



ICT in TVET – regional overview

Bringing TVET up to speed

ICT-enhanced practices in TVET

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Issues to be addressed

- ICT as a megatrend
- Achievements and challenges: ICT in TVET
- Conditions to enable successful use of ICT in TVET illustrated by examples



ICT as a megatrend



Trends Shaping Education 2013

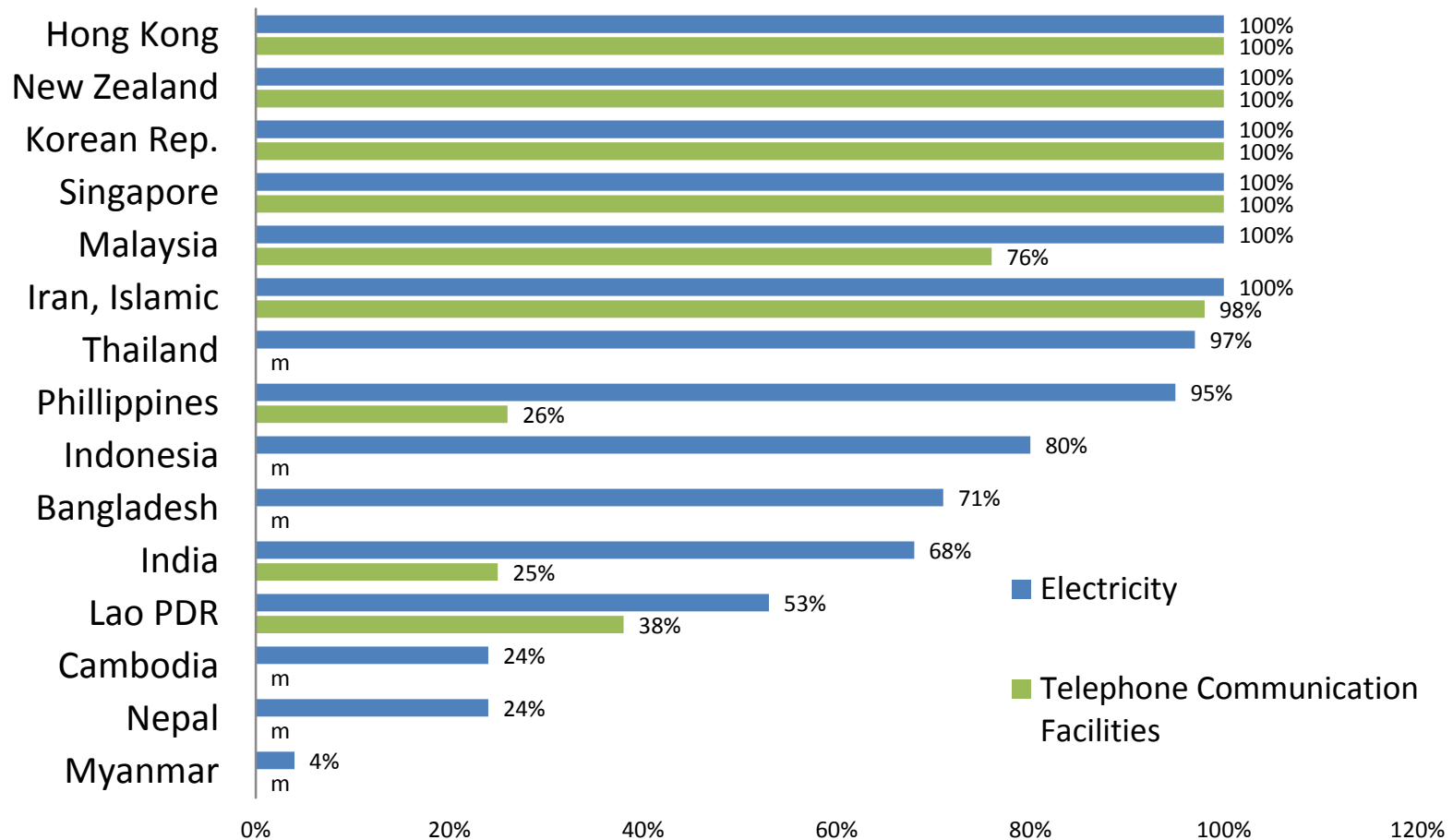
OECD (2013)

- The dynamics of globalization
- Transforming our societies
- The changing world of skills and work
- Modern families
- **Infinite connection:** Universal Internet access, the rise of portable devices and social media, and the dark side of cyber space – bullying and fraud



Universal access and education?

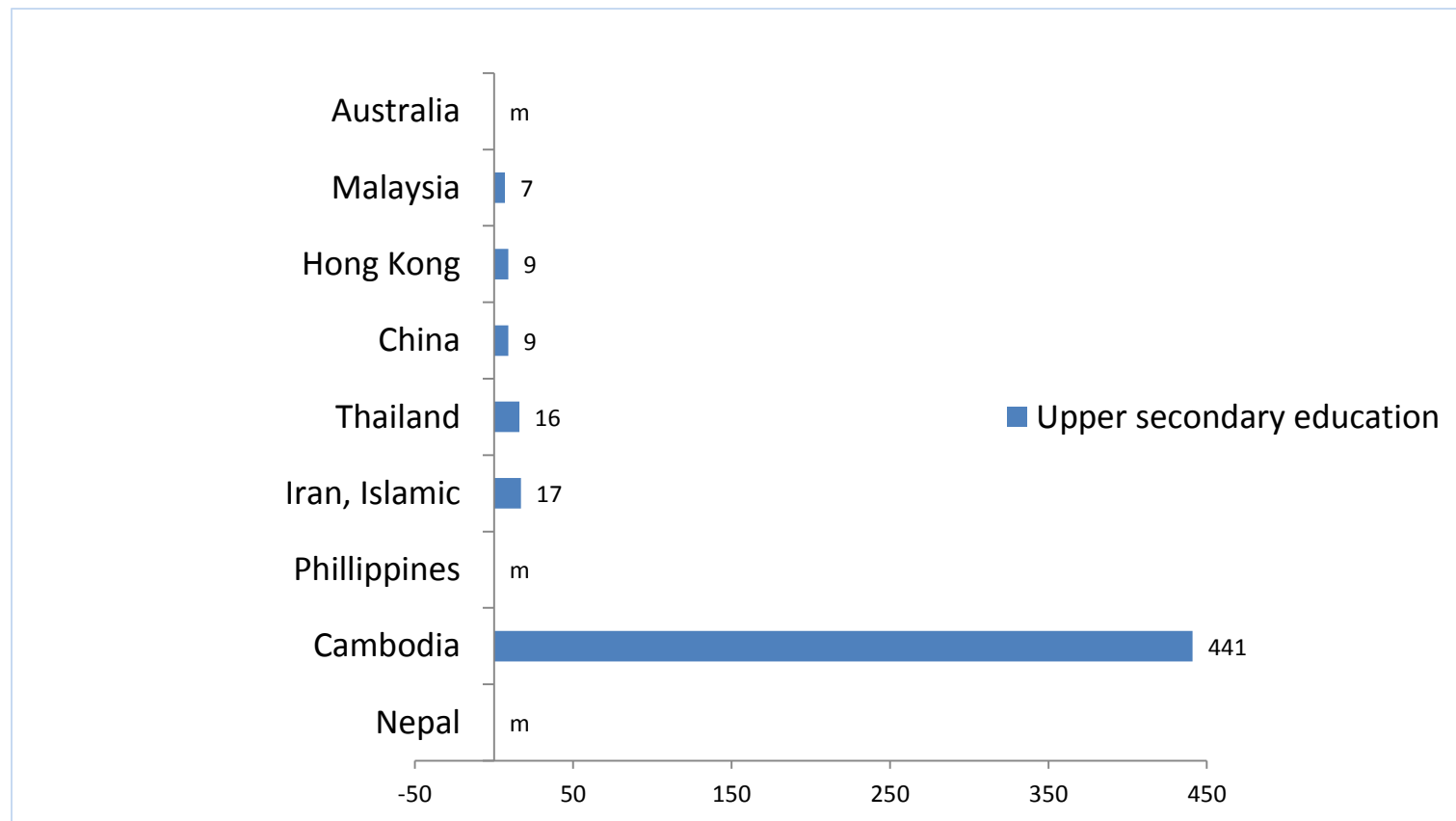
Proportion of educational institutions with basic electrical and telecommunications infrastructure, 2012 (ISCED 3)



(UNESCO UIS, 2013)



Learner-to-computer ratio in upper secondary education, 2012



(UNESCO UIS, 2013)



ICT infrastructure in secondary educational institutions, ISCED 3, 2012

(UNESCO UIS, 2013)

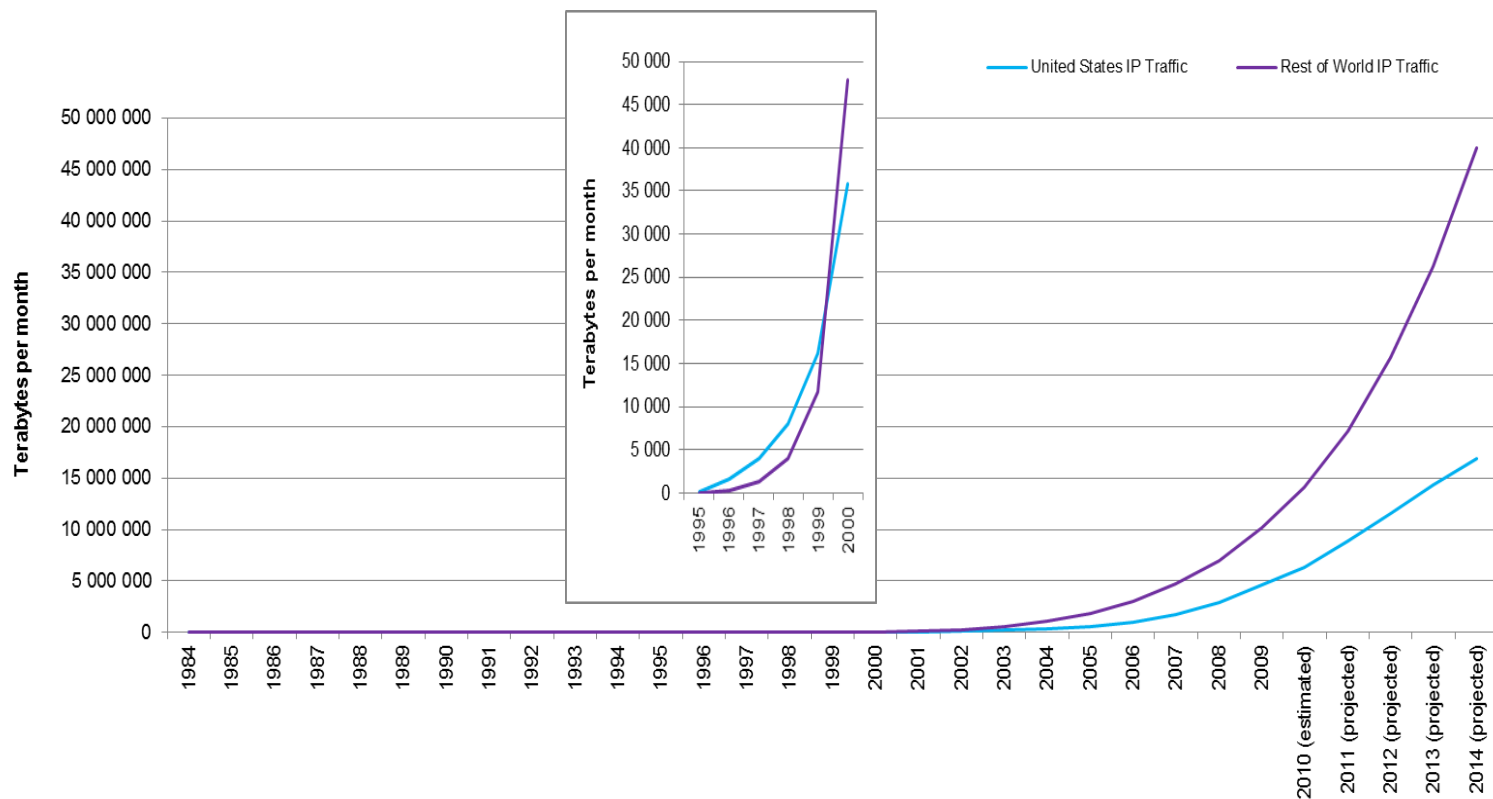
| REGION | Educational institutions with electricity | | Educational institutions with a telephone communication facility | | Educational institutions with radio-assisted instruction (RAI) | | Educational institutions with television-assisted instruction (TAI) | | Educational institutions with computer-assisted instruction (CAI) | | Educational institutions with computer laboratories | | Educational institutions with a Local Area Network (LAN) | |
|--|---|---------------------|--|---------------------|--|------------------|---|--------------------|---|--------------------|---|--------------------|--|--------|
| | (%) | | (%) | | (%) | | (%) | | (%) | | (%) | | (%) | |
| Country or Territory | Total | Public | Total | Public | Total | Public | Total | Public | Total | Public | Total | Public | Total | Public |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
| CENTRAL ASIA | | | | | | | | | | | | | | |
| Armenia | 100 | 100 | 80 | 82 | ... | ... | ... | ... | 100 | 100 | 92 | 95 | ... | ... |
| Azerbaijan | 100 ^d | 100 ^d | 100 ^d | 100 ^d | ... | 5 ^d | ... | 36 ^d | ... | 84 ^d | ... | 84 ^d | ... | ... |
| Georgia | 100 | 100 | 100 | 100 | ... | ... | ... | ... | 100 | 100 | 100 | 100 | ... | ... |
| Kazakhstan | ... | ... | ... | ... | ... | ... | ... | ... | ... | 100 ^{**} | ... | ... | ... | ... |
| Kyrgyzstan | 100 ^d | 100 ^d | ... | ... | - | - | ... | ... | ... | 86 ^d | ... | 86 ^d | ... | ... |
| Mongolia | 91 ^d | 90 ^d | ... | ... | ... | ... | ... | ... | 100 ^d | 100 ^d | 92 ^d | 93 ^d | ... | ... |
| EAST ASIA AND THE PACIFIC | | | | | | | | | | | | | | |
| Australia | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Brunei Darussalam | ... | ... | ... | ... | 100 ^{**,-3} | ... | ... | ... | 100 ^{**,-3} | ... | ... | ... | ... | ... |
| Cambodia | ... | 24 | ... | ... | ... | ... | ... | ... | ... | 3 ^{**d} | ... | ... | ... | ... |
| China | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| China, Hong Kong Special Administrative Region | 100 | 100 | 100 | 100 | ... | 100 | 100 | 100 | ... | 100 | ... | 100 | ... | ... |
| China, Macao Special Administrative Region | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Indonesia | 80 ^e | 79 ^e | ... | ... | ... | ... | ... | ... | ... | ... | 37 ^e | 33 ^e | ... | ... |
| Japan | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Lao People's Democratic Republic | 53 | 50 | 38 | 36 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Malaysia | 100 ⁻¹ | 100 ⁻¹ | 76 ⁻¹ | 74 ⁻¹ | ... | 18 ⁻¹ | ... | 100 ⁻¹ | ... | 100 ⁻¹ | 92 ⁻¹ | 91 ⁻¹ | ... | ... |
| Myanmar | 4 | ... | 2 | ... | 13 | ... | 15 | ... | 15 | ... | 10 | ... | ... | ... |
| New Zealand | 100 ^{d,-1} | 100 ^{d,-1} | 100 ^{d,-1} | 100 ^{d,-1} | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Philippines | ... | 95 ^{*,e} | ... | 26 ^{*,e} | ... | ... | ... | ... | ... | 87 ^{*,e} | ... | 87 ^{*,e} | ... | ... |
| Republic of Korea | 100 ^{**} | 100 ^{**} | 100 ^{**} | 100 ^{**} | ... | ... | ... | ... | 100 ^{**} | 100 ^{**} | ... | ... | ... | ... |
| Samoa | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Singapore | ... | 100 ⁻¹ | ... | 100 ⁻¹ | ... | ... | ... | ... | ... | 100 ⁻¹ | ... | 100 ⁻¹ | ... | ... |
| Thailand | 97 [*] | 100 [*] | 35 [*] | 29 [*] | ... | 18 [*] | 19 [*] | 19 [*] | 97 [*] | 100 [*] | 97 [*] | 100 [*] | ... | ... |
| SOUTH AND WEST ASIA | | | | | | | | | | | | | | |
| Bangladesh | 71 | 85 ^{**} | 93 [*] | 85 ^{**} | ... | ... | ... | ... | ... | ... | 38 ^{**} | ... | ... | ... |
| Bhutan | 91 | 90 | ... | ... | ... | ... | ... | ... | ... | 66 | ... | 66 | ... | ... |
| India | 68 ^g | 59 ^g | 25 ^g | 17 ^g | ... | ... | ... | ... | ... | ... | 45 ^g | 36 ^g | ... | ... |
| Iran (Islamic Republic of) | 100 | 100 | 98 | 98 | ... | ... | ... | ... | 76 | 76 | ... | 43 | ... | ... |
| Maldives | 100 | 100 | 100 | 100 | ... | ... | ... | ... | ... | 40 ^{d,**} | ... | 40 ^{d,**} | ... | ... |
| Nepal | 24 ⁻¹ | 27 ⁻¹ | ... | ... | ... | ... | ... | ... | 4 ⁻¹ | 3 ⁻¹ | ... | ... | ... | ... |
| Sri Lanka | 82 ^{d,-1} | 82 ^{d,-1} | 32 ^{d,-1} | 31 ^{d,-1} | ... | ... | 28 ^{d,-1} | 28 ^{d,-1} | 60 ^{d,-1} | 60 ^{d,-1} | 34 ^{d,-1} | 33 ^{d,-1} | ... | ... |



Exponential use of the Internet and education

Global IP traffic, 1984-2014 (projected)

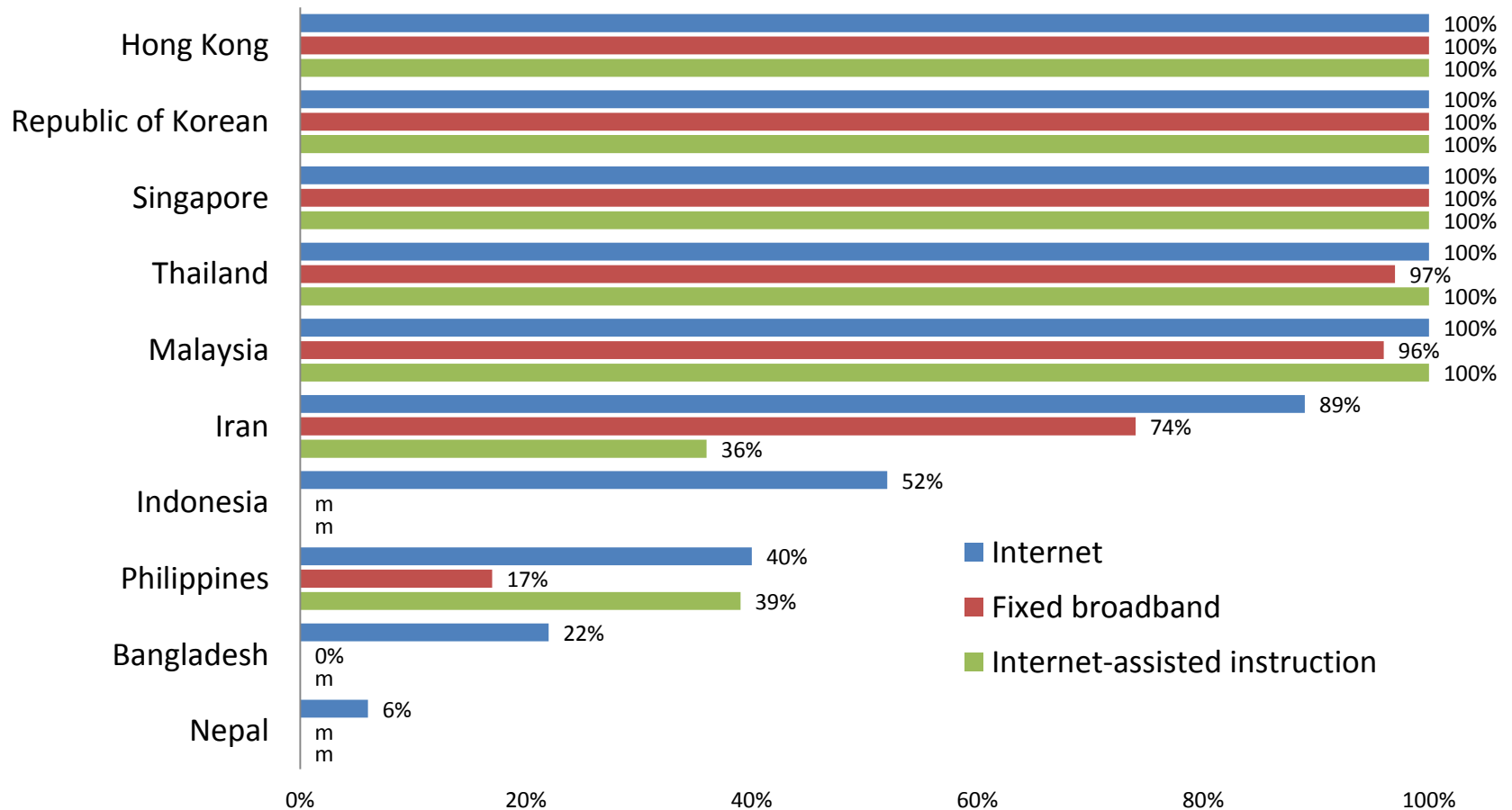
Global Internet activity rising exponentially



Source: OECD (2011), *OECD Communications Outlook 2011*, OECD Publishing. doi: 10.1787/comms_outlook-2011-en

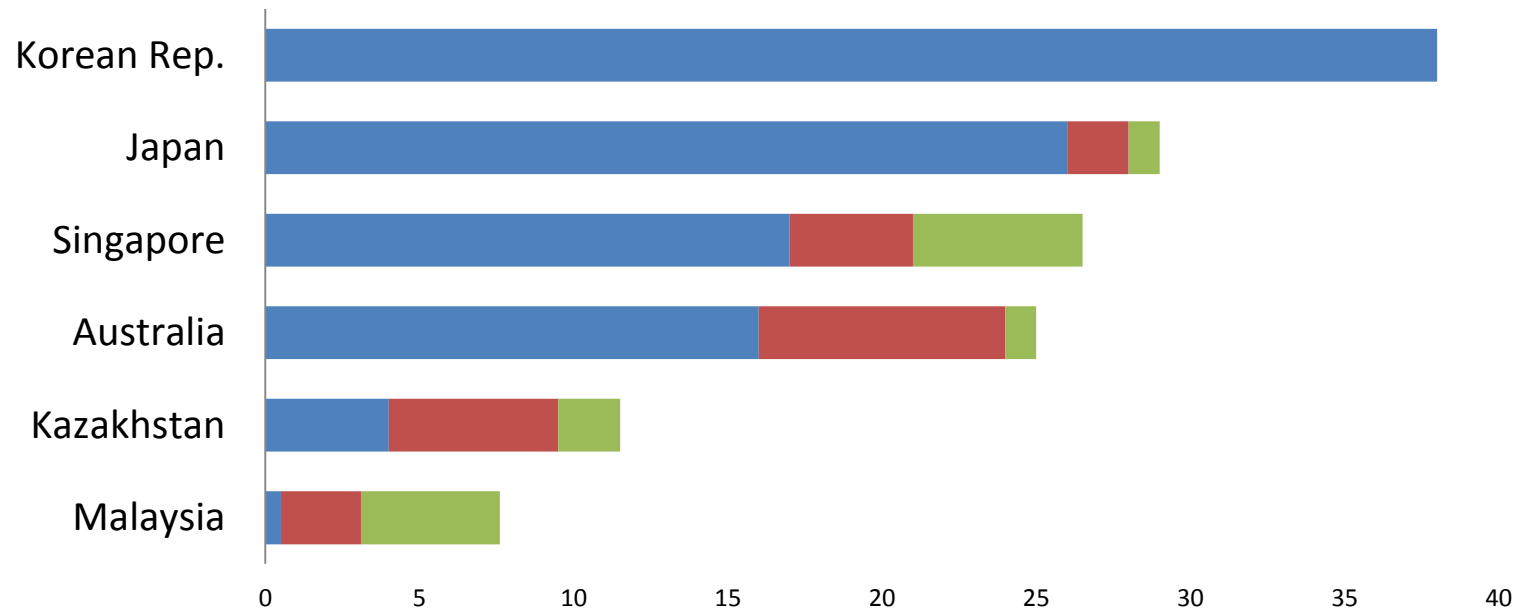


Proportion of educational institutions with Internet, fixed broadband and Internet-assisted instruction, 2012 (ISCED 3)



UNESCO UIS, 2013

Differences in broadband speed



Fixed-broadband subscriptions per 100 inhabitants, by speed, early 2014
(selected countries)

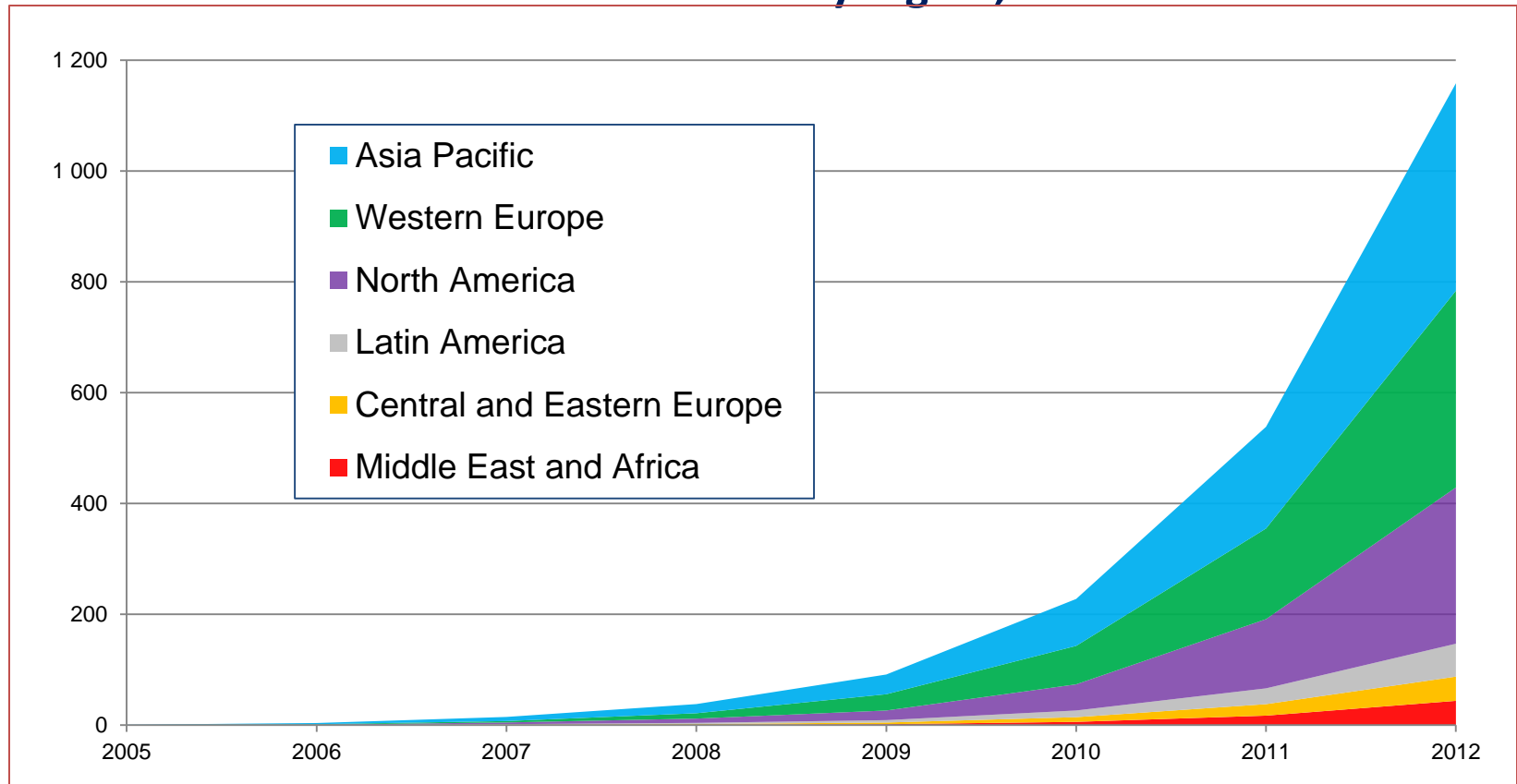
■ >10 Mbit/s ■ ≥ 2 to <10 Mbit/s ■ ≥ 256 kbit/s to < 2 Mbit/s

Source: International Telecommunication Union, 2015



The world in your pocket and education

Expanding use of mobile broadband Mobile IP traffic worldwide by region, 2005-2012

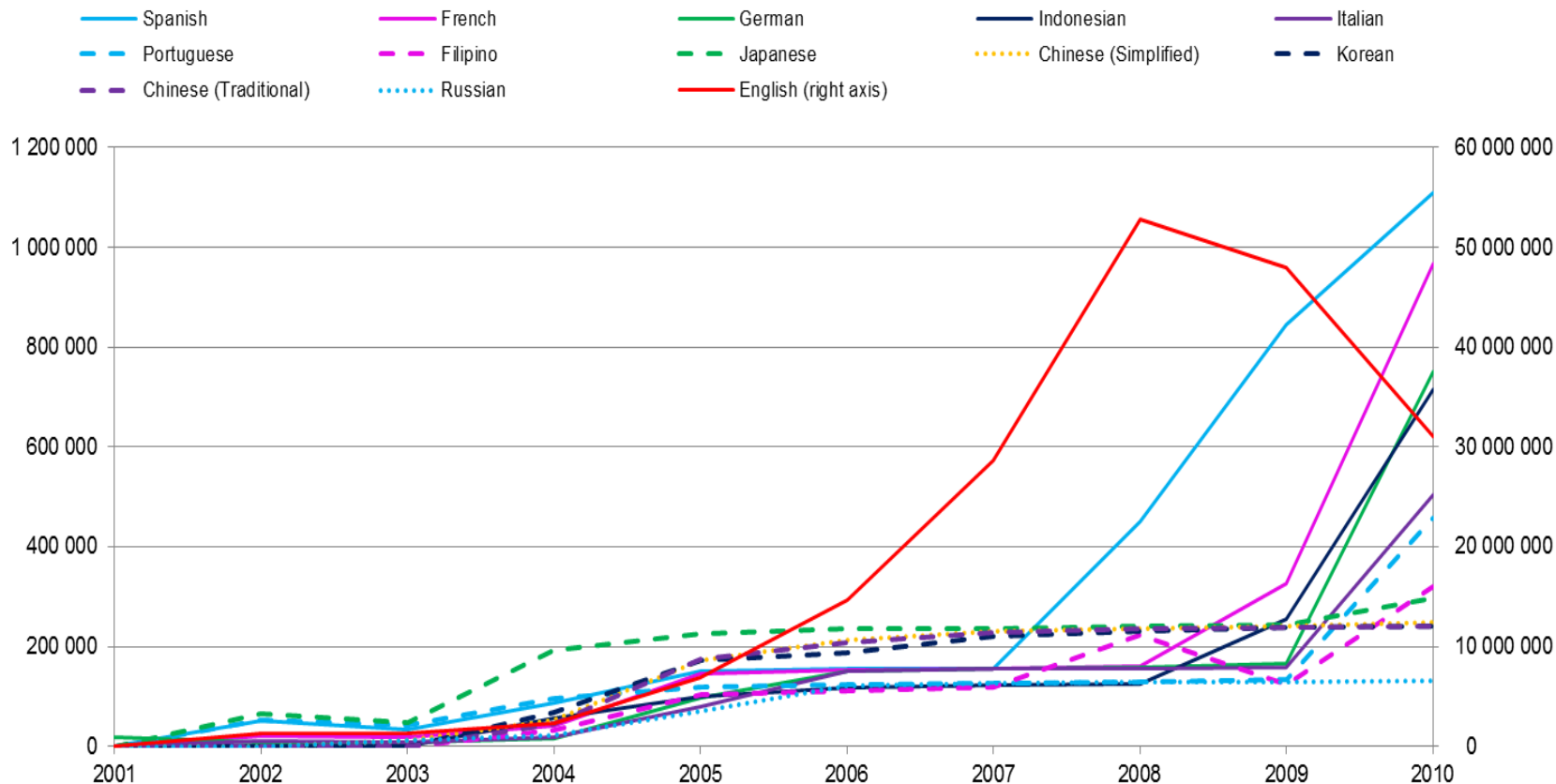


Trends Shaping Education 2013 edition - © OECD 2012



Local diversity and education

Individuals engaging online in many different languages



Number of blogs indexed by Google, presented by language (left axis) and English (right axis), 2001-2010

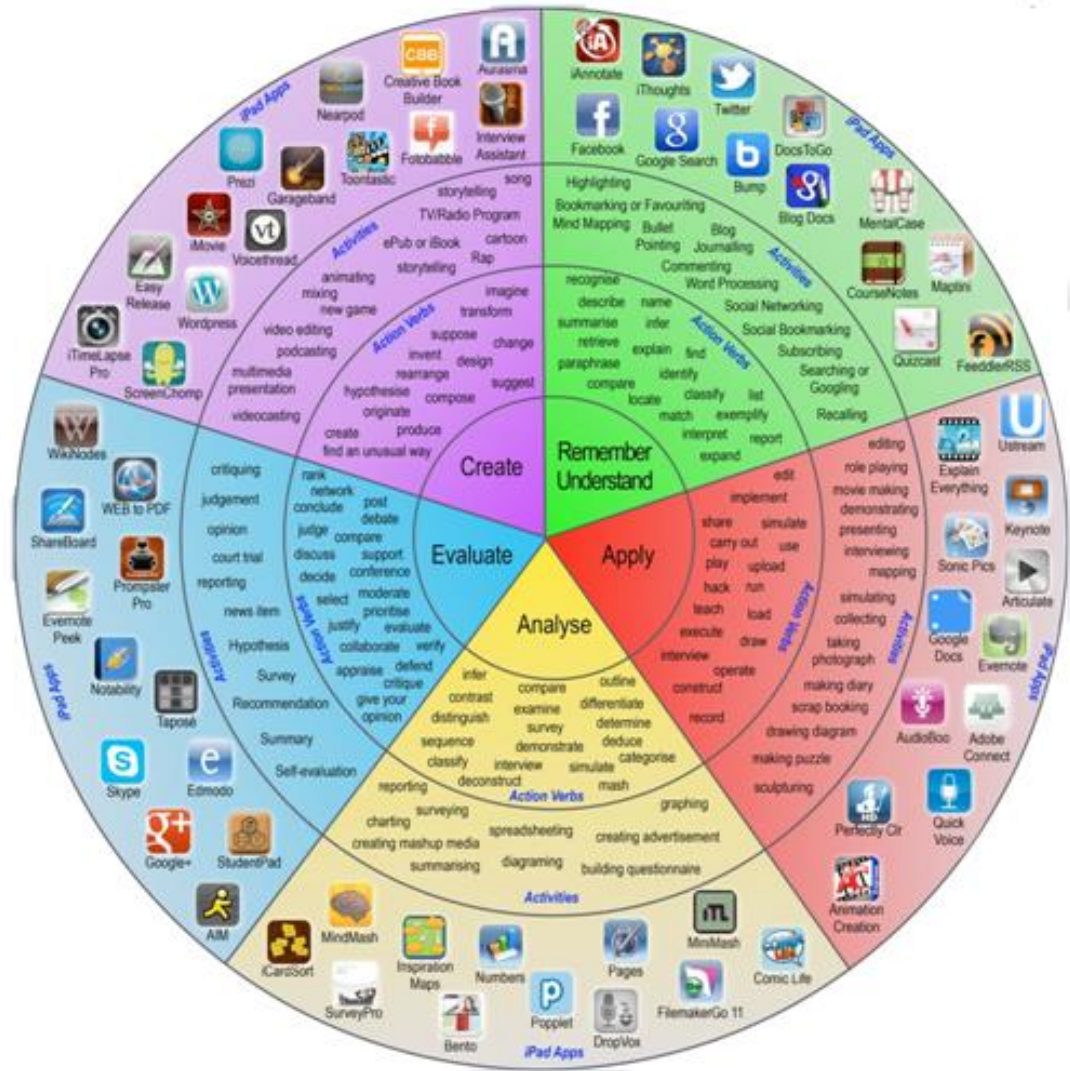


Transforming our internet and education

A Padagogy Wheel

(typo intended)

by Allan Carrington



Source: <http://www.unity.net.au/padwheel/padwheelposterV3.pdf>



Achievements and challenges: ICT in TVET



Different facets of ICT

- ICT as a generic skill
- ICT as specialization
- ICT as a pedagogical tool
- ICT as an access solution
- ICT as a management tool

QINGDAO DECLARATION, May 2015

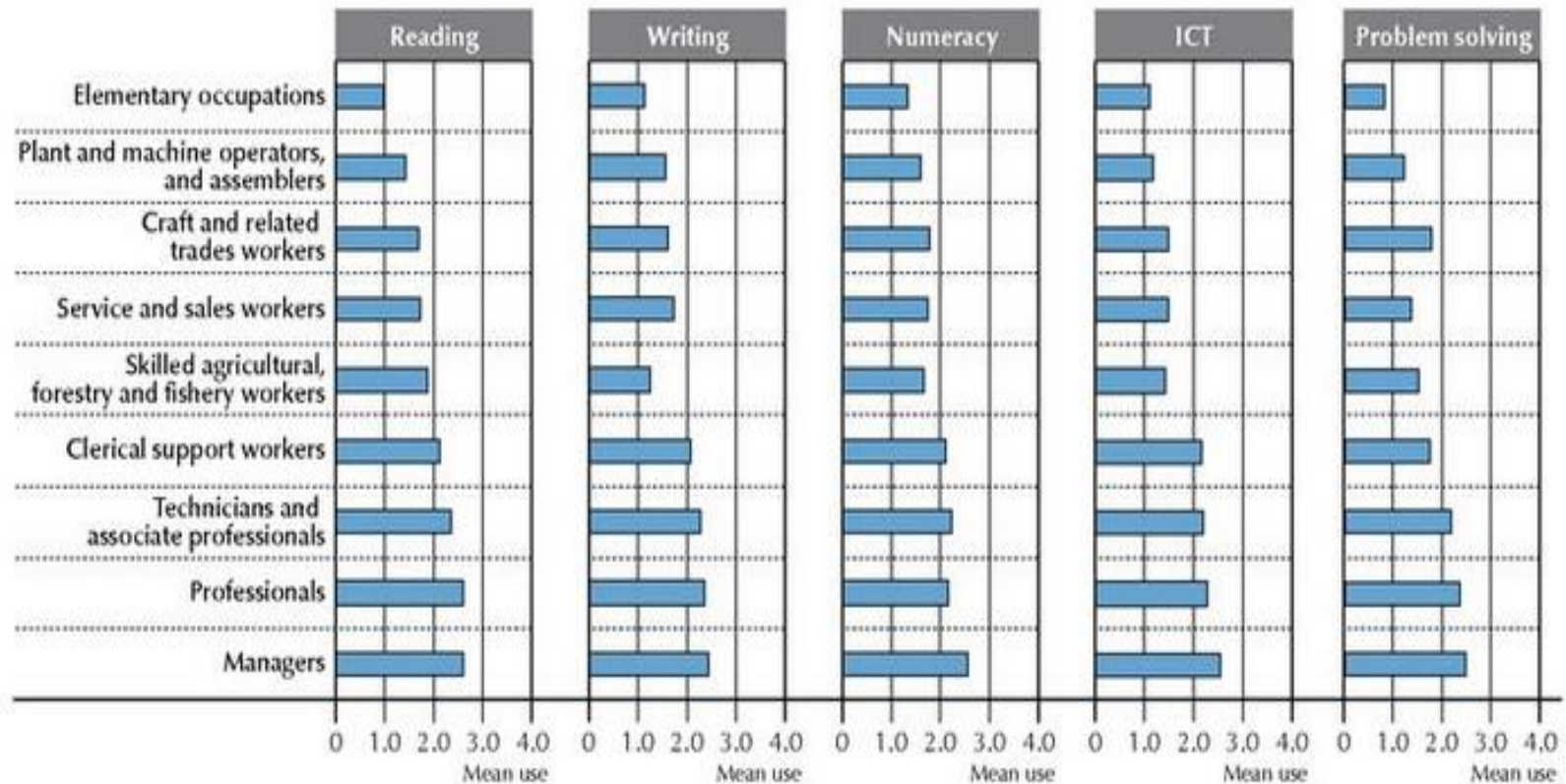
INTERNATIONAL CONFERENCE ON ICT AND POST-2015 EDUCATION

Seize digital opportunities, lead education transformation

23-25 May 2015, Qingdao, the People's Republic of China



Use of information-processing skills at work, by occupation – OECD (2013)



Occupations are ranked in ascending order of the average use of reading skills at work.

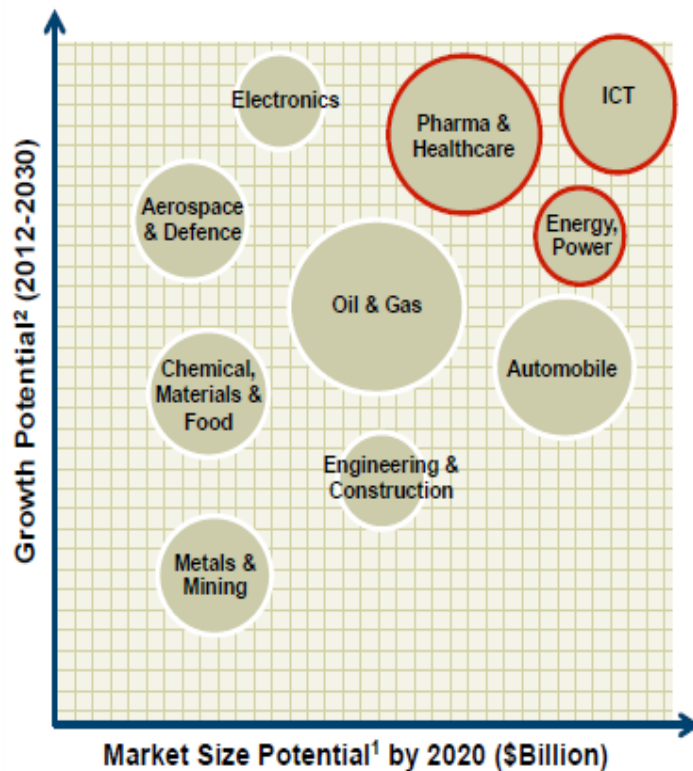
Source: Survey of Adults Skills (PIAAC) (2012), Table A4.17.

StatLink  <http://dx.doi.org/10.1787/888932901581>

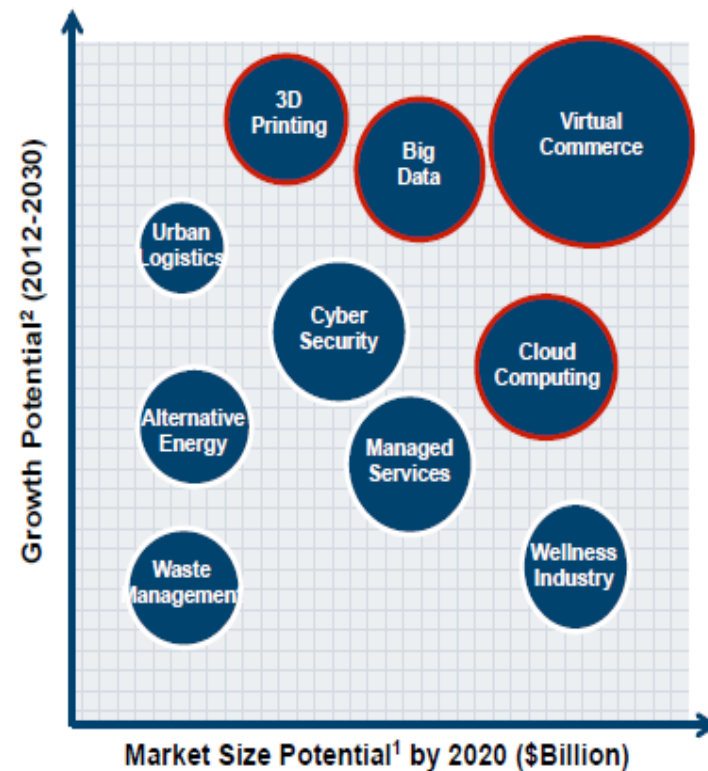


Top industries of the future

Top Mature Industries by 2020



Top Emerging Industries by 2020



¹Relative score assigned for potential annual turnover (revenue / shipment) of the industry in 2025

²Measured by qualitative factors that has the scope to create a boom in the industry such as new patents, innovation cycle and industry impact

Source: Bloomberg, Frost and Sullivan Analysis

Drivers for the development of ICT in TVET

- The requirements of knowledge economy
- The increase of ICT in the workplace
- The demand to increase success of initial VET
- The lack of qualified teachers and the requirement to provide opportunities for continuing professional development
- Re-skilling and skills upgrading

(Herd, G. and Maed Richardson, 2015)



TVET Progress Review in Asia-Pacific: Progress since Shanghai Congress 2012

Good overall progress across the region

- Offering training in electronic and/or digital technologies
- Emphasising innovation-related (STEM) skills in TVET curriculum
- Integrating electronic and/or digital methods and technologies across TVET curriculum

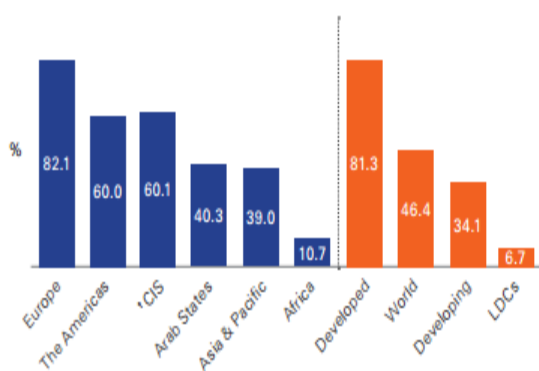
Challenges

- Evidence of 'digital divide' in use of ICT in TVET
- Low use of ICT-enhanced innovative pedagogies
- Differences in skills sets across region

(Dr Gita Subrahmanyam , 2015)



Percentage of households with Internet access

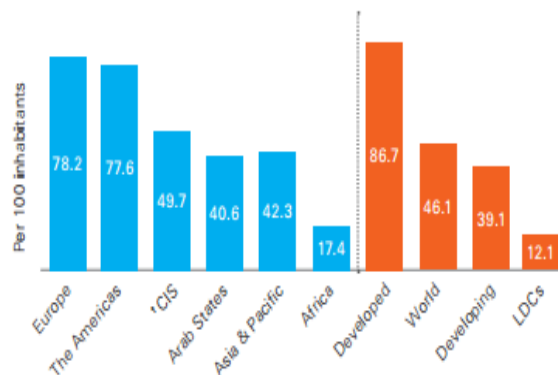


- By end 2015, 34% of households in developing countries have Internet access, compared with more than 80% in developed countries

- In least developed countries (LDCs), only 7% of households have Internet access, compared with the world average of 46%



Mobile broadband subscriptions



- Mobile-broadband penetration levels are highest in Europe and the Americas, at around 78 active subscriptions per 100 inhabitants

- Africa is the only region where mobile broadband penetration remains below 20%

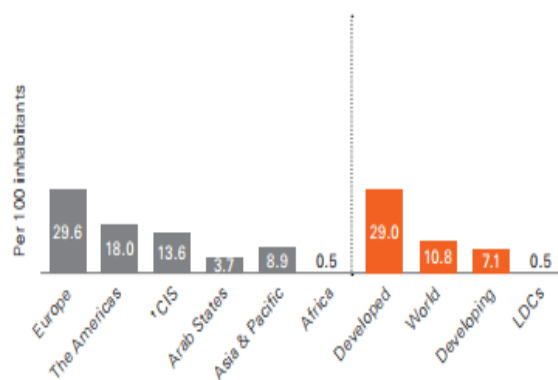


The digital divide in 2015*

Source: ITU. 2015

Note: * Estimates. † CIS Commonwealth of Independent States

Fixed-broadband subscriptions



- Fixed-broadband penetration remains at less than 1% in LDCs

- Africa and the Arab States stand out as the regions with the fewest fixed-broadband subscriptions per 100 inhabitants, at less than 1 and less than 4, respectively



TVET Progress Review in Asia-Pacific: Progress since Shanghai Congress 2012

Promising practices

- ICT-related TVET programmes (Tuvalu, Palau, Bhutan, Lao PDR)
- Policies to promote ICT in TVET (Thailand, Indonesia, Iran, NZ)
- Use of ICT to improve TVET access + equity (Fiji, Philippines, India)
- ICT as a self-help tool for continual skills upgrading (Singapore)

Major obstacles

- Lack of funds (especially, South Asia and Pacific)
- Lack of trained staff with relevant knowledge and expertise
- Inadequate IT, technological and/or physical infrastructure (especially, Pacific)

(Dr Gita Subrahmanyam , 2015)



Factors limiting ICT use in TVET: Bangladesh

| Factors | Teachers Opinion | Percentage |
|---------------------------------------|------------------|---------------|
| Lack of Knowledge | 50 | 47.17% |
| Absence of skill | 45 | 42.45% |
| Deficiency of training | 80 | 75.47% |
| Shortage of modern ICT tools in Class | 75 | 70.75% |
| Nonexistence of awareness | 50 | 47.1% |
| N = 106 | | |

Source: Raihan, M.A Shamim, MR.H. (2013).



Conditions to enable successful use of ICT in TVET



Success factors for effective integration of ICT in TVET

- Enabling national policy
- Effective ICT infrastructure in TVET organization and high speed of the Internet
- Effective ICT resources including software
- Commitment of institutional managers
- Commitment of individuals, including teachers
- Professional development for teachers in recognizing their changing roles
- Support of the champions
- Research on ICT practices



National policies

- Australia – National VET E-learning Strategy - <http://www.flexiblelearning.net.au/>
- The [National Vocational Education and Training E-learning Strategy 2012–2015](#) ('the Strategy') is aimed at:
 - Strengthening the Australian training sector's use of new learning technologies
 - Stimulating innovative approaches to increasing participation in training and employment
 - Improving the skill levels of the Australian workforce.
 - The Strategy was previously managed by the [Flexible Learning Advisory Group \(FLAG\)](#), a key policy advisory group on national directions and priorities for information and communication technologies in the VET sector. It built on the strengths of previous national strategies, including the former Australian Flexible Learning Framework (2008–2011).

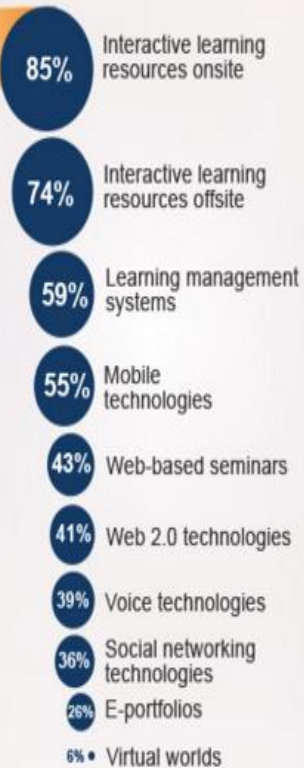


Australia

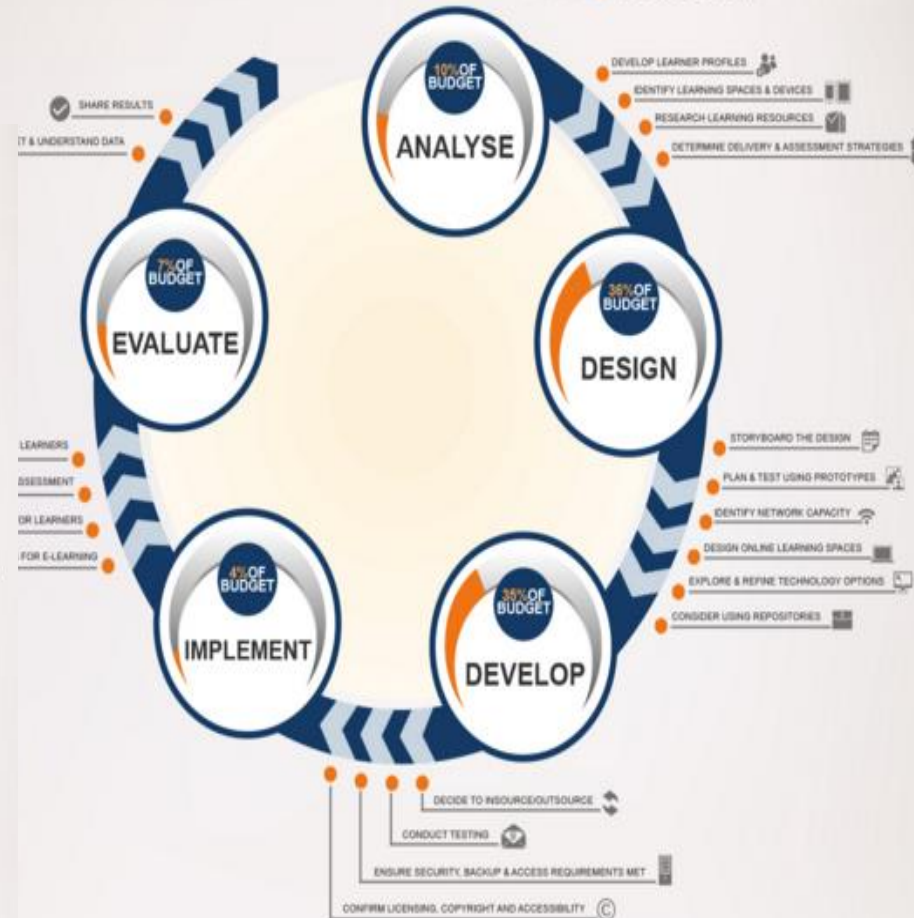
IMPLEMENTING E-LEARNING A TOOLKIT FOR REGISTERED TRAINING ORGANISATIONS

- PREPARATION**
- STRATEGY & LEADERSHIP
 - SCOPE OF PROJECT
 - BUSINESS CASE & RESOURCING
 - IT & PEOPLE SUPPORT

TECHNOLOGY USED BY VET TRAINERS & TEACHERS



% VET TEACHERS & TRAINERS USING RESOURCES FROM:



<http://flexiblelearning.net.au/infographic/>



Curriculum and tools

➤ Tool boxes by training package area

<http://toolboxes.flexiblelearning.net.au/preview/index.htm>

The Build Green Toolbox

https://nationalvetcontent.edu.au/share/proxy/alfresco/api/node/content;cm:content/workspace/SpacesStore/e4043a5a-23c9-468f-8425-dafc36cbe9c9/14_02/content_sections/home.htm



The screenshot shows a web browser displaying the 'Build Green' toolbox page. The URL in the address bar is <https://nationalvetcontent.edu.au/share/proxy/alfresco/api/node/content;cm:content/workspace/SpacesStore/e4043a5a-23c9-468f-8425-dafc36cbe9c9>. The page features a navigation menu with buttons for 'Introduction', 'Investigate', 'Set', 'Implement', and 'Monitor'. The main content area is titled 'Environmentally sustainable work practices' and includes a video player. The video player shows a woman and a man, with a text overlay that reads: 'Investigate your organisation's current work practice and identify areas for improvement.' The video player also has a progress bar and a timestamp of 1:33 / 1:56.



Effective ICT resources

IL&FS Skills Development Corporation



Search IL&FS Education



ABOUT

BUSINESS

MEDIA

WEBSITES

CONTACT



Mr Ravi Parthasarathy, Chairman, IL&FS Group launched the Next-Gen K-Yan during the Imagineering Summit, 2015 at Bangalore.

<http://tinyurl.com/ilfs-skills>



Research on ICT practices

Transforming educator and student capability with iTunes U: an action research journey

- **Annette Winch and Karen Grice (TAFE, QLD, Australia)**

Results:

- iTunes U provided a delivery model that increased the digital literacy skills of both students and educators.
- Using iTunes U provides a new mode of collaborative learning in the classroom that is effective in engaging adult ESL learners and improving outcomes for students.
- Technical infrastructure (wifi and Apple IDs) provided significant challenges to the study.
- The project highlighted implications for the way that content is created, distributed and delivered in the AMEP and SEE English language programs.
- <http://youtu.be/5hQwFXV1y8s>



TELLing it and
SEEing it via iTunes U

Annette Winch
Karen Grice



SAMR Transformation Framework

The teaching

Real-life application
Email, discussion boards
Opening PDFs, watching videos
Navigating online courses

01
Skill building

02

Multi modal
Video
Audio
Written text
Images

student centred

Independent

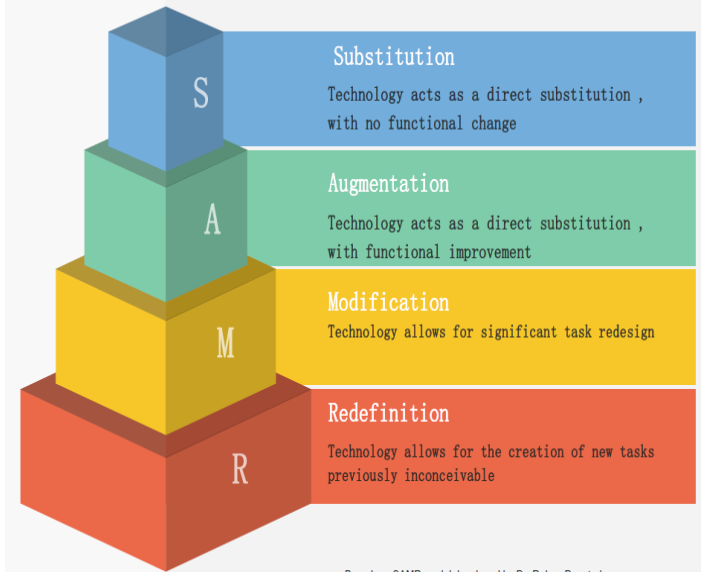
03

Individualisation in a large class
Personalised feedback
Private space to make mistakes
Some collaborative pairing

Engaging

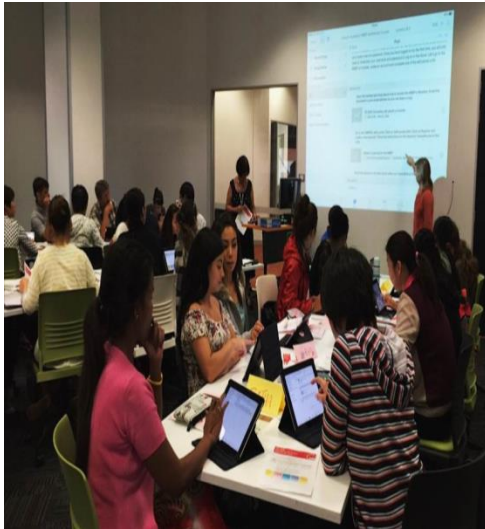
04

Self-paced
Fun
Challenging



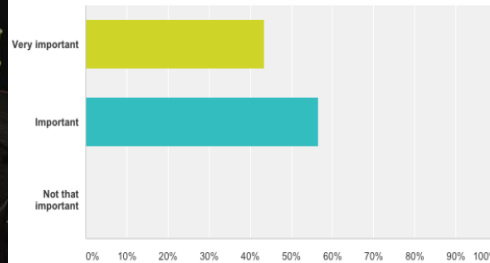
Based on SAMR model developed by Dr. Ruben Puentedura

Student engagement surveys



How important to your learning is using iTunes U? Do you learn better from the use of iPads?

Answered: 23 Skipped: 0



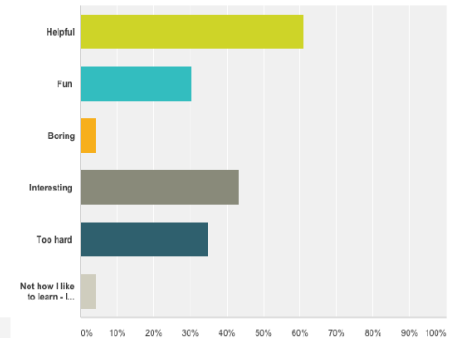
I would like to keep using iTunes U in class

Answered: 23 Skipped: 0



Using iTunes U is... (tick all that apply)

Answered: 23 Skipped: 0



Conclusions: ICT in TVET

- ICT-related developments as a megatrend in the region
- ICT divide to be considered for practice and policy development (improve effectiveness of ICT, access to high speed Internet)
- Interface between technologies and pedagogies
- Systematic approach at different levels (policy, curriculum, infrastructure)
- Utilization of available tools (resources and software)
- Commitment of institutional managers and support for individuals and teachers (PD)
- Capacity building for managers and teachers
- Support of the champions
- One stop for resources (e.g. UNESCO- UNEVOC)



Thank You

Dr. Margarita Pavlova

