



## 2<sup>ND</sup> HIGH OFFICIALS MEETING ON SEA-TVET

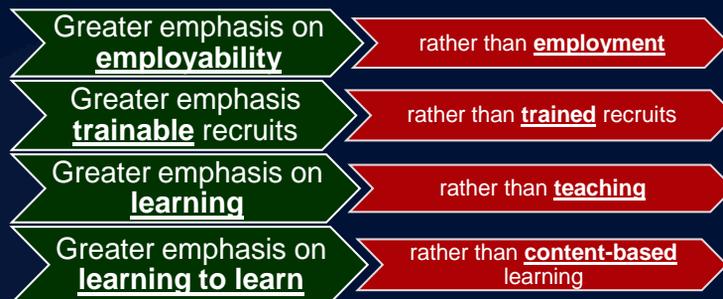
12-15 MAY 2016, BALI, INDONESIA

# Integration of 21<sup>st</sup> Skills in TVET Curriculum to Meet the Needs of Industry

Dr. Paryono  
SEAMEO VOCTECH Regional Centre

## Background

- ▶ The 21st century skills are a set of abilities that students need to develop in order to succeed in the information age (Thoughtful Learning, 2016)
- ▶ Many future jobs are not existing yet at the moment thus:



Source: Majumdar, 2010

## Quotes

- ▶ “Each year Rolls-Royce plc receives more than 11,000 applications from well qualified, bright graduates wishing to join the company, as well as many applications for its Modern Apprentice and undergraduate schemes. What makes the difference is an applicant’s ability to demonstrate what are now widely referred to as key skills, such as working as a member of a team, communication and interpersonal skills, problem solving, and planning and taking responsibility for one’s own learning and development. These are the skills that differentiate the great from the good. They enable new recruits to settle quickly into the world of work, to make an early contribution to our company, and to ensure that they remain equipped to meet the ever-changing challenges and opportunities of a career with a successful business like Rolls-Royce plc.”  
**Operations Training Manager, Coca Cola Enterprises**

## Quotes (Contd.)

- ▶ “To be productive contributors to society in our 21st century, you need to be able to **quickly learn the core content of a field** of knowledge while **also mastering a broad portfolio of essentials learning, innovation, technology, and careers skills** needed for work and life” (Trilling & Fadel, 2009, p16).

## Various terms

### 21<sup>st</sup> Century Skills



SEAMEO VOCTECH 2016

5/29/2016

5

## Sets of Transferable Skills

### Competencies in Learning

Capacity to learn,  
Problem solving,  
Willingness to take a  
chance,  
Innovation & creativity,  
Critical personality,  
Self reliance and  
Independence,  
Self evaluating,  
Self control,  
Self directed,  
Self disciplines

### Competencies in Understanding self and others

Integrity,  
Team work,  
Communication and  
public speaking,  
Confidence,  
Mutual respect and  
tolerance,  
Sensitivity,  
Vigilance,  
Piety,  
Empathy.

### Competencies in Dealing with work environment

Flexibility,  
Dealing with pressure,  
Work ethic,  
Positive attitude,  
Time management,  
Decision making  
ability,  
Pro-activeness,  
Leadership,  
Negotiation skill.

SEAMEO VOCTECH 2016

5/29/2016

6

## What are 21<sup>st</sup> Century Skills?

Learning and Innovation Skills	Literacy Skills	Life & Career Skills
Critical Thinking Creative Thinking Collaborating Communicating	Information Literacy Media Literacy Technology Literacy	Flexibility Initiative Social Skills Productivity Leadership

- ▶ HOT (High Order Thinking)

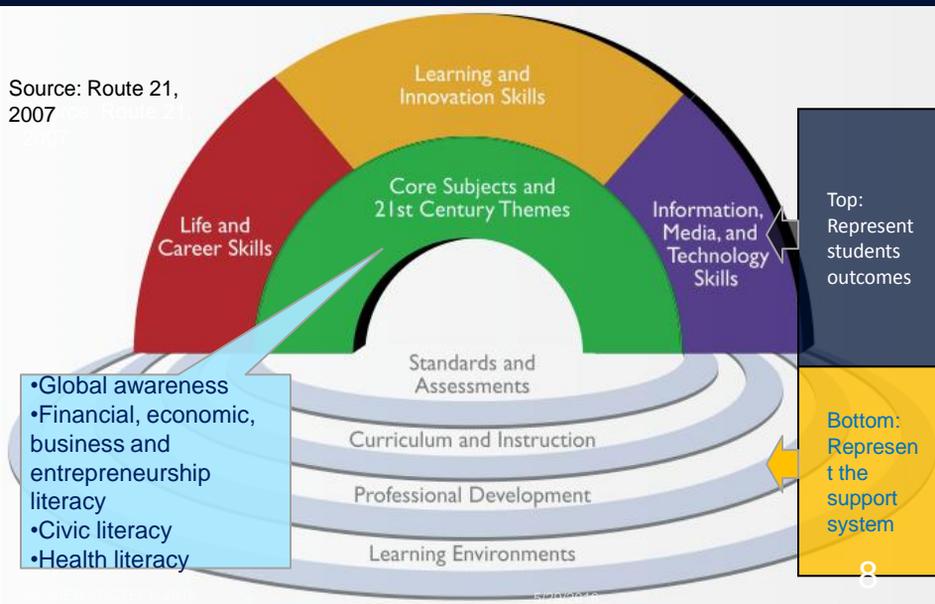
SEAMEO VOCTECH 2016

5/29/2016

7

## Mapping the 21<sup>st</sup> Century Skills

Source: Route 21,  
2007



8

## High Order Thinking Skills

Transfer	Critical Thinking	Problem Solving
Remembering	Reasonable	remembering information
Making sense	Reflective thinking	Learning with understanding
Being able to use the learned experience	Artful thinking: reasoning, questioning and investigating, observing and describing, comparing and connecting, finding complexity, and exploring viewpoints	Critically evaluating ideas
		Formulating creative alternatives
		Communicating effectively

Brookhart (2010), in Collins, R (2014)

SEAMEO VOCTECH 2016

5/29/2016

9

## Cognitive domain

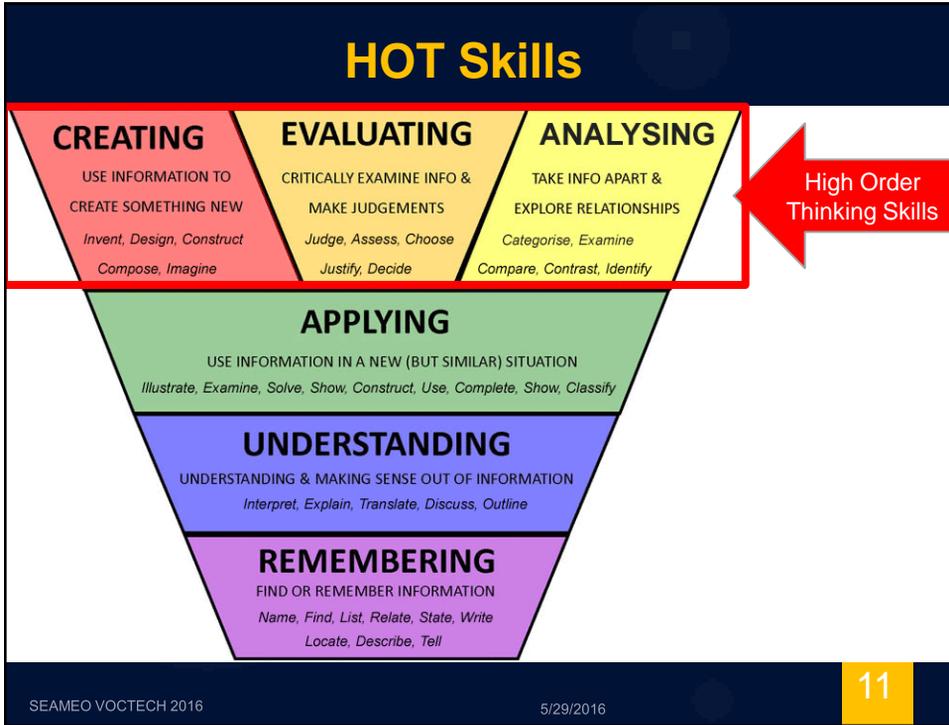
Bloom	Anderson
Knowledge	Remembering
Comprehension	Understanding
Application	Applying
Analysis	Analyzing
Synthesis	Evaluating
Evaluation	Creating

The higher the level

SEAMEO VOCTECH 2016

5/29/2016

10



## Issues

- ▶ There are challenges in imparting these skills to students, including the suitable ways for monitoring and assessing the skills.

## Integration in the Curriculum

- ▶ **Mapping**
- ▶ Integration in teaching learning
- ▶ Holistic assessment through the use of multi assessors, multi assessment tools, and multi evidences.

## Mapping Components of 21<sup>st</sup> Century skills in various occupations and the suggested level for a skilled worker

21 <sup>st</sup> Century Components	C Group 1	BT Group 2	C Group 3	C Group 4
Communication	2	3	3	1
Numeracy	3	1	3	3
ICT Skills	1	1	2	1
Patriotism	-	1	2	1
Teamwork	3	2	3	2
Integrity	3	2	3	2
Safety Awareness	3	3	3	3
Self-presentation	1	3	2	1
Planning	2	3	3	3
Entrepreneurship	2	1	2	2
Leadership	?	?	?	?
Critical Thinking	?	?	?	?
Negotiation Skills	?	?	?	?

Notes: C= Carpenter, BT= Beauty Therapy

SEAMEO VOCTECH 2016

5/29/2016

15

## Mapping components of 21<sup>st</sup> Century skills in various occupations and the suggested level for a manager

TS Component	C 1	BT 2	C 3	C 4
Communication	4	3	4	4
Numeracy	3	3	3	3
ICT Skills	3	2	3	3
Patriotism	-	1	2	2
Teamwork	2	3	3	3
Integrity	3	3	3	3
Safety Awareness	4	3	3	3
Self-presentation	3	3	3	3
Planning	4	3	4	4
Entrepreneurship	4	4	4	4
Leadership	?	?	4	?
Critical thinking	?	?	?	?
Negotiation Skills	?	?	?	?

Notes: C= Carpenter, BT= Beauty Therapy

SEAMEO VOCTECH 2016

5/29/2016

16

## Integration of 21<sup>st</sup> Century Skills in Teaching and Learning Process in 6 SEA Countries

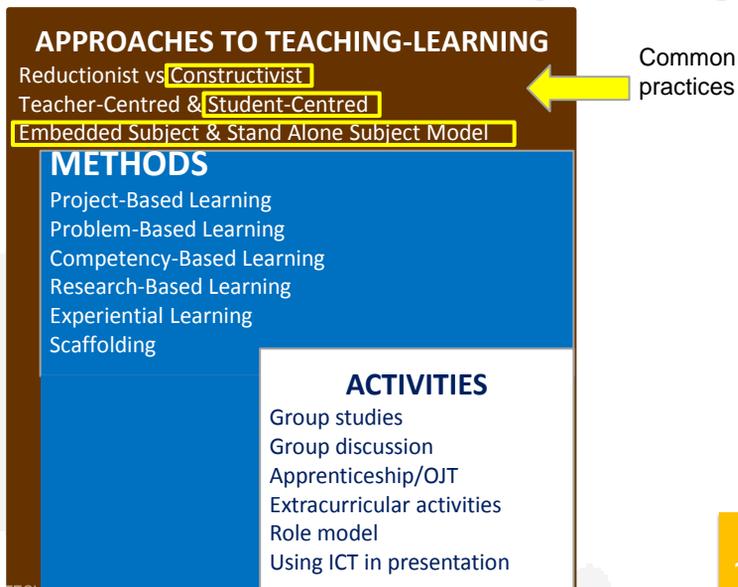
Indonesia	Malaysia	Vietnam	Brunei	Philippines	Thailand
TS employs <b>real situation/cases as learning context</b> . Some relevant teaching methodologies are: <b>project-based learning, problem-based learning and group discussions</b> .	Two types in implementing TS in teaching and learning process: <b>1.Embedding</b> teaching and learning of communication skills, teamwork, critical thinking, and other skills in the classroom. <b>2.Offering subjects</b> such as entrepreneurship, leadership and other skills as optional courses.	The principles of life skills (TS) teaching activities: <b>1.</b> The content of TS is in accordance to Vietnamese habits and customs. <b>2.Institutions are responsible for the content and quality of life skills (TS) education.</b> <b>3.The learners participate in volunteer spirit.</b>	<b>Various approaches to teach or inculcate TS, ranging from a student-centred to teacher-centred methods.</b> Industrial experience is important for teachers to impart TS in students.	Employing some approaches as follows: <b>1.Hands-on activities / experience-based learning approach.</b> <b>2.Highlighting values</b> in all learning areas. <b>3.Utilising innovative technology.</b> <b>4.Applying skills to real-life situation.</b> <b>5.Engaging learners via varied instructional approaches.</b> <b>6.Using 4 teaching learning episodes: what to know, pro-cess, reflect &amp; transfer.</b> <b>7.Allowing students to discover and develop skills by themselves.</b>	TS are employed in a <b>dual program</b> which ties apprenticeship in industry & school activities, re-search-based learning, group studies, project-based, and extra-curricular activities (e.g., sport & leisure activities, community services, leadership camp, and skills competition)

SEAMEO VOCTECH 2016

5/29/2016

17

## Model of Integration of 21<sup>st</sup> Century Skills in Teaching-Learning



18

# Assessment and certification

Indonesia	Malaysia	Vietnam	Brunei	Philippines	Thailand
Types of evaluation: 1. Formative and 2. Summative.  Transferable skills are assessed continuously.	Involves other parties: faculty members, co-curriculum, instructors or coaches.  Assessing TS involve assessment rubric to measure students' TS. The student will receive grades at the end of the semester (based on their achievements).	The TS subjects are evaluated according to the general regulations of the school and university and depending on the nature of the subjects.	Using holistic assessments, such as a rubric. Other instruments used in assessments are observations & presentations. During internship, TS are assessed by industry. The student will get the certificate of achievement with descriptive results.	Approaches employed: 1. TESDA (Technical Education and Skill Development Authority) certification. 2. Criterion-referenced assessments (checklist, rubrics, etc). 3. Authentic assessment/performance test. 4. Teacher observation and feedback. 5. Client satisfaction survey.	1. Assessed using authentic assessment through various tools. 2. Assessed and reported at faculty level. 3. Measured, evaluated, and reported mostly for certification.

## Model of Assessing 21<sup>st</sup> Century Skills

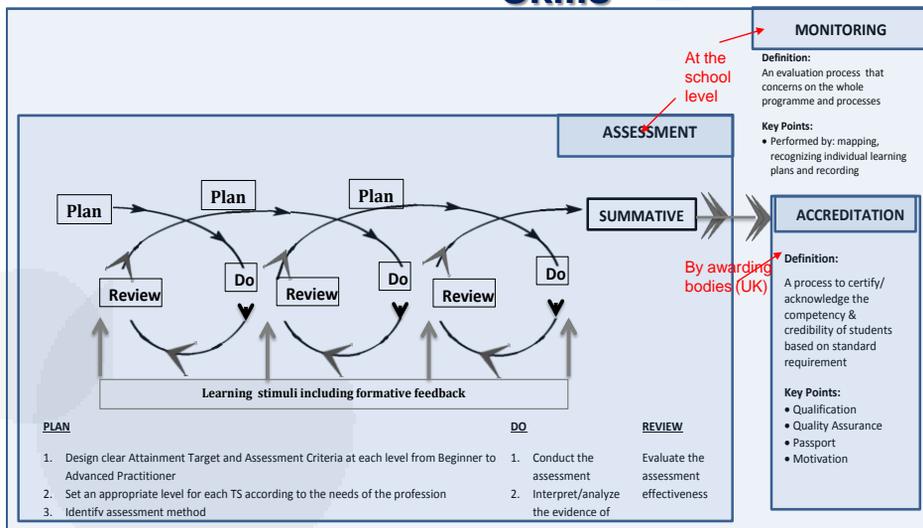


Figure 7.10. A Proposed Model of Monitoring, Assessment, and Accreditation of Transferable Skills in TVET. Adapted from Robinson & Vickers (2014)

## Conclusions and recommendations

Integration of 21<sup>st</sup> Century in Curriculum:

- ▶ It is advisable that TVET curriculum is more self-directed and reflecting active development of competencies in work projects (UNESCO, 2013).
- ▶ Adopting a “mapping approach” using descriptors at different levels (1 to 4, e.g. UK example) may be a suitable way of integrating them in TVET curriculum and assessment.
- ▶ Even though some of the member countries have adopted various relevant approaches to teaching 21<sup>st</sup> century skills, such as learner-centred, PBL, inquiry-based, reflective learning real life situation/workplace practice etc. the discrepancy was still wide and implementation was still an issue. Some were still superficial and lacking of meaningful implementation.

## Conclusions and recommendations (contd.)

Integration of 21<sup>st</sup> century Skills in Teaching-Learning process, echoing from UNESCO (2013) recommendations:

- ▶ The idea that teachers should act as the role model is important considering that some of the 21<sup>st</sup> century skills are better inculcated through examples than through traditional teaching. In other words these skills should not be taught using traditional teaching style but through consultative and more learner-centred.
- ▶ “Teachers need to be passionate, enthusiastic, knowledgeable, approachable and well organised in order to: (a) communicate to learners the importance of these skills in the workplace; (b) help learners to acquire such generic skills; and (c) ensure that learners are then capable of transferring these skills to new contexts.” (p. 10).
- ▶ The adoption of vocation-specific projects, work-related tasks, and facilitated under real working conditions are some of the important approaches that teachers must consider.
- ▶ Holistic and authentic assessment are advisable.

## Conclusions and recommendations (contd.)

- ▶ “To be productive contributors to society in our 21st century, students need to be able to quickly learn the core content of a field of knowledge while also mastering a broad portfolio of essentials learning, innovation, technology, and careers skills needed for work and life” (Trilling & Fadel, 2009, p16).

- ▶ Thank you