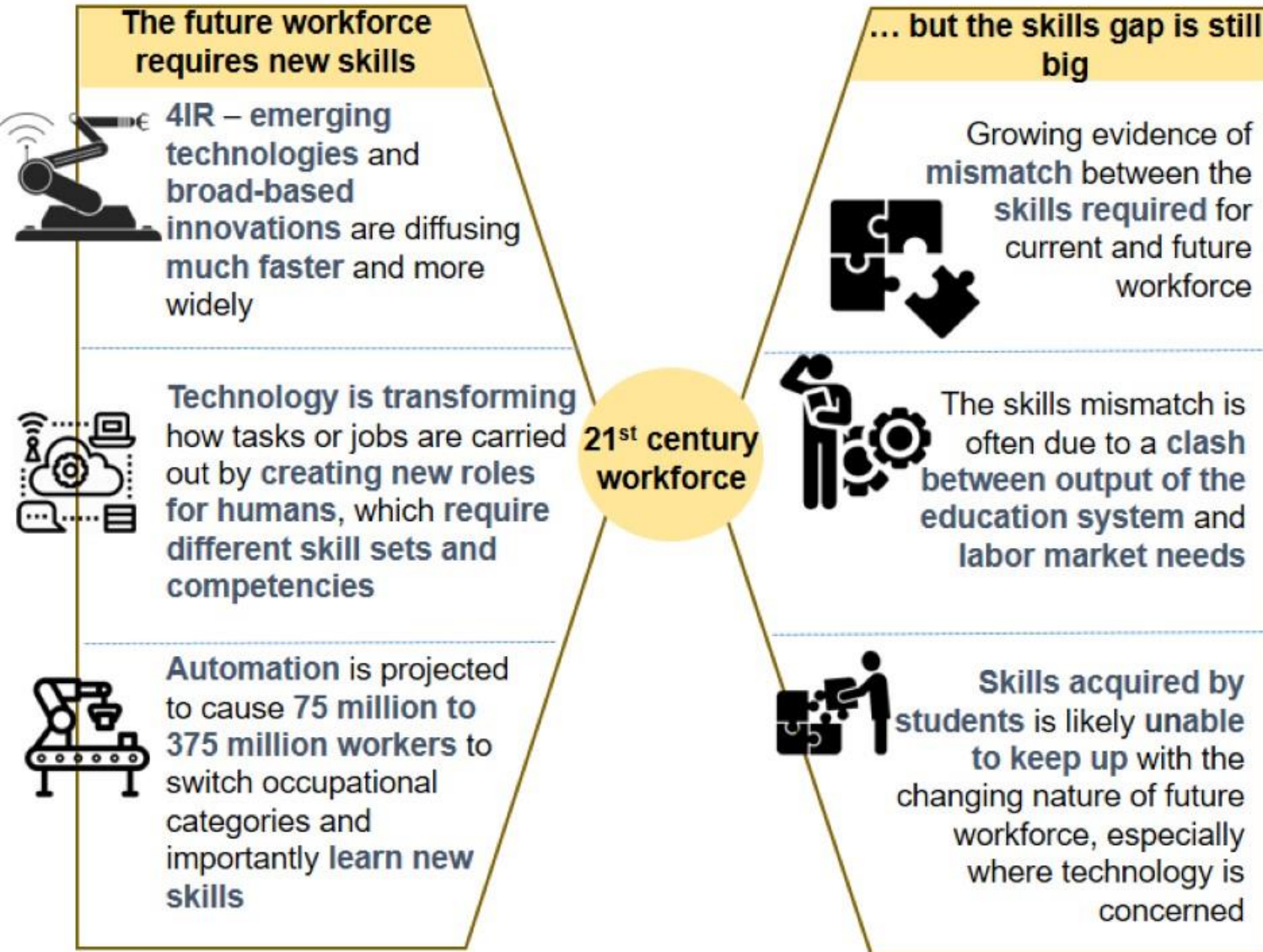# IMPROVING QUALITY OF EDUCATION: IMPORTANCE OF KEY SKILLS AND COMPETENCIES IN THE DIGITAL AGE

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Ministry of Education, Malaysia

Emergent skills and competencies in the 21st century workforce

The future workforce requires new skills

4IR – emerging technologies and **broad-based innovations** are diffusing **much faster** and more widely

Technology is transforming how tasks or jobs are carried out by **creating new roles for humans**, which **require different skill sets and competencies**

Automation is projected to cause **75 million to 375 million workers** to switch occupational categories and importantly **learn new skills**

21st century workforce

… but the skills gap is still big

Growing evidence of **mismatch** between the **skills required** for current and future workforce

The skills mismatch is often due to a **clash between output of the education system** and **labor market needs**

Skills acquired by students is likely **unable to keep up** with the changing nature of future workforce, especially where technology is concerned

SKILLS CATEGORY	Hours worked in 2016 (billion)	Changed in hours spent by 2030 (%)
Physical and manual	203	14%
Basic cognitive	115	15%
Higher cognitive	140	8%
Social & emotional	119	24%
Technological	73	55%

Synthesising key skills and competencies across various frameworks

Trilling & Fadel (2009)	Soland, Hamilton, & Stecher (2013)	OECD Learning Framework (OECD, 2018)	Scott (2015)	ISTE
1 Learning and Innovation skills • Critical thinking and problem solving • Communication and collaboration • Creativity and innovation **2 Information, Media and Technology Skills** • Information literacy skills • Media literacy skills • ICT literacy skills **3 Life and career skills** • Flexibility and adaptability • Initiative and self-direction • Social and cross-cultural interaction • Productivity & accountability • Leadership & responsibility	**1 Cognitive competencies** • Academic mastery • Critical thinking • Creativity **2 Interpersonal competencies** • Communication and collaboration • Leadership • Global awareness **3 Intrapersonal competencies** • Growth mindset • Learning to learn • Intrinsic motivation • Grit	**1 Knowledge** • Disciplinary • Interdisciplinary • Epistemic • Procedural **2 Skills** • Cognitive & meta cognitive • Social & emotional • Physical & practical **3 Attitudes and values** • Personal • Local • Societal • Global **4 Transformative competencies** • Creating new value • Reconciling tensions and dilemmas • Taking responsibility	**1 Learning to know** • Mastery of core subjects **2 Learning to do** • Critical thinking • Problem solving • Communication and collaboration • Creativity and innovation • ICT and media literacy **3 Learning to be** • Social & cross cultural skills • Personal responsibility, self-regulation and initiative • Sense making & metacognitive skills • Entrepreneurial skills • Learning to learn & habits of lifelong learning **4 Learning to live together** • Seek and value diversity • Teamwork and interconnectedness • Civic and digital citizenship • Global competence • Intercultural competence	**1 Empowered Learner** • Leverage technology in choosing, achieving and demonstrating competency in their learning goals **2 Innovative Designer** • Use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions **3 Computational Thinker** • Develop and employ strategies for understanding and solving problems by leveraging the power of technology **4 Digital citizen** • Recognize the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world. **5 Creative Communicator** • Communicate articulately and express oneself creatively using platforms, formats and digital media appropriately. **6 Global Collaborator** • Use digital tools to broaden perspectives and enrich learning by collaborating with others and working effectively in teams, locally and globally.

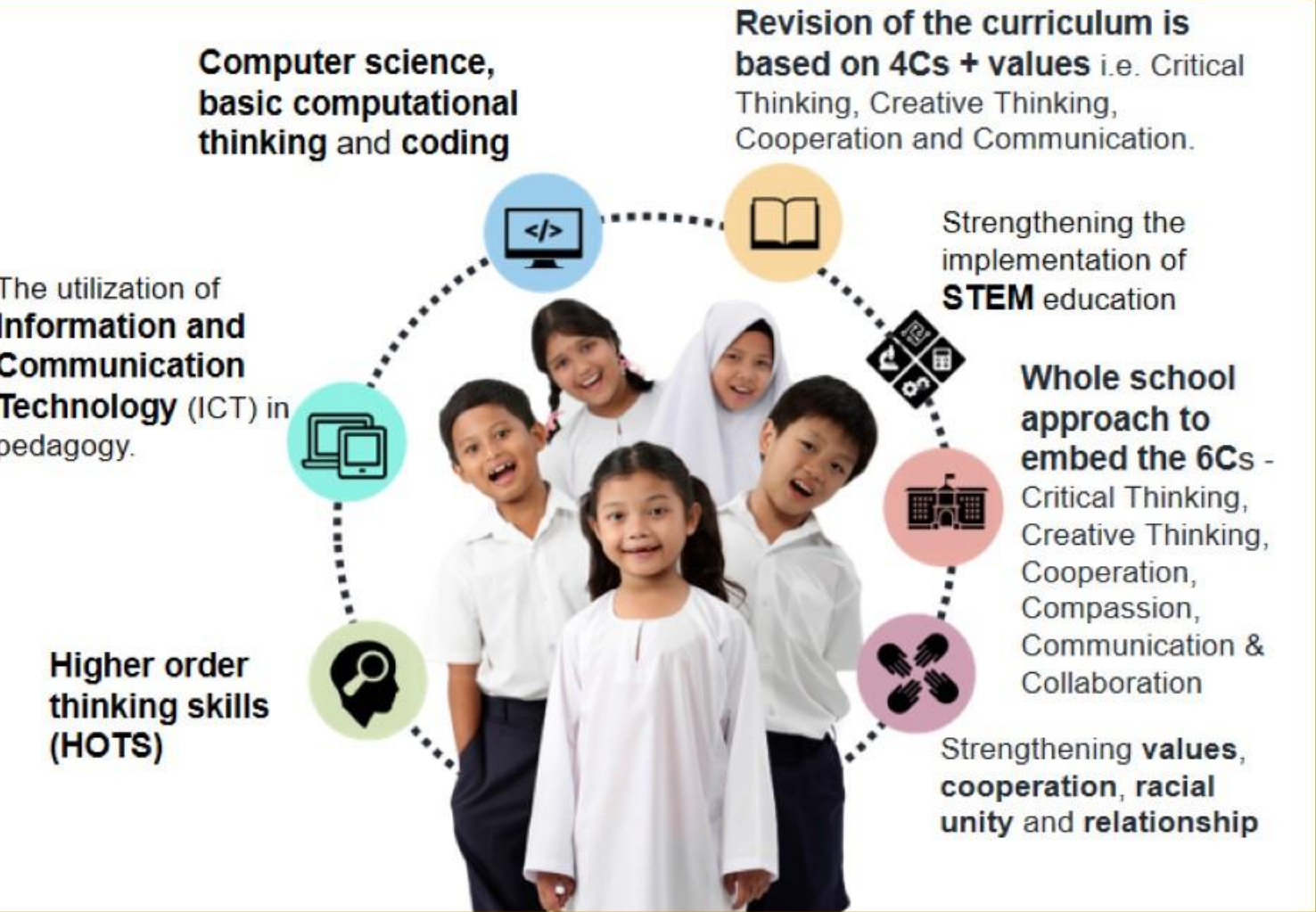# Synthesising key skills and competencies across various frameworks

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The apparent area of **overlap in all the frameworks** suggest the **need for students to master more than one skill and competency** which are functional and relevant.

4

Many countries respond to the need to implement 21st century skills in the national and school curricula

Six Student's Aspirations: Knowledge; Thinking Skills; Bilingual Proficiency; Ethics and Spirituality; Unity; Leadership Skills

Students who posses and practice: Core Values; Social and Emotional Competencies; Any emerging 21st Century Competencies

Students who are able to practice self-directed learning; apply learning to real-life context and society; think and make informed decisions

Students who possess: Higher order thinking processes; ethics and desirable Thai characteristics; practice lifelong learning

The intended students outcome of the reform highlights the needs for students to master multiple skills which are deemed important in the 21st century.

5

How 21st century skills and competencies are envisioned in the Malaysian education system

Computer science, basic computational thinking and **coding**

Revision of the curriculum is based on 4Cs + values i.e. Critical Thinking, Creative Thinking, Cooperation and Communication.

The utilization of **Information and Communication Technology** (ICT) in pedagogy.

Strengthening the implementation of **STEM** education

Whole school approach to embed the 6Cs - Critical Thinking, Creative Thinking, Cooperation, Compassion, Communication & Collaboration

Higher order thinking skills (HOTS)

Strengthening **values, cooperation, racial unity** and **relationship**

The *holistic approach* of the proposed APEC 21st century key competencies and skills allows for any identification of key skills, values and attitudes of any policies to be adopted in the framework
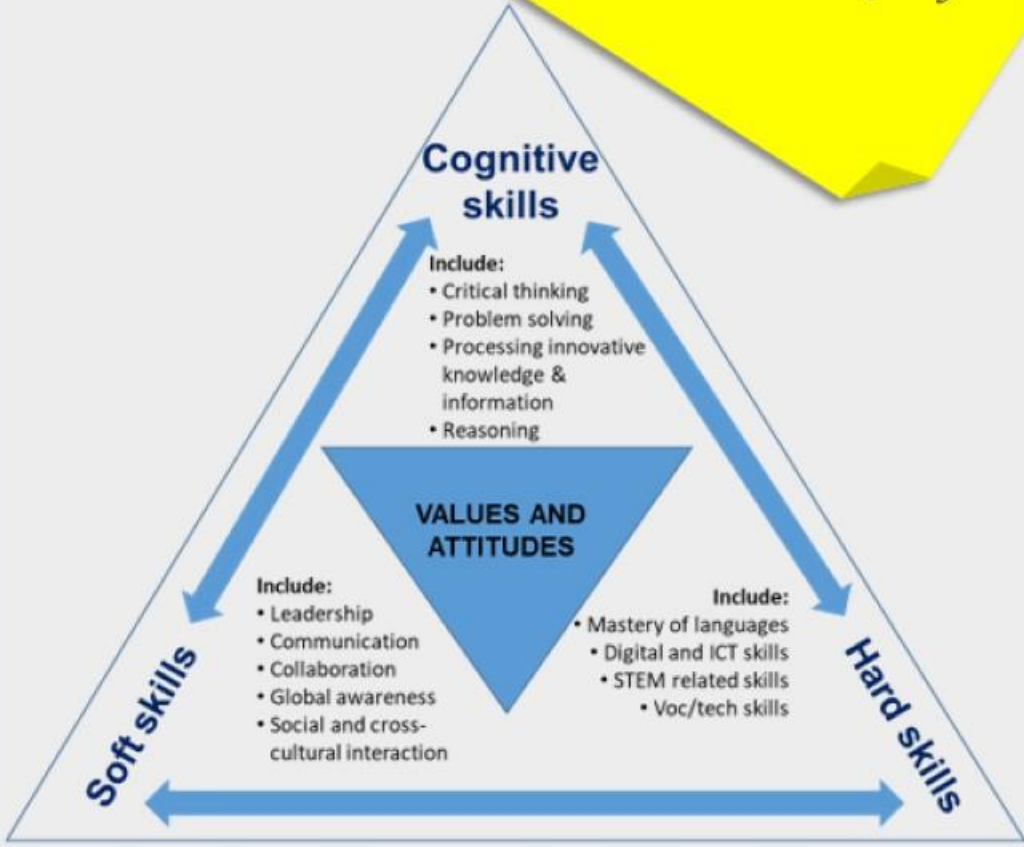

Cognitive skills

Include:
- Critical thinking
- Problem solving
- Processing innovative knowledge & information
- Reasoning

VALUES AND ATTITUDES

Soft skills

Include:
- Leadership
- Communication
- Collaboration
- Global awareness
- Social and cross-cultural interaction

Hard skills

Include:
- Mastery of languages
- Digital and ICT skills
- STEM related skills
- Voc/tech skills

Fig: 21st century skills and competencies framework (APEC, *in press*)

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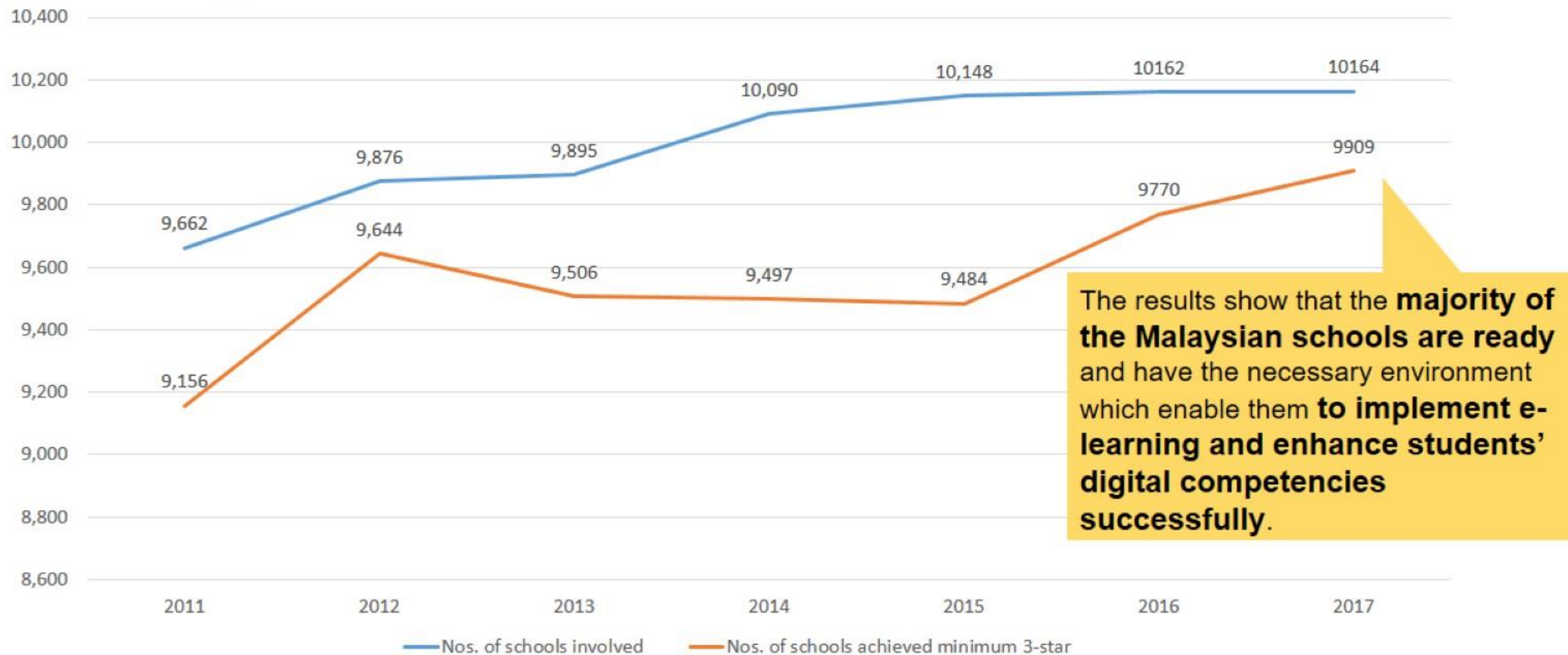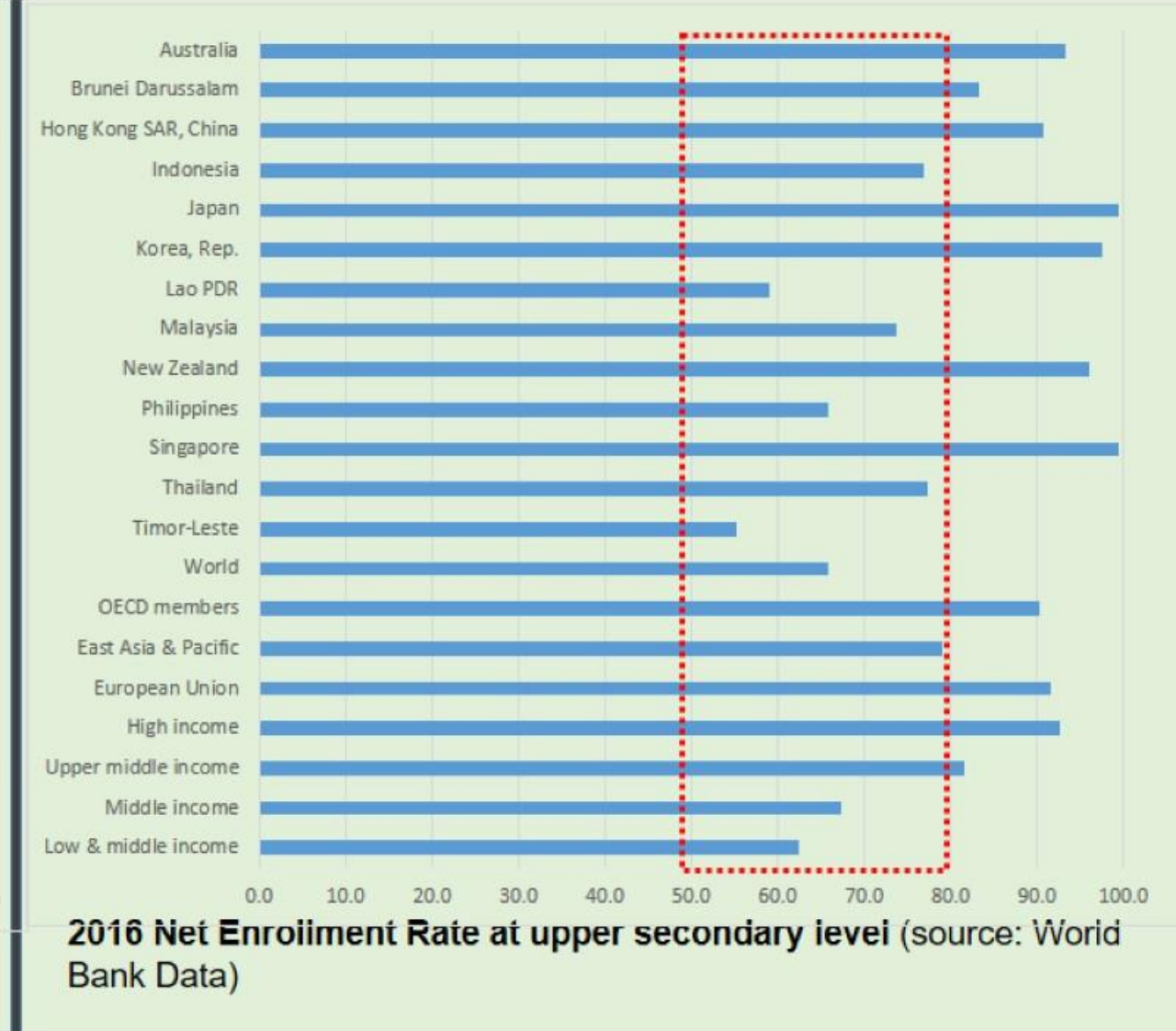# Case of Malaysia: Ensuring That schools are leveraging on technology and remain 'smart'

The results show that the **majority of the Malaysian schools are ready** and have the necessary environment which enable them **to implement e-learning and enhance students' digital competencies successfully**.

Legend: Nos. of schools involved — Nos. of schools achieved minimum 3-star

Data points (Nos. of schools involved): 2011: 9,662; 2012: 9,876; 2013: 9,895; 2014: 10,090; 2015: 10,148; 2016: 10162; 2017: 10164

Data points (Nos. of schools achieved minimum 3-star): 2011: 9,156; 2012: 9,644; 2013: 9,506; 2014: 9,497; 2015: 9,484; 2016: 9770; 2017: 9909
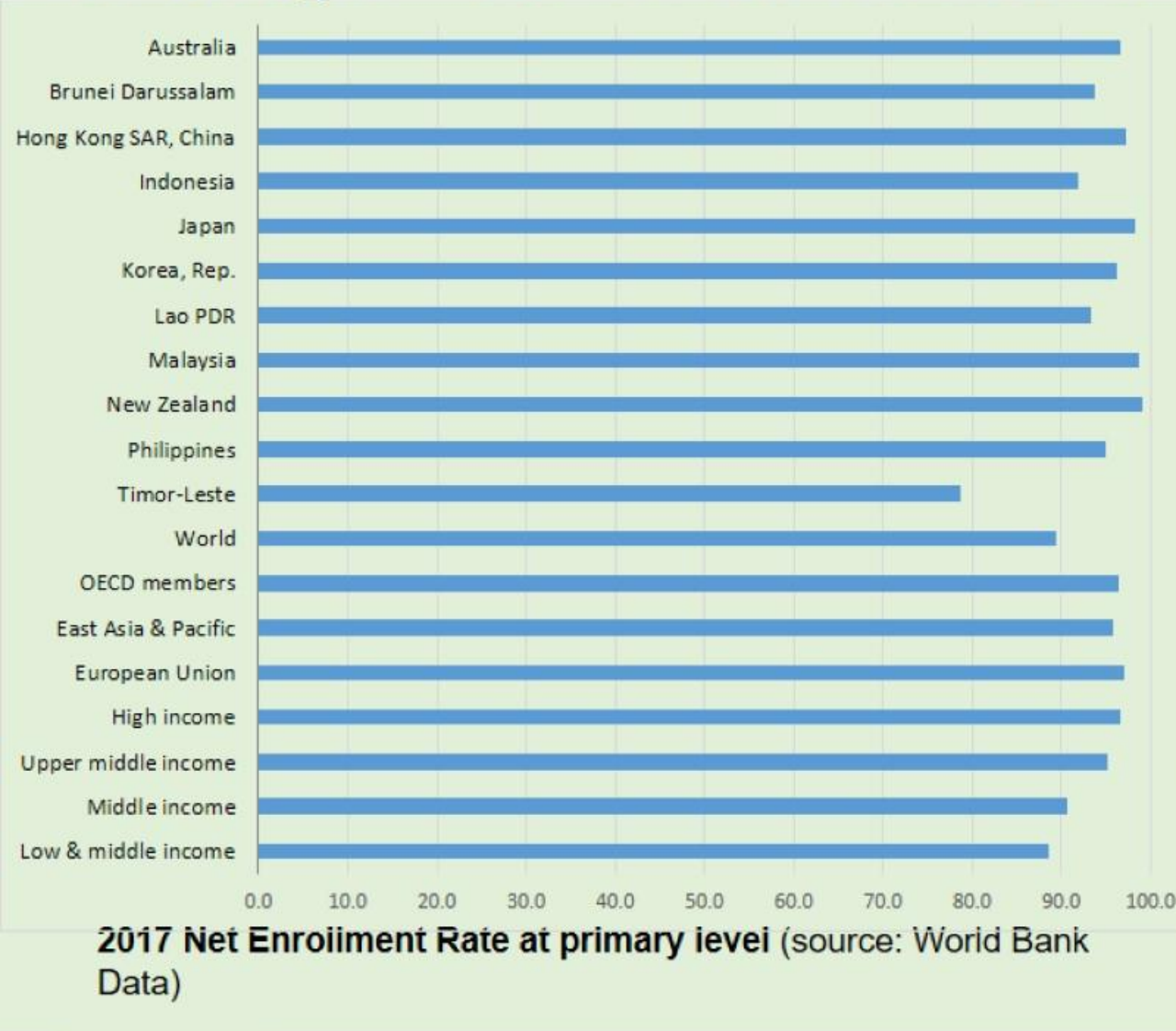
FIGURE: SSQS* RESULTS INDICATING NUMBER OF MALAYSIAN SCHOOLS ACHIEVING A MINIMUM OF 3-STAR

*Smart school qualification standards (SSQS) identified the extent to which schools facilitate continuous improvement of ICT integration in schools. Schools are rated from 1- star to 5-star.

These essential skills must be nurtured at **a very early stage**...hence the **approach to classroom teaching and learning** must be shaped by broadening the adoption of **technology**

Challenges – Access to education

2017 Net Enrollment Rate at primary level (source: World Bank Data)

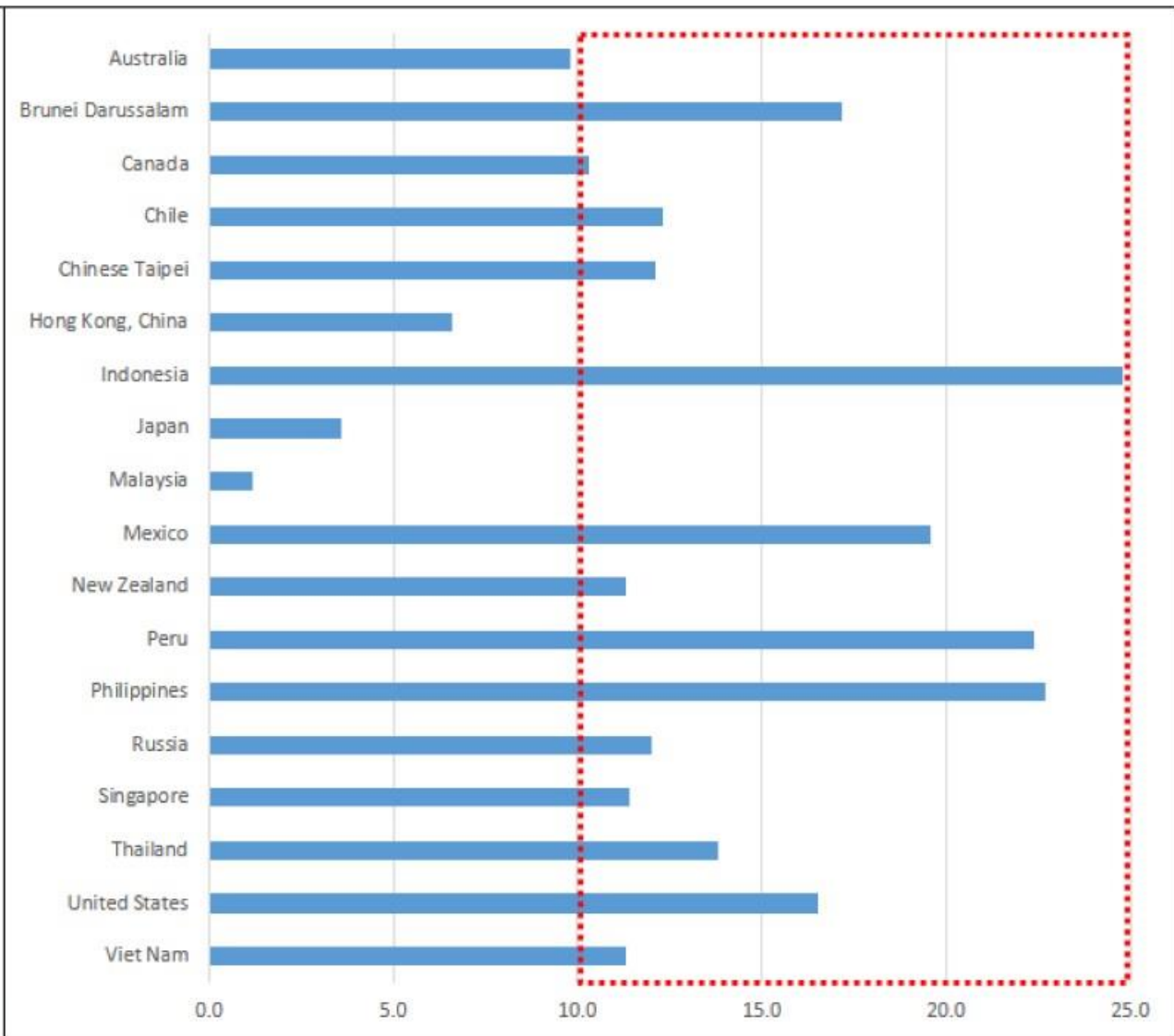**2016 Net Enrollment Rate at upper secondary level** (source: World Bank Data)

While **access to basic quality** education is **near universal**, the NER of **selected countries and region** at upper secondary level is **less than 80%.**

Challenges – Unemployment
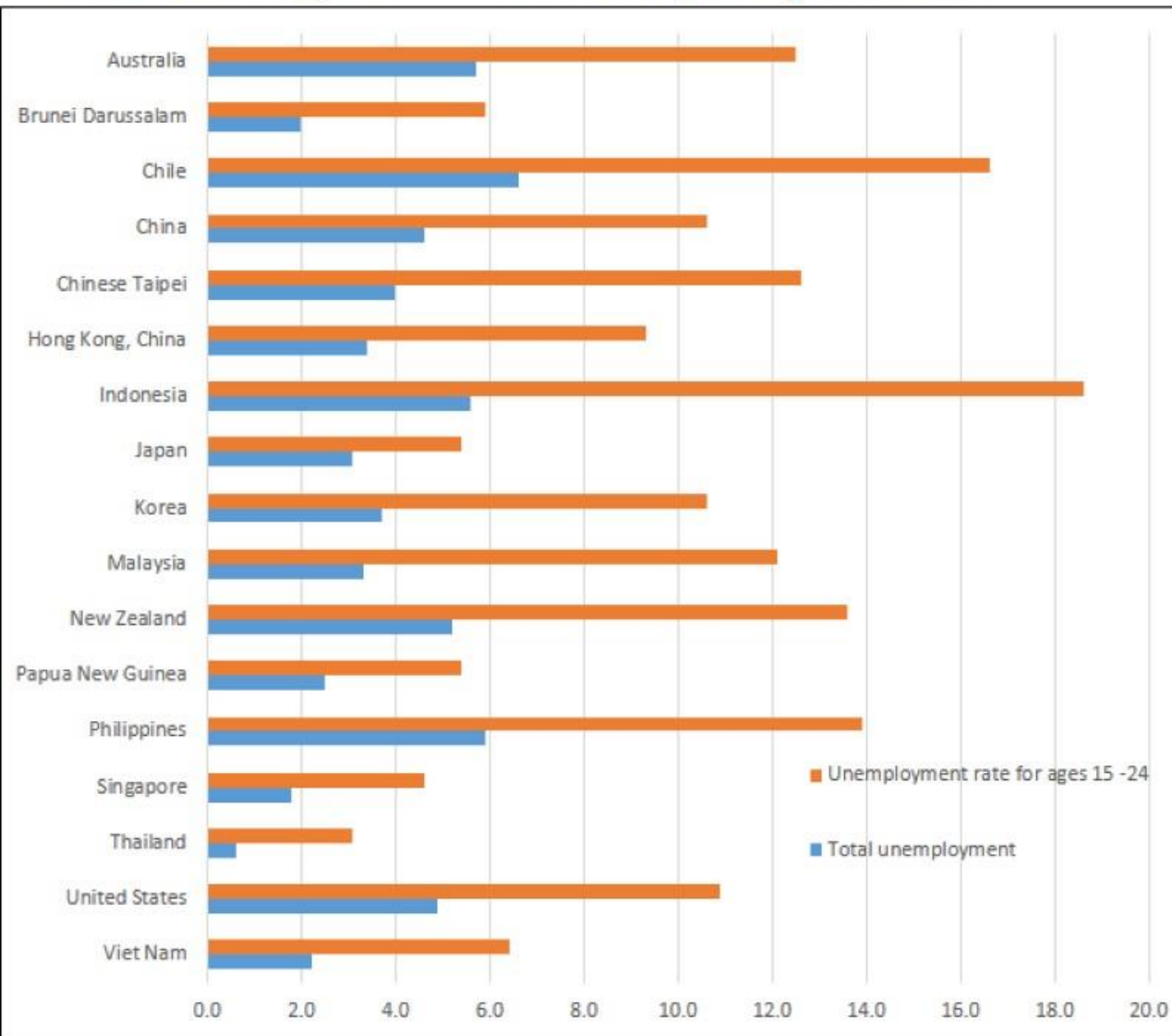
2016 Unemployment rate (source: 2017 APEC Economic Policy Report/OECD)

Youth (ages 15 – 24) not in education, employment, or training, latest available year (source: 2017 APEC Economic Policy Report/ OECD Data)

Moving forward, in order to harmonise between the intended skills in the digital age, key considerations need to be made...

Technology is advancing at a very fast pace

- Technology is changing so **quickly** that either people are **slow to grasp** which skills they might need, or they do not understand of the demand for skilled labor that will only grow in the very near future.
- The rate of technological advances is now **exceeding our ability to adapt.**

Digital gap between countries
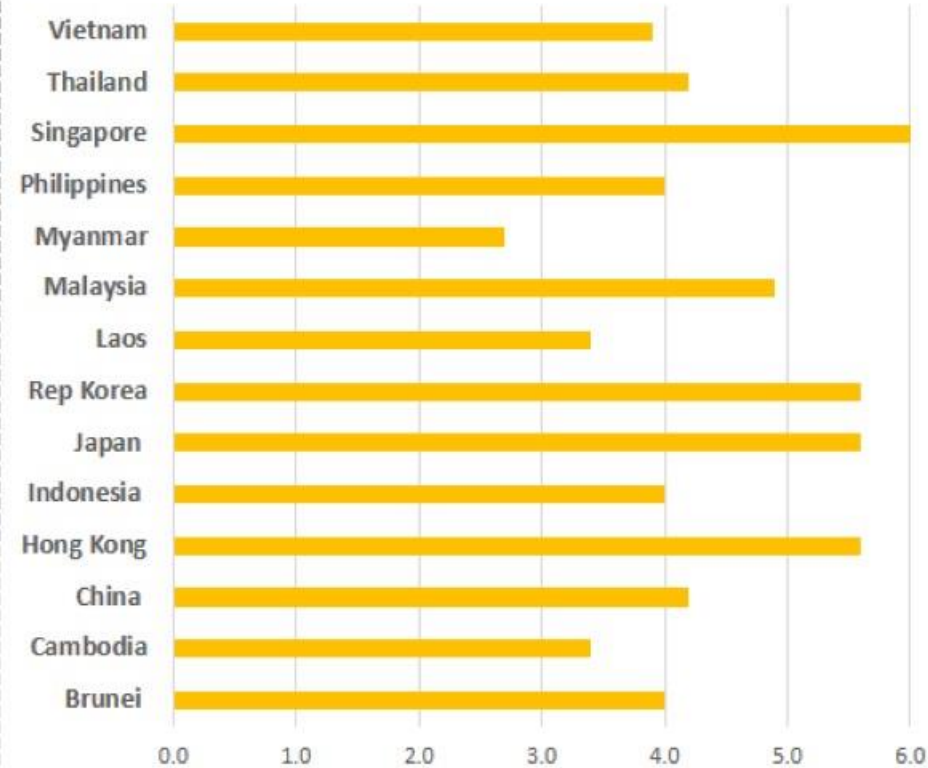
Network Readiness Index 2016 of Selected Regions and Asian Countries^

Digital natives vs digital migrants

The **digital divide** between the younger generation with majority of the teachers who have to constantly keep up with ever changing technological advances would **pose a potential problem on how the technology is accepted and adapted in classroom practices.**

Essential skills and competencies should **always remain relevant**, not only today but, more importantly, in the future. In doing so, it is important to **recognize the changing requirements of the future workforce and continue to adapt** to those requirements. Thus, the education system must provide the knowledge and skills **that is relevant** to the current and future workforce.

THANK YOU