



United Nations
Educational, Scientific and
Cultural Organization

Bangkok Office
Asia and Pacific Regional Bureau
for Education



Global
citizenship



NEQMAP
Network on Education Quality
Monitoring in the Asia-Pacific



Critical and
innovative
thinking



Intrapersonal
skills

Assessment of Transversal Competencies

Policy and Practice in the Asia-Pacific Region



Media and
information
literacy



Physical health
& religious
values



Interpersonal
skills

Assessment of Transversal Competencies

Policy and Practice in the Asia-Pacific Region

Esther Care and Rebekah Luo

Published in 2016 by the United Nations Educational, Scientific and Cultural Organization 7,
place de Fontenoy, 75352 Paris 07 SP, France,

and

UNESCO Bangkok Office

© UNESCO 2016

ISBN: 978-92-9223-562-8 (print version)

ISBN: 978-92-9223-563-5 (electronic version)



This publication is available in Open Access under the Attribution-ShareAlike 3.0 IGO (CC-BY-SA 3.0 IGO) license (<http://creativecommons.org/licenses/by-sa/3.0/igo/>). By using the content of this publication, the users accept to be bound by the terms of use of the UNESCO Open Access Repository (<http://www.unesco.org/open-access/terms-use-ccbysa-en>).

The designations employed and the presentation of material throughout this publication do not imply the expression of any opinion whatsoever on the part of UNESCO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

The ideas and opinions expressed in this publication are those of the authors; they are not necessarily those of UNESCO and do not commit the Organization.

Editor: Aliénor Salmon

Cover Design: Kathleen Sullivan and Warren Field

Layout: Warren Field

Graphics: Kathleen Sullivan

TH/IQE/C3/16/066-1000

Table of Contents

Foreword	I
Acknowledgments	III
Acronyms	IV
Executive Summary	V
1 Introduction	1
2 Background	3
3 Method	7
4 Key Findings	14
System level.....	15
School level.....	20
Teacher level.....	28
5 Challenges in implementing TVC assessment	37
7 Recommendations	45
8 Conclusion	48
References	49

Figures and Tables

Figure 1: Independently sourced materials and guidelines	22
Figure 2: Teachers' awareness of general assessment guidelines	30
Figure 3: Teachers' awareness of TVC assessment guidelines	30
Figure 4: Teachers' awareness of TVC-relevant curriculum guidelines	30
Figure 5: Change in ways of teaching assessment	30
Figure 6: Purposes of TVC assessment	31
Figure 7: Specific guidelines and/or handbooks received by teachers	32
Figure 8: Style of training relevant to TVC assessment provided to teachers	33
Figure 9: Teacher responses regarding access to TVC assessment tools	35
Figure 10: Focus of TVC assessment	36
Figure 11: Categories of challenges	43
Figure 12: Acting on recommendations	46



Table 1: **ERI-Net’s framework on transversal competencies**4

Table 2: **Number of respondents at each level by country/jurisdiction**8

Table 3: **Details of system level respondents**9

Table 4: **Demographic characteristics of participating schools for each country/jurisdiction** 11

Table 5: **Inclusion of TVC assessment in country policy frameworks and guidelines** 16

Table 6: **Efforts implemented by countries/jurisdictions to integrate TVC assessment into education** 17

Table 7: **Information about training provided to schools** 18

Table 8: **TVC assessment policy documentation and guidelines at school level** 20

Table 10: **Support and infrastructure available in schools across countries/ jurisdictions** 25

Table 11: **Partnerships and initiatives sought, established and strengthened by schools** 26

Table 12: **Plans for TVC assessment** 27

Table 13: **Challenges to implementation of government policies** 38





Foreword

Globally, there is increasing recognition of the relevance of transversal competencies development in education. Although recognition of the competencies that are important for the workforce has long been endorsed, it is relatively recently that calls for their development have moved from a strongly vocational stance (Brewer, 2013), to an educational one for both work and life perspective (Pellegrino and Hilton, 2014). There are many frameworks which describe the skills or competencies that this 21st century world demands (Binkley et al., 2012; Lippman et al., 2015; Delors et al., 1996; Gordon et al., 2009), and in so doing they display strong commonalities. These include descriptions of how people think, act, use tools, and interact. The framework for transversal competencies used in this study is derived from the studies by the Asia-Pacific Education Research Institutes Network (ERI-Net), which is hosted by UNESCO Bangkok.

Educators, not only in the Asia-Pacific region, but globally, are grappling with the challenges and promise of supporting students in developing transversal competencies. Enthusiasm for their inclusion in formal education abounds, as do reservations. In these early days of change, enthusiasm is challenged by the need to explore and identify the methods and strategies which will enable the youth of today to graduate from basic education better equipped to embrace life and work.

This study explores educators' beliefs and knowledge about the assessment of transversal competencies as well as associated support practices in nine countries/jurisdictions in the Asia-Pacific region, together with the challenges and issues that they face.

With major changes in educational goals across countries, how do the contributing agents of curriculum, pedagogy, and assessment play their part? As countries move more purposefully and explicitly towards broadening their curricula, how do educators align not only pedagogical practices but also approaches to assessment with these innovations?

Assessment is frequently discussed as though it is an entity separate from education. In order for educational assessment to be functional, its interdependence with its partners – curriculum and pedagogy – needs to be understood. Assessment not only provides information to system, to school and teacher, as well as to student and parent, but also mirrors the education goals, as do curriculum and pedagogy. In the same way that goals influence what is in the curriculum, and how it is to be taught, so do these goals influence assessment, and the methods and styles that it should best take up.

The introduction of transversal competencies to education systems requires a shift in thinking about how we teach and how students learn. Assessment can guide that shift or inhibit it. Educators are considering active learning approaches that might be more attuned to competencies and skills development; curricula are being reformulated to require demonstration of understanding and application of knowledge; and assessment methods need to be designed to support these practices.

This report follows earlier work on transversal competencies undertaken by ERI-Net. The work demonstrated the prevalence of these competencies in country policy frameworks, and their



manifestation in teacher practices. In this report, the nine Asia-Pacific countries/jurisdictions describe how their education systems currently see the assessment implications of these phenomena. The report provides valuable information both across the region and within countries/jurisdictions upon which to reflect as transversal competencies are increasingly represented in country goals. The report is focused on the structures and understanding that are required to support assessment of transversal competencies, rather than examples of specific assessments. Questions focused on how teachers can be supported to assess these competencies; whether guidance is provided to support alignment of assessment with curriculum and pedagogy; and whether assessment of these competencies is regarded as important. The views of central education management, school leadership, and teachers were sampled and compared, to draw a picture of how far implementation has travelled in these countries/jurisdictions.

There are very few research-based tools that reflect innovative responses to the demands of assessment of transversal competencies for use in education settings. Although there have been intensive efforts to assess competencies such as problem solving (OECD PISA), collaborative problem solving (Griffin and Care, 2015), and information and communications technologies skills (ECDL, 2016; Claro et al., 2012; Fraillon et al., 2014) at large-scale for the education sector, other competencies have not received such global attention. The majority of measurement attempts concerned with the more 'social' of the transversal competencies such as communication, sociability, self-discipline, and so on, have taken place in the psychology domain. Others such as organizational skills, collaboration, and teamwork have taken place in the human resource or organizational psychology domains. These measurement attempts have mainly focused on diagnosis or 'typing' of interaction or professional practices, rather than adopting an educational or developmental approach. Measurement attempts concerned with the more 'cognitive' of the transversal competencies such as problem solving are more numerous, having explored process frameworks (Polya, 1973), as well as the degree to which teaching of problem solving processes generalizes beyond the immediate context to other applications. Large-scale applications of problem solving assessment for cross-curriculum use are not in evidence.

Transversal competencies draw on psycho-educational concepts, literature, and practices. This is part of the challenge for education systems – how to mainstream the teaching and assessment of capabilities that heretofore have existed in specialist programmes or clinical areas rather than in core education policies. The findings of this report highlight this challenge.



Gwang-Jo Kim

Director

UNESCO Bangkok



Acknowledgments

This report is the outcome of a collaborative regional study on assessment of transversal competencies in nine countries/jurisdictions of the Asia-Pacific region, conducted under the auspices of the Network on Education Quality Monitoring in the Asia-Pacific (NEQMAP), a regional network coordinated by UNESCO Bangkok.

We would like to thank the following country researchers who made this study possible through conducting the research and producing country case study reports: **Australia:** Stanley Rabinowitz of the Australian Curriculum Assessment and Reporting Authority (ACARA); **Hong Kong (China):** Samuel Kai-Wah Chu of the University of Hong Kong; **India:** Jyoti Bawane of the Indian Institute of Education (IIE); **Malaysia:** Lei Mee Thien and Dominador Dizon Mangao of the Southeast Asian Ministers of Education Organisation Regional Centre for Education in Science and Mathematics (SEAMEO RECSAM); **Mongolia:** Khishigbayar Badamsambuu and Otgonbaatar Khajidmaa of the Institute of Education Research, and Munkhjargal Davaasuren and Amarjargal Adyasuren of the Mongolian State University of Education; **Philippines:** Marie Therese A.P. Bustos, and Joedal Jan A. Marabe of the Assessment, Curriculum and Technology Research Centre (ACTRC); **Republic of Korea:** Insuk Kim of the Korea Institute for Curriculum and Education (KICE); **Thailand:** Pumsaran Tongliemnak of the Ministry of Education, and **Viet Nam:** a research team led by Minh Duc Nguyen of the Vietnam Institute of Educational Sciences (VNIES).

Our sincere thanks go to the school leaders, principals and teachers, researchers and education specialists who provided information and participated in interviews, questionnaires, and group discussions for this study. Special thanks go to the schools and teachers who allowed the researchers to observe their classrooms.

This regional synthesis report was written by Esther Care of the University of Melbourne and the Brookings Institution, and Rebekah Luo of the University of Melbourne, based on country reports and data prepared by the participating country researchers noted above.

The report was prepared under the overall supervision of Ramya Vivekanandan of the Section for Inclusive Quality Education at UNESCO Bangkok, which hosts the NEQMAP Secretariat. Tserennadmid Nyamkhuu played a major role in conceptualization and coordination of the project, while administrative assistance was provided by Thanattiya Potimu and Ratchakorn Kulsawet. The report also benefitted from valuable contributions and research support from former UNESCO Bangkok staff and interns, namely Antony Tam, Ryoko Suzuki and Kohei Yamada. The report was edited by Aliénor Salmon, with additional proofreading support by Kathleen Sullivan. Warren Field and Kathleen Sullivan are gratefully acknowledged for the design and graphics respectively.

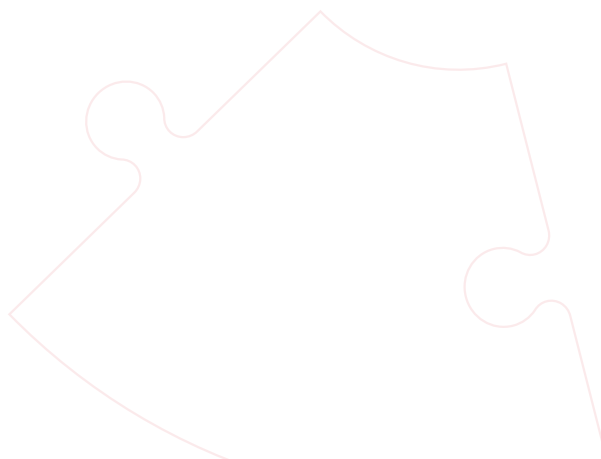
We would also like to extend our sincere appreciation to the external peer review panel, namely Connie K. Chung of the Harvard Graduate School of Education, Joshua Muskin of Geneva Global, Helyn Kim of the Brookings Institution, and Deepika Sharma of the Learning Links Foundation, as well as UNESCO Bangkok review team, namely Maki Hayashikawa, Satoko Yano, Jongwhi Park, and Ramya Vivekanandan.

The research, and the production of this report, were made possible through funding support from the Global Partnership for Education (GPE) and the Government of Malaysia via the Malaysia Funds-in-Trust (MFIT), under the Malaysia-UNESCO Cooperation Programme (MUCP).



Acronyms

ACARA	Australian Curriculum, Assessment and Reporting Authority
ATC21S	Assessment and Teaching of 21st Century Skills
BEA	Bureau of Education Assessment
CBSE	Central Board of Secondary Education
CCE	Continuous and Comprehensive Evaluation
DepEd	Department of Education
ERI-Net	Asia-Pacific Education Research Institutes Network
IT	Information Technology
JNV	Jawahor Navodaya Vidyalaya
KLA	Key Learning Areas
KVS	Kendriya Vidyalaya Sangathan
NEQMAP	Network on Education Quality Monitoring in the Asia-Pacific
PLTs	Professional Learning Teams
SBA	School-based Assessment
SSA	Sarva Shiksha Abhiyan
TVC	Transversal Competencies
UNESCO	United Nations Educational, Scientific and Cultural Organization
VNIES	Vietnam Institute of Educational Sciences





Executive Summary

This report draws on reports from nine participating countries/jurisdictions in the Asia-Pacific: Australia, Hong Kong (China), India, Malaysia, Mongolia, Philippines, Republic of Korea, Thailand and Viet Nam. These in turn drew upon responses from individuals in their education systems at policy and school levels to identify their perceptions of the current state of practices associated with the assessment of transversal competencies. The focus of the explorations was on the elements of the education system that support integration of the competencies agenda, rather than the form of the actual assessment tools.

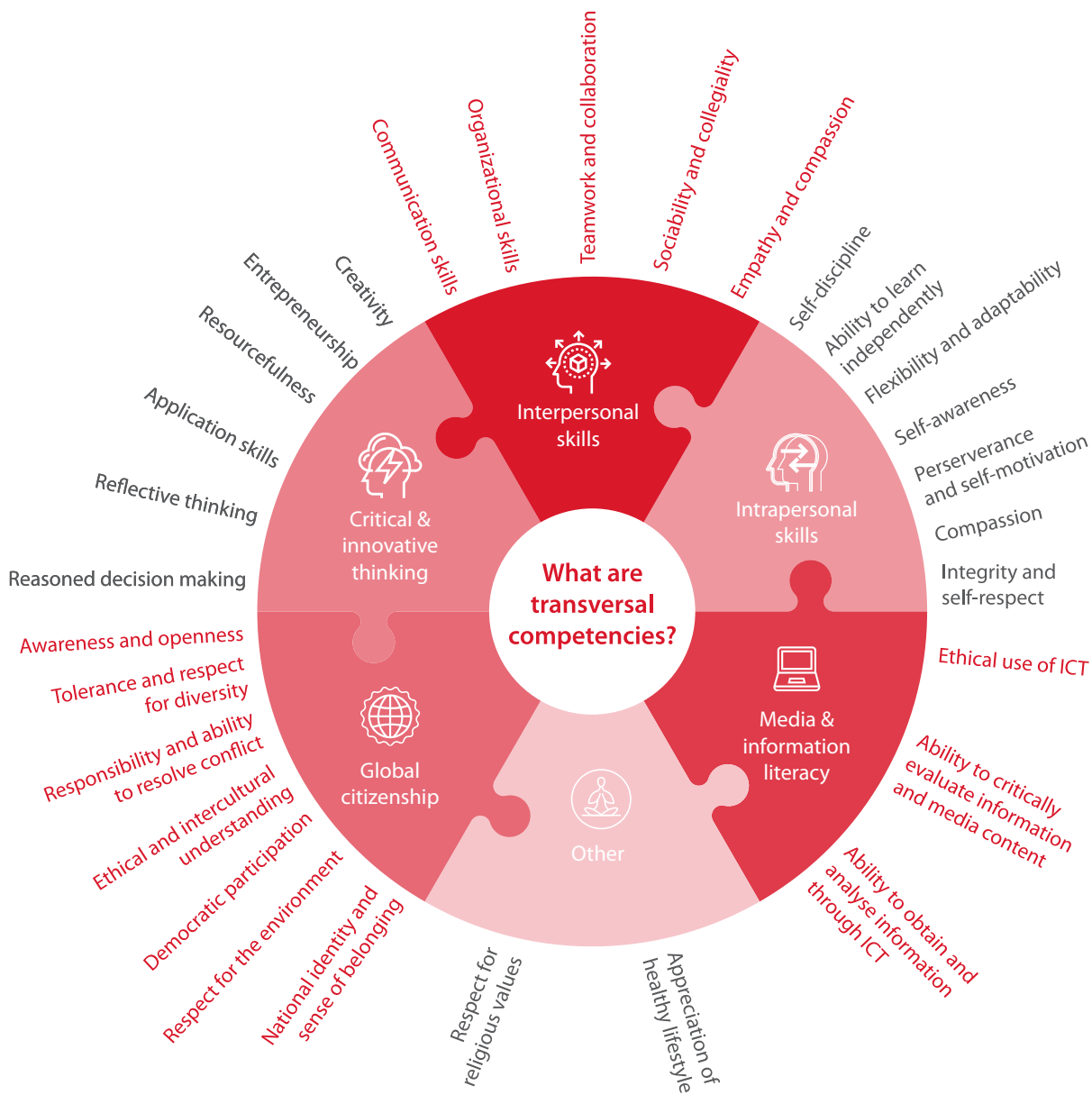
The guiding questions for the study were:

- Is assessment of transversal competencies reflected in policies, plans, legislation, curriculum guidelines, or national assessment frameworks?
- Are transversal competencies being assessed at school and/or system level?
- What are the challenges of assessing transversal competencies at school?
- What are the recommendations for initiating or improving assessment of transversal competencies?

From participant responses at the policy level it is clear that assessment of transversal competencies is being considered, and in some countries/jurisdictions research has been undertaken to support exploration of how to implement assessment. Challenges about how to assess and the value of assessment reflect challenges in the integration of competencies in the curriculum, and their teaching. Challenges also reflect systemic issues that arise as a consequence of any major education reform effort. Participant responses at school and teacher levels indicate recognition of the shift towards integration of transversal competencies, and make clear that more definition of how to proceed is required. Although teachers across the region have the opportunity for professional development activities, these are overall not seen as specific enough to the demand of the competencies shift. Likewise, teachers indicate that more support in access to appropriate assessment tools and in how to develop these, would be helpful.

The analysis of case study data from the region reveals variation in practices and approaches, providing a rich opportunity for information sharing as countries/jurisdictions in the region continue with this education reform. The call for professional development and for support with development of assessment tools illustrates the core challenge for education. The core challenge is the lack of knowledge about transversal competencies – how they develop, how they might be taught through or in conjunction with current curricula, and how assessment might enhance their teaching and learning. The major recommendation from this study is, through the mechanism of a core regional group, to build capacity in enhancing understanding in order to maximize positive learning outcomes from the diversity of approaches and expertise evident in the region.







1 Introduction

For the past decade, the Asia-Pacific region has been undergoing major social, economic and technological changes and development. To equip learners with the knowledge and skills to cope with these changes, education systems in the region have increasingly emphasized the importance of transversal competencies (TVC) which refer to knowledge, skills, values, and attitudes that are integral to life in the 21st century.

This Asia-Pacific trend reflects global activity. Increased rates of change brought about by technologies are transforming how we communicate, and how we change the ways in which we produce and create. For example, it is now impossible for any one individual to have a comprehensive technical understanding of how to use or modify our technologies. This presents a serious challenge for educators who have the responsibility of equipping learners with the skills to navigate their worlds of work and life.

A useful approach to looking at the skill sets required by our 21st century working environments is possibly best represented by the work of Levy and Murnane and colleagues (e.g., Autor et al., 2003) who have shown that the need for human performance of repetitive and routine tasks has diminished due to the capacity to automate these. Accordingly, it has been argued that the skill set now required of workers is for increasingly sophisticated and complex problem-solving skills, and communication and coordination skills.

Bringing these issues into the education sphere, the OECD's DeSeCo Report (2005) explored the competencies needed not only for individual success but also for a well-functioning society. The report's identification of competencies required that these contribute to valued outcomes both for society and individuals, that they would support individuals to meet societal demands, and that these would be for all as opposed to specialist groups. The framework proposed was organized across three themes – using tools interactively, acting autonomously, and interacting in heterogeneous groups. These themes cover a wide range of competencies, with emphasis on their transversal characteristics – that the competencies would be applicable across a wide range of occupational and life areas.

Changes in educational goals necessarily involve all sectors of the education community. For the education providers themselves, reviews of curriculum, of pedagogical philosophy, and of assessment, as well as review of technical capabilities and resources, are needed.

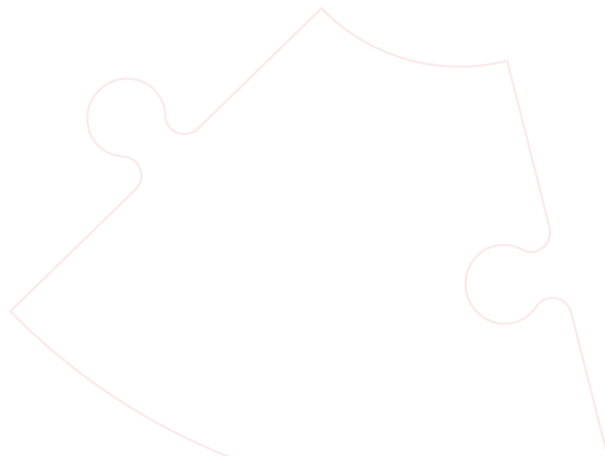
Assessment, of primary interest in this report, is used for many purposes. These purposes include provision of accountability data to evaluate quality of learning outcomes, use of data for instructional or formative purposes, and clarification of the goals and desired outcomes of learning. Where educational goals are qualitatively different from those typically aspired to in the past, the implications for review of assessment approaches and methods are critical.

Many education systems in the Asia-Pacific region have begun to incorporate or have plans to integrate such competencies into their educational goals. To explore and investigate the development of TVC in the Asia-Pacific region, UNESCO's Asia-Pacific Regional Bureau for



Education (UNESCO Bangkok) has undertaken a series of research studies. In 2013, members of the Asia-Pacific Education Research Institutes Network (ERI-Net), hosted by UNESCO Bangkok, initiated research to document how countries/jurisdictions in the region had introduced, or were in the process of introducing policy and curriculum changes to cultivate these non-discipline skills in learners. Different terms have been used to describe these skills and competencies, such as 21st century skills, soft skills, and non-cognitive skills. In 2012, ERI-Net developed a working definition for those skills competencies using the term 'transversal competencies' (TVC). TVC encompass skills, values and attitudes that are required for learners' holistic development and for learners to become capable of adapting to change (**Table 1**).

This research initiative has led to several phases of research. The objectives and main findings of these are briefly discussed in the following chapter.





2 Background

ERI-Net research phases

Phase I: National policies and plans

The objective of this phase was to review whether countries in the Asia-Pacific region have recognized TVC and have integrated them into their education policies and frameworks. Ten Asia-Pacific countries/jurisdictions participated in the study. According to the results of the study (UNESCO, 2015), all ten¹ participating countries/jurisdictions have policy documents or curricula that promote (either explicitly or implicitly) TVC as defined in the ERI-Net TVC framework. The study found that creative and innovative thinking and interpersonal skills, for example, and critical thinking, teamwork and collaboration, were included most prominently in education policies and/or curricula by participating countries/jurisdictions. TVC were most commonly integrated into curricula through three modes – integration into a specific subject, cross subject, and extracurricular activities. Participating countries/jurisdictions reported challenges in integrating TVC into their policies and curricula; the challenges were categorized as definitional, operational, and systemic.²

Phase II: Current practices and the link between policy and practice

Although findings from Phase I indicated that TVC were integrated in policy and curricula at national level, the link between policy and actual practice in the classrooms was not well understood. The main objective of Phase II was to (a) identify current practices, emerging trends and bottlenecks in integrating TVC in schools, classrooms and teaching practices, and (b) compile and analyze best practices for teaching TVC in the classroom. The same ten countries/jurisdictions that participated in Phase I Study continued, with the exception of Hong Kong (China), which was replaced by Viet Nam.

The results of the Phase II study (UNESCO, 2016), suggested that the role of teachers in classrooms has changed due to the teaching of TVC such as communication skills and critical thinking. To teach TVC, teachers require new skills and approaches that are more interactive and student-centred. In Phase II, school principals and teachers also revealed that many felt that they lack adequate support for teaching TVC, with inadequate teacher training, instruction and education materials, and confidence in delivering the lessons. These findings highlighted a need for research to determine how teachers could be prepared and supported in their efforts to teach TVC.³

1 Participating countries/jurisdictions in the study were Australia, Hong Kong (China), India, Japan, Republic of Korea, Malaysia, Mongolia, Philippines, Shanghai (China) and Thailand.

2 The full report for Phase I can be accessed through this link: <http://unesdoc.unesco.org/images/0023/002319/231907E.pdf>

3 The full report for Phase II can be accessed through this link: <http://unesdoc.unesco.org/images/0024/002440/244022E.pdf>



In view of this, the current study, which was launched by the Network on Education Quality Monitoring in the Asia-Pacific (NEQMAP)⁴ at UNESCO Bangkok, was undertaken with the backdrop of the ERI-Net study phases using ERI-Net's framework on TVC (**Table 1**). As shown, ERI-Net's framework on TVC has six domains: 1) critical and innovative thinking; 2) interpersonal skills; 3) intrapersonal skills; 4) global citizenship; 5) media and information literacy; and 6) physical health and religious values.

The aim of this study was to explore and identify approaches that countries/jurisdictions of the Asia-Pacific region adopt in moving to assess TVC through primary and secondary education, the issues and challenges encountered in the process, the lessons that could be drawn from current practices, and to formulate recommendations for future directions. Nine countries/jurisdictions participated in this study: Australia, Hong Kong (China), India, Malaysia, Mongolia, Republic of Korea, Philippines, Thailand and Viet Nam. An orientation meeting for country researchers was held in October 2015 in Bangkok, Thailand. At the meeting, country researchers and Esther Care, the international expert leading this work, had the opportunity to discuss in-depth the research framework, research tools and instruments, and to plan the study together.

Table 1: ERI-Net's framework on transversal competencies

Domains	Examples of key skills, competencies, values and attitudes
Critical and innovative thinking	Creativity, entrepreneurship, resourcefulness, application skills, reflective thinking, reasoned decision-making
Interpersonal skills	Communication skills, organizational skills, teamwork, collaboration, sociability, collegiality, empathy, compassion
Intrapersonal skills	Self-discipline, ability to learn independently, flexibility and adaptability, self-awareness, perseverance, self-motivation, compassion, integrity, self-respect
Global citizenship	Awareness, tolerance, openness, responsibility, respect for diversity, ethical understanding, intercultural understanding, ability to resolve conflicts, democratic participation, conflict resolution, respect for the environment, national identity, sense of belonging
Media and information literacy	Ability to obtain and analyse information through ICT, ability to critically evaluate information and media content, ethical use of ICT
Other (Physical health, Religious values)	Appreciation of healthy lifestyle, respect for religious values

4 NEQMAP is a regional platform established at UNESCO Bangkok in 2013, with an aim to improve the quality of learning in the Asia-Pacific region by enhancing the use of student learning assessment to strengthen education systems. NEQMAP focuses on student learning assessment as a key tool for monitoring education quality while acknowledging the importance of maintaining strong linkages with other enablers of learning in the classroom including curriculum and pedagogy. The network supports countries in the region through capacity development, research and knowledge sharing activities in the area of learning assessments.
<http://www.unescobkk.org/education/quality-of-education/neqmap/>





Approaches to assessment

The answer to why assessment might be seen as necessary to explore in the context of the global move towards integration of TVC lies in two realities. First, the teaching and learning of TVC are necessarily based on a developmental paradigm, and this differentiates it from some traditional subject areas – although not all. Development of competencies relies absolutely on achieving the most simple of skills before one can move to more advanced levels. Second, TVC are essentially about processes, as opposed to being about content, its storage and retrieval. What this means is that assessment strategies that have been used effectively in the past to measure student learning that is primarily content-based, may not be appropriate for student learning that is focused on developing and enhancing competencies.

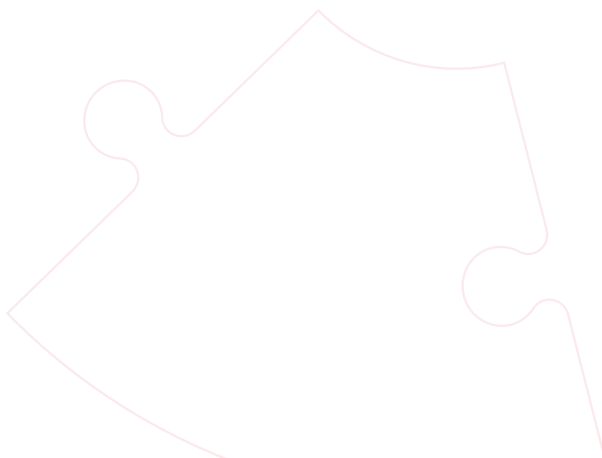
Assessment in education has traditionally focused on end points. In an education system that includes TVC, the learning target is the students' capacity to process and use information, and their developing competence in this, not their ability to store and recall facts. Thus the assessment target needs to change to evaluate that processing capacity. This poses a challenge for assessment experts and for classroom teachers. Assessing whether a student knows a fact is relatively simple. Assessing whether a student can identify how that fact can be used is complex. Application and use of information can take many forms, while responses around content are typically less varied. This means that in assessment we must move from targeting well-defined goals to ill-defined goals (Care and Griffin, 2014; Fischer et al., 2012). In the context of classroom assessment, we move from a 'closed' question where correct answers are prioritized, to 'open' questions or prompts, which require a student to demonstrate cognitive and/or social processing. There is no doubt that these competencies have long been valued as outcomes of education, but they have not been explicitly prioritized through formal classroom assessments.

In order to build assessment tasks or events that can capture these processes, developers (whether assessment experts or classroom teachers) need to know what the nature of the processes are, to know what they look like at their most rudimentary, and to understand how they become progressively more complex. TVC such as collaboration, critical thinking, or communication, have not been studied over the extended period of time that researchers and educators have dedicated to study of literacy and numeracy skills, so less is known about their development.

To understand the development of these competencies is also to know how to teach them. The history of measurement of many human characteristics, including personality and intelligence, is that our understanding of them has been facilitated by our efforts to assess them. Assessment requires us to deconstruct complex ideas or constructs in a way that makes them comprehensible, more simple, and manageable. Assessment of TVC is essential to develop the capacity to understand them.



Apart from using assessment as a tool in this way, assessment is seen by many as an accountability mechanism that communicates that what is being assessed is valued. Accordingly, countries' involvement in developing assessment of TVC may be interpreted by their communities as clarification of their importance. This accountability imperative as well as the use of assessment to drive understanding of TVC accounts for the current interest in assessment of these competencies.





3 Method

This chapter describes the research approach of the study and data collection methods adopted by the researchers.

Research approach

This study on TVC was designed to collect information and document experiences, as well as issues and challenges faced by participating countries/jurisdictions in the Asia-Pacific region. The specific objectives of the study are:

- To gather information on existing approaches to assessment of TVC at the school and system level from selected countries/jurisdictions in the Asia-Pacific region.
- To identify challenges in the assessment of TVC.
- To formulate preliminary recommendations on how countries/jurisdictions of the Asia-Pacific region can prepare for the assessment of TVC.

The NEQMAP Secretariat at UNESCO Bangkok provided countries/jurisdictions with guidelines for research interviews and classroom observations. Input from country researchers was integrated during the development of research guidelines and tools at the orientation meeting. Country researchers were encouraged to follow the guidelines, but also to use their expert judgment concerning viability in their country context.

Table 2 lists the number of respondents (by level) who participated in the study. Each participating country/jurisdiction was expected to sample participants at the system level to the extent necessary to collect sufficient information about their policies and practices in assessment of TVC. The purpose in sampling across the Asia-Pacific region is to identify the range of practices. Differences in numbers of respondents across the different responsibility levels in the education system raise difficulties in reporting mode. Also, the country explorations were not undertaken using sampling procedures that would generate a representative sample, so findings of similarities or differences across the region merely represent the range of practices found. For this reason, a variety of reporting modes have been used throughout the report – cautions about drawing inferences about country-wide practices are made frequently in order to keep this in mind. Note that although the data identified the sex of respondents, this was not found to be a pattern in any way across the information collected, and so is not reported.



Table 2: Number of respondents at each level by country/jurisdiction

	System	School leaders	Teacher
Australia	1	4	13
Hong Kong (China)	1	5	10
India	4	7	21
Malaysia	1	6	6
Mongolia	2	6	16
Philippines	4	4	20
Republic of Korea	1	5	9
Thailand	1	5	10
Viet Nam	2	6	24
Total	17	48	129

Table 3 provides descriptions of system-level respondents from each country/jurisdiction in terms of their position, department, and major responsibility. At the school level, countries/jurisdictions were expected to sample schools that demonstrate *notable* practices in assessing TVC. Countries/jurisdictions were expected to sample five to six schools, with a minimum of two primary schools and two secondary schools. Within each school, the principal or school leader was interviewed. In each school, it was recommended that up to four teachers spanning across grade levels be interviewed. As shown by both **Tables 2 and 3**, the numbers and roles of personnel varied across countries/jurisdictions, influenced by different system structures and organizational hierarchies.

The term *notable* was adopted for this study in recognition of the case study approach. The study was not designed to identify practices that could be claimed as representative of the school population at large. Rather, it was designed to identify practices that respond to formal policy, notwithstanding that these might not yet be mandated. Given the recency of the adoption of a ‘breadth of skills’ (Care and Anderson, 2016) or TVC frameworks in countries globally, in many cases these practices would be pilot practices, or practices adopted by schools that identify themselves as 21st century skills schools, or similar.





Table 3: Details of system level respondents

Country	Role	Department/Authority	Position	Major responsibility
Australia	R1	Australian Curriculum, Assessment and Reporting Authority	General Manager (Curriculum)	Lead and manage the development of the Australian Curriculum and its assessment
Hong Kong (China)	R1	Curriculum Development Council	Principal Assistant Secretary	Curriculum development of secondary, primary and kindergarten policies
India	R1	Central Board of Secondary Education (CBSE)	Additional Director (Innovation & Research)	Coordinate research activities, competitions, mentoring and monitoring of schools
	R2	Kendriya Vidyalaya Sangathan (KVS)1	Deputy Commissioner – Regional	Administration, capacity building, coordinate between schools and headquarters
	R3	Jawahar Navodaya Vidyalaya (JNV)2	Assistant Commissioner – Regional	Monitor the academics and functioning of JNV's in the region.
	R4	Sarva Shiksha Abhiyan (SSA)3	State Coordinator	Initially involved in coordinating activities related to pedagogy and currently related to Special Education.
Malaysia	R1	Examination Syndicate, Malaysian Ministry of Education	Principal of Assistant Director	Coordinate, produce, print and distribute assessments; monitor and control national and international assessments
Mongolia	R1	Institute of Education	Head of Curriculum Development Sector	Conduct studies on curriculum development and develop national curriculum
	R2	Educational Evaluation Center	Head of Education Quality Monitoring Inspection Research and Evaluation Department	Analyze and evaluate examination results and report to Ministry of Education, Culture and Science
Philippines	R1	Bureau of Education Assessment (BEA), Department of Education (DepEd)	Senior Education Program Specialist	Provide inputs in preparing policy drafts related to assessment
	R2	BEA, DepEd	Senior Education Program Specialist	Develop tests
	R3	BEA, DepEd	Chief Education Program Specialist	Manage the development and implementation of national assessment framework in basic education

Country	Role	Department/Authority	Position	Major responsibility
	R4	Office of the Undersecretary for Programs and Projects, DepEd	Technical Assistant to the Undersecretary for Curriculum and Instruction	Involve in curriculum and assessment
Republic of Korea	R1	Metropolitan Office of Education	School Inspector	Manage and support student evaluations for elementary, middle and high school
Thailand	R1	Bureau of Education Testing, Office of Basic Education Commission	Director	Manage the administration of the bureau, relay policies information to the ministry
Viet Nam	R1 and R2	Ministry of Education and Training	Senior specialists	Planning educational policy, including writing policies, regulations related to student outcome assessment; design framework for programmes, materials, textbooks and instruction manuals for teachers

Notes: R1 = Respondent 1, R2 = Respondent 2 and so on; KVS¹ refers to *Kendriya Vidyalaya Sangathan*, which is a system of central government schools in India that have been instituted under the aegis of the Ministry of Human Resource Development; JNV² refers to *Jawahar Navodaya Vidyalaya*, a system of alternate schools for gifted students in India; SSA³ refers to *Sarva Shiksha Abhiyan*, a flagship programme by the Government of India to achieve Universalization of Elementary Education (UEE).

It should be noted that the approach to selection of schools varied across the countries/ jurisdictions. For example, Australia targeted schools that explicitly identify their interest in educational directions aligned with TVC. India selected schools that were recommended by system authorities or experts for demonstrating *notable* practices in assessing TVC. Malaysia targeted High Performing Schools that are recognized for their outstanding performance in academic and non-academic achievements. Mongolia used a mixture of methods for school selection; some participating schools were suggested by system authorities for *notable* practices in TVC while others were selected because of high student performance and good school practices; the Republic of Korea selected from its 21 schools designated for the stabilization of its achievement evaluation system. Thailand selected schools with diverse socioeconomic background of students. These selected schools were different in student population size, location, and covered primary and/or secondary levels. **Table 4** presents the demographic characteristics of participating schools.





Table 4: Demographic characteristics of participating schools for each country/ jurisdiction

	Number of sampled schools	School types				School size (students)		School locations
		Primary - Public	Primary - Private	Secondary - Public	Secondary - Private	Average	Range	
Australia	4	2	0	2	0	688	303 – 1125	Large city
Hong Kong (China)	5	1	1	3	0	960	850 – 1100	Town and large city
India	7	1	5*	1	0	947	162 – 1872	Rural regions, small and large city
Malaysia	6	3	0	3	0	1316	1080 – 2048	Towns, large city
Mongolia	6	2	0	4	0	1537	900 – 1908	Town, small and large city
Philippines	4	2	0	2	0	3525	865 – 6254	Large city
Republic of Korea	5	3	0	2	0	-	-	Town, large city
Thailand	5	2	0	1	2	1614	868 – 2500	Large city
Viet Nam	6	3	0	3	0	1242	721 – 1694	Small and large city

Notes: *These private schools cover both primary and secondary school years; dash ('-') indicates no data provided.

Given the diversity of recruitment approaches, comparisons across the countries/jurisdictions are not warranted in terms of drawing from these practices are understood within country. For some countries/jurisdictions, the findings might demonstrate examples from schools demonstrating best practice in terms of education standards generally, while in others these might be examples of typical practices, and in others, possibly infrequent practices. Overall, however, it should be noted that most countries/jurisdictions drew from schools that had self-consciously adopted a 21st century perspective (e.g. Australia), participation in pilot programmes that valued learning beyond traditional disciplines (e.g. the Republic of Korea), or were relatively high achieving (e.g. Malaysia), or an alternative school which focuses on non-traditional approach of learning (e.g. Thailand). As such, the school and teacher findings from this report cannot be assumed to be representative of schools across the participating countries/jurisdictions.



Data collection methods and tools

The main methods used for data collection in the study at country level included review of policy documents such as assessment framework and guidelines, and implementation and management-related documents; and structured interviews with respondents at system, school, and teacher levels. The structured interview was guided by level-specific questionnaires that were developed and framed around the following research questions:

- Is assessment of TVC reflected in policies, plans, legislation, curriculum guidelines, or national assessment frameworks?
- Are TVC being assessed at the school and/or system level? If so, how are they assessed?
- What are the challenges of assessing TVC at school?
- What are the lessons learned from initiating or improving assessment of TVC?
- What are the recommendations for initiating or improving assessment of TVC?

These questions were designed to explore the implementation structures and strategies in place rather than to examine specific assessment tools. All nine countries/jurisdictions conducted interviews with respondents at system, school, and teacher levels using the questionnaires. Mongolia also conducted group discussions and the Philippines conducted classroom observations.

Limitations of the study

While this study provides valuable insights into the current TVC assessment practices of countries/jurisdictions in the Asia-Pacific region, the study is not without limitations.

1. Accuracy of data and data reporting

Triangulation of information across the system, school, and teacher levels reveals anomalies for several countries/jurisdictions. Given the case study approach to this research, this is not unreasonable. In a large-scale quantitative study, similar anomalies would surface and be referred to as error. Some differences across individuals in terms of their understanding of their work environments and its productivity are to be expected. In this case, the study reports are therefore subject to two different types of error, or bias.

The first source of error lies in the different understanding of a small number of respondents about initiatives that have taken place within their country. The second source of error lies in possible response bias towards presenting a positive impression of progress towards implementation of TVC within country. Although such bias might lead to an inaccurate picture of current practices, it should also be interpreted as an attitudinal factor that is possibly aligned with the country perspective. Taking the view that attitude and attitudinal change is a necessary factor in reform, the generally positive views of assessment-related implementations can be interpreted as a positive mood for this reform.





2. Cultural nuances

The data collection tools were developed collaboratively across participating countries. Where common terminology was possible, this was prioritized; however, where country organizational features and education structures varied, and where different terminology and language was used, questionnaires were customized to the local context. Beyond the potential of this customization to draw data differently from the countries/jurisdictions, the expertise and understanding of the nature of TVC would reasonably vary across and within countries/jurisdictions.

3. Sample representativeness

The current findings on TVC assessment practices are based on a small sample of schools in order to identify any *notable* practices. Even so, the school selection criteria varied between countries/jurisdictions. There is no claim that the findings are representative of country practices in terms of frequency or distribution. The majority of schools which participated were identifiable in some way as out of the ordinary; some were targeted due to their self-conscious identification as valuing 21st century competencies, were part of pilot cohorts, or high achieving. Additionally, while this study aims to provide an Asia-Pacific regional perspective on TVC assessment practices, the small sample of nine countries/jurisdictions is not a representation of the region at large.

4. Alignment across education sectors

The questionnaires used for interviews at system, school and teacher levels deliberately included many items that were identical or drew upon similar concepts. It is reasonable that personnel at each of these levels would not have the same perceptions or knowledge about the education system and its practices. However, where there are significant discrepancies in understanding across the levels, this might indicate either inefficient communication structures, or, and as presumably in this case, the consequences of recent and intended *operational-systemic* and *definitional* change. Notwithstanding some triangulation gaps across identical items at different levels, the data drawn across the levels in participating countries/jurisdictions were reasonably well aligned.



4 Key Findings

The findings presented in this chapter are based on data obtained from the nine countries/ jurisdictions. Each provided their findings through both a raw data file with coded participant responses and a case study text report. From time to time, particular findings are referred to as either *definitional* or *operational-systemic* – these descriptions are also used for interpretive purposes towards the end of the report.

Definitional refers to understanding about transversal competencies, what these competencies are, how they develop, and what they would look like at different levels of performance. This also refers to appreciation of how transversal competencies will impact on curriculum and pedagogical processes, since the competencies place a different set of demands upon students in their learning, with an emphasis on understanding and application, and a move away from a focus on content knowledge, and storage and retrieval. If this shift in focus is not understood, then it is unlikely that appropriate assessment mechanisms and strategies will be brought to bear. The nature of the competency that is to be assessed has implications for how it would be assessed. Teaching and assessment strategies that are appropriate for teaching and learning of content knowledge (which may be reasonably familiar to teachers currently) are likely to be different from those strategies appropriate for teaching skills and competencies. The description of the definitional category has been extended beyond its use in the ERI-Net's Phase I Report (UNESCO, 2015), to emphasize the generic nature of these challenges as opposed to a concern about specifics of a definition within country. In essence, the definitional category refers to the substance of the reform and its uniqueness.

Operational-systemic refers to factors that impact on the implementation of an initiative; these factors are logistical in nature and may be system-wide. Examples of such factors are access to training, perceptions about time implications of teaching a new set of competencies, development of appropriate training and resource materials, access to finance to provide training, materials provision, and identification and recruitment of personnel with requisite technical skills to develop materials and training. Other factors could be class size, perceptions about the appropriateness of trained education professionals teaching outside of their discipline area, aspirations towards traditional academic excellence, and socio-cultural norms around behaviour and interactions. *Operational-systemic* issues are those most frequently identified in this study and the issues to which most human resource and infrastructure are applied. However, they are strongly influenced by the definitional issues





System level

This section presents findings on countries/jurisdictions' policies on assessment of TVC and the support and infrastructure provided to schools by the system.

Policy documentation and awareness

All countries/jurisdictions except **Malaysia** reported that TVC were explicitly mentioned as *educational goals* in their formal policy documentation, covering primary, lower secondary and upper secondary education.

For example, **Hong Kong (China)**'s 'Learning to Learn' framework consists of three interconnected components, namely Key Learning Areas (KLA), generic skills, and values and attitudes. Generic skills clearly correspond to TVC and serve as the foundation for teaching and learning. These generic skills, which are fundamental for solving problems in different situations, include collaboration, communication, creativity, critical thinking, self-management, and information technology skills. Similarly, TVC are explicitly mentioned in the **Philippines** basic education curriculum: 'every graduate of basic education shall be an empowered individual who has learned...the competence to engage in work and be productive...[and], the capability to engage in autonomous, creative, and critical thinking... (Section 2 of Republic Act 10533), as part of the goal of nurturing the "holistically developed Filipino"' (DepEd, 2016). With the exception of **Thailand** and **Australia**, all countries/jurisdictions reported that TVC assessment is explicitly mentioned in formal policy documentation as well. For these countries/jurisdictions, the formal policy documentation covered primary and secondary education with the exception of **Mongolia** and the **Philippines**, which reported that their upper secondary education is not covered by relevant formal documentation. It should be noted that these two countries have only recently brought senior secondary grades into mainstream education, with Mongolia introducing 12th grade in School Year 2014/15, and the Philippines introducing 11th grade in School Year 2016/17, with 12th grade to follow in School Year 2017/18. In **India**, the 2009 Right to Education Act, an Act of the Parliament of India mandates schools to adopt the continuous and comprehensive evaluation (CCE) process of assessment, which integrates TVC evaluation through a series of co-curricular and extracurricular activities along with academics. The introduction of the CCE in the different grade levels however is dependent on the State policy and the Board of Education adopted by the schools.

The inclusion of TVC assessment in country frameworks and guidelines was manifested in a number of ways and varied between the countries/jurisdictions (**Table 5**).

For example, in **Australia**, the assessment of TVC is not explicitly outlined in policy framework or guidelines. Instead, it is embedded in the assessment of subject knowledge and skills in key learning areas. This is evident in the information provided to schools on the Australian Curriculum website (ACARA, 2016), and demonstrates the presumption that implementation and assessment of TVC occurs through the teaching of content and assessment of achievement



standards. In **Hong Kong (China), India** and **Viet Nam**, the inclusion of TVC assessment in formal education frameworks and guidelines is reflected in four components: 1) section(s) that outline how TVC are to be assessed; 2) section(s) on how to integrate assessment of TVC with other assessments; 3) subject assessment guidelines that encompass TVC assessment; and 4) assessment principles and guidelines that are identified as relevant to TVC. Although it may seem that these distinctions are not great, they imply very different attitudes to the integration of TVC with the mainstream curriculum. In **Malaysia, Mongolia** and **Thailand**, the inclusion of TVC assessment in policies is reflected in several but not all components. For instance, in **Malaysia**, TVC are reflected in the National Philosophy of Education and are highlighted in the Malaysian Education Blueprint 2013-2025 and School-based Assessment (SBA) policy documents. These documents provide guidelines on assessing academic and co-curricular activities, as well as the subjects which integrate assessment of TVC, such as science, mathematics, living skills, and moral education. Yet, these documents do not outline *how* TVC are to be assessed. In a similar vein, in **Thailand**, there is evidence of discussions, papers, plans, and policy papers that aim to target TVC. The Ministry of Education put forward a new version of the national test that mainly targets assessment of students' cognitive skills; however, this test also tangentially (but not directly) measures TVC, such as creative thinking, innovative ideas, and adaptability. In **Mongolia**, TVC include general skills and subject-specific skills that are taught in primary and lower secondary education. The curriculum documents are the only guidelines or handbooks available in relation to assessment of TVC. Both the **Philippines** and the **Republic of Korea** have subject assessment guidelines that are reported as encompassing TVC. For example, in the **Philippines**, TVC are embedded in the content and skills of subjects such as mathematics, social studies and science in the curriculum. Recent assessment guidelines in the **Philippines** integrate TVC in national and classroom level assessment policies.

Table 5: Inclusion of TVC assessment in country policy frameworks and guidelines

	Section(s) that outline how TVC are to be assessed	Section(s) on how to integrate TVC with other assessment	Subject assessment guidelines to encompass TVC	Assessment principles, guidelines identified as relevant to TVC	Other
Australia					*1
Hong Kong (China)	•	•	•	•	
India	•	•	•	•	
Malaysia		•	•	•	*2
Mongolia			•	•	
Philippines			•		
Republic of Korea			•		
Thailand			•	•	
Viet Nam	•	•	•	•	

Notes: • = Yes; ¹ Embedded in assessment of subject knowledge and skills in key learning areas;

² Guidelines for Higher Order Thinking Skills item development.





The majority of the policy frameworks and guidelines address *definitional*, and to a slightly lesser degree, the *operational-systemic* factors relevant to educational reform.

To integrate TVC assessment into the education system, some countries/jurisdictions reported **(Table 6)** that they have revised textbooks, developed teaching guides, conducted in-service teacher training, and reformed student assessment systems. It should be noted that the development of guides and materials does not presume that these have been disseminated, although where in-service teacher training on TVC assessment has been conducted, it is reasonable to infer that participants in the training have access to these resources. Building on the need to fully understand the nature of TVC and its implications for pedagogy as well as assessment, some countries/jurisdictions reported conducting formal pilots of assessments as well as undertaking research into TVC, extending activities under the *definitional* category. Specifically, **Australia, Hong Kong (China), Malaysia, and Viet Nam** reported that they have conducted educational research on TVC and formal pilots of TVC assessment. For example, **Australia** was one of six countries which participated in the global Assessment and Teaching of 21st Century Skills (ATC21S) research between 2011-2014, that pioneered online approaches to assessment of a small number of 21st century skills. **Viet Nam's** Ministry of Education and Training held intensive training and development activities in 2014 to define and describe their selected cluster of 21st century skills, through a partnership with the Vietnam Institute of Educational Sciences (VNIES) and the University of Melbourne, funded by the World Bank.

Table 6: Efforts implemented by countries/jurisdictions to integrate TVC assessment into education

	Revised textbooks	Develop teaching guides	Reformed pre-service teacher training	Conduct in-service teacher training	Reformed student assessment system	Conduct formal pilots of assessment	Conduct education research on TVC
Australia	-	•	-	-	-	•	•
Hong Kong (China)	-	•	•	•	•	•	•
India	•	•	X	•	•	•	X
	•	•	-	•	•	-	-
	•	•	-	•	•	-	-
	-	•	-	•	•	-	-
Malaysia	X	X	X	•	•	•	•
Mongolia	•	X	X	•	•	•	X
	•	•	X	•	X	X	X
Philippines	X	•	X	X	•	•	X
	X	•	X	X	•	•	X
	X	•	X	X	•	•	X
	•	•	•	X	X	X	X
Republic of Korea	•	-	-	•	-	-	•
Thailand	•	•	•	•	X	X	•
Viet Nam	•	•	•	•	•	•	•
	•	•	X	•	•	•	•

Notes: • = Yes; X = No; dash (-) indicates no data provided; where more than one system-level respondent was interviewed, there are multiple entries against country/jurisdiction.



Support and infrastructure

All countries/jurisdictions apart from **Australia** and the **Philippines** reported that they have provided schools with specific guidelines and/or handbooks on implementation of TVC assessment and informed schools where to access these guidelines and resources.

Thailand reported that the system has provided guidelines and/or handbooks and relevant training to schools, but schools are not required to rely on the TVC guidelines. The system-level data from **Mongolia** were mixed. Half the respondents in **Mongolia** indicated that schools have been provided with TVC assessment guidelines and informed where to access these resources. The mixed responses may indicate that implementation of these initiatives is in early days, and information about them not yet thoroughly disseminated. In **Australia**, the system-level respondent reported that schools have not been provided with specific guidelines and/or handbooks on the implementation of TVC assessment, and have not been formally informed about where to access these resources. The main reason for this in this case is because the implementation of school policy and practice rests with the schooling authority and/or curriculum authorities in each state or territory. The Australian Curriculum, Assessment and Reporting Authority (ACARA) is responsible only for the development of the Australian Curriculum. Therefore, information about implementation of policy and practice would be accessed through each of the six states and two territories in the country. In the **Republic of Korea**, although there are minimum requirements around the curriculum, there is increasing autonomy at the school level for curriculum development. These individual differences in terms of context and system control highlight the complexity of drawing a comprehensive picture of the flow of innovative practices at a country level. The flow might be stimulated by pilot or trial implementations, or by different levels of a system having implementation authority within states, regions, provinces, and districts.

Table 7: Information about training provided to schools

	Training provided by system	Linked to broader education and/or curricular goals	Training follow-up to:			
			Consolidate learning	Monitor implementation	Identify professional development needs	No follow-up
Hong Kong (China)	•	•			•	
India	•	•	•	•	•	
Malaysia	•	•	•	•	•	
Mongolia [^]	•	•	•	•	•	
Republic of Korea	•	•	•			
Thailand	•	•				
Viet Nam	•	•	•	•	•	

Notes: • = Yes; [^]1 of 2 respondents reported 'Yes'. No training was provided in Australia and the Philippines.





All countries/jurisdictions with the exception of **Australia** and the **Philippines** report they have provided training to schools on how to implement TVC assessment (**Table 7**) although the extent to which this is system-wide is unclear.

In the **Philippines**, while there is a current focus on assessment of TVC at the central level of the Department of Education through its Bureau of Educational Assessment, schools have not yet been provided with specific guidelines on TVC implementation and assessment. Since TVC are embedded through the curriculum, some training can be assumed in the general professional development provided but this is not explicitly identified as TVC. In the other seven countries/jurisdictions, the case studies report that relevant training was delivered through various modes such as lectures, lesson study, and peer coaching. Training involved exchange of ideas and consulting with colleagues, engaging with specialists within or outside the school, taking leadership roles, and visiting other schools to observe and learn. The content of training tended to focus on information about the nature of TVC, methods for assessments of TVC, and classroom examples of TVC assessment. As shown in **Table 7**, when training was provided, it was linked to broader education and/or curricular goals. In addition, for most countries/jurisdictions, formal follow-up was conducted after training was completed. Identification of professional development needs was one of the main purposes of following-up, but the method for the process was not documented.

Summary at system level

System-level findings indicate that countries/jurisdictions in the Asia-Pacific region have introduced or incorporated TVC assessment into their education policy framework and guidelines to varying degrees. Initiatives such as training of school leaders and teachers and partnerships with universities and colleges of education have been established to integrate TVC assessment into education systems.

The accuracy of the reported data may vary according to the position held by the system-level respondent, and their access to up-to-date information. Particularly where relatively new initiatives are being piloted, information may not be widely shared beyond the department(s) directly involved.

It is clear that some countries/jurisdictions, such as **Hong Kong (China)** and **Viet Nam**, report documentation both in terms of policy as well as across the full spectrum of texts, guides, and teacher training. The lesser evidence of documentation in the other countries could be due to features such as the recent innovations and the decentralization of systems, as much as to the possibility that countries/jurisdictions vary in how and what they document at a more general level. It is useful to note that a majority of the implementation efforts outlined in **Table 6** refer to *operational-systemic* issues. Those efforts more strongly related to *definitional* issues, such as piloting and research, are undertaken by a smaller number of countries/jurisdictions, with **Australia, Hong Kong (China), Malaysia, and Viet Nam** most notable for activity.



School level

This section presents findings related to school-level policies and practices documented in the nine countries/jurisdictions. The findings are based on data collected from a small sample of private and public schools across primary and secondary levels.

Policy documentation and awareness

Most schools sampled were aware of system-level mandates on TVC assessment. **Table 8** presents responses from schools for each country/jurisdiction; the numbers in the last three columns indicate the total number of 'Yes' responses. Note that the number of responses varied across countries/jurisdictions depending on the number of schools and leaders per school that participated in the study. It should also be kept in mind that the sampled schools were specifically targeted in each country/jurisdiction.

Table 8: TVC assessment policy documentation and guidelines at school level

	Number of sampled schools	Aware of system-level mandates	Have been provided with guidelines and/or handbook	Have disseminated policy information to teachers
Australia	4	3	2	2
Hong Kong (China)	5	2	1	2
India	7	7	7	7
Malaysia	6	6	4	6
Mongolia	6	6	4	6
Philippines	4	4	4	4
Republic of Korea	5	2	3	4
Thailand	5	2	2	1
Viet Nam	6	5	5	6

In the case studies for **India, Mongolia,** and the **Philippines**, all schools which participated reported being aware of system-level mandates on TVC assessment. While all the respondents from **Malaysia** reported they were aware of system-level mandates on TVC, different sources of policy documentation were referred to (e.g., School-based Assessment, *Bestari Net*⁵). The other countries/jurisdictions (**Australia, Hong Kong [China], Republic of Korea, Thailand,** and

⁵ BestariNet is a project initiated by the Malaysian Ministry of Education to equip primary and secondary schools with high-speed 4G Internet access and a virtual learning platform, and access to a world-class Integrated Learning Solution.





Viet Nam) had a mix of responses; only some schools' leaders were aware of system-level mandates on TVC assessment. For instance, in the **Republic of Korea**, two out of the five principals interviewed were aware of system level mandates on TVC assessment. In **Hong Kong (China)**, awareness of system-level mandates varied across schools. The two school leaders in the primary schools were unaware of any system level mandates nor were they provided with specific guidelines to implement TVC assessment. On the other hand, there was some awareness in the secondary schools and one school had been provided with specific guidelines.

All school leaders from **India, Malaysia, Mongolia, Philippines**, and **Viet Nam** reported that they had disseminated system-level policy information related to TVC assessment to teachers in the past 12 months, but there was variability in the dissemination mode. For example, in **Mongolia**, policy-level information was provided to teachers in the form of the national curriculum, textbooks, and teacher handbooks from the Ministry of Education, Culture and Science, whereas in **Malaysia**, dissemination of system-level policy information was managed through in-house training and teacher orientation week.

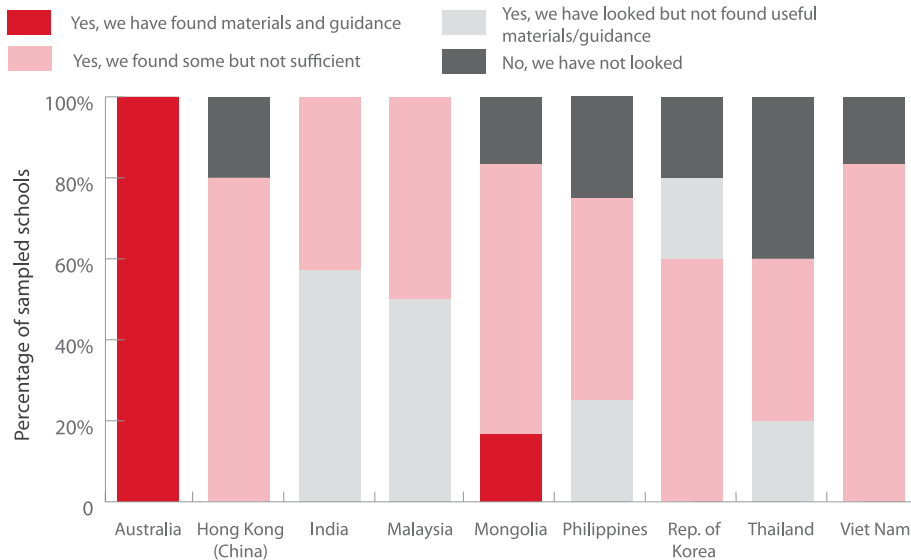
As shown in **Table 8**, not all school leaders from **Australia, Hong Kong (China), Republic of Korea**, and **Thailand** reported disseminating system-level policy to teachers. This does not necessarily imply omission. Some countries/jurisdictions have a well-established online presence where teachers know they can access documentation on policy, curriculum, pedagogical strategies, assessment, and resources. In these countries/jurisdictions, explicitly referring teachers to these resources may not be deemed necessary.

Interestingly, many schools reported that they had independently sourced materials and guidelines related to TVC assessment (**Figure 1**). For example, two schools in **Hong Kong (China)** reported referring to curriculum information from other countries such as Australia and Singapore. One school in **India** reported contacting different agencies to obtain relevant materials, and another reported sourcing materials and information from other schools and principals. Tellingly, school leaders from most countries/jurisdictions responded that the materials which they found were not sufficient.



Figure 1: Independently sourced materials and guidelines

Distribution of school leaders' responses to the question 'Has your school independently sourced specific guidelines and/or handbooks to implement TVC assessments in your school?'



Note: There are unequal numbers of respondents across countries.

All participating schools from **Australia** and the **Philippines** reported that school-level guidelines for TVC assessment have been developed for teachers. In **Australia**, TVC are referred to as 'general capabilities', which are embedded in the content of different learning areas. The principal from School 1 reported that her school has developed a range of 'platforms' that are used across the school to guide capability planning, programming, teaching and assessments. Some of these platforms include *PERSIST Policy*, *Creativity Wheel*, and *Blackboard Configurations*. The principal from School 2 reported that teachers use the general capability learning continuum to make holistic judgements about the capability achievement of their students in areas such as critical and creative thinking. In School 3, guidelines are being developed in the Real Time Learning programme. In School 4, guidelines for general capability assessment are being developed through the school's Brighter Future project, including the development of an integrated curriculum and assessment digital platform to support delivery of quality 21st century learning and teaching. This is a work in progress that aims to provide an innovative approach. On the other hand, participating schools from the **Philippines** did not provide details of school-developed guidelines for TVC assessment. This may be due to the relative recency of awareness and less access to teaching guidelines and resources online.



In **India, Republic of Korea, Malaysia, Mongolia, Thailand**, and **Viet Nam**, it was reported that some schools had developed their own TVC assessment guidelines while others had not. In most schools where such guidelines were developed, they were disseminated to teachers. For example, in **India**, six out of the seven surveyed schools had taken the initiative to develop school-specific guidelines; however, one school did not, believing that the system-level guidelines were adequate. In **Thailand**, the four government schools were not particularly interested in TVC curriculum or assessment, instead focusing more on standardized testing. In contrast, the one private alternative school, which aims to enhance students' non-cognitive skills and their character placed an emphasis on TVC curriculum and assessment, producing its own guidelines, textbooks, curriculum, and assessment. In **Hong Kong (China)**, one of the five schools reported that there were school-level assessment guidelines for TVC and these were mainly subject-based. Schools and teachers have the autonomy to develop their own guidelines based on the needs of schools and students.

As reported in the country case studies, TVC have been integrated into the curriculum via four main modes: 1) integration within specific subjects; 2) integration across subjects; 3) integration into multidisciplinary subjects; and 4) integration into extracurricular activities.

Table 9 indicates that most countries integrated TVC into their school curriculum through all four modes, but the majority of schools integrated TVC into specific subjects and/or across subjects such as national language, science, and mathematics. The **Republic of Korea** integrated TVC into their curriculum through specific subjects such as 'Intelligent Life' (a combined course of science and social studies) and across subjects. The integration mode varied by school. Two out of five schools integrated TVC into the curriculum of specific subjects, including Korean language, mathematics, science, and social studies, while another school provided opportunities to carry out project studies and participate in cooperative classes as well as hands-on activities to raise cultural sensitivity. School leaders in **Australia** noted that TVC were integrated into extracurricular activities such as sports, debates, student leadership programmes, and student well-being programmes. In **Malaysia**, TVC have been integrated in two main modes: first within specific subjects like language, science and mathematics; then by integrating TVC into extracurricular activities and multidisciplinary subjects through project-based learning and learning outside the classroom to enhance creativity and entrepreneurship.

In **India**, schools adopting the CBSE curriculum have integrated TVC through subjects included under co-scholastic areas such as 'life skills', 'work education', 'visual and performing arts', 'literary and creative skills', 'scientific skills', 'ICT skills', 'organizational and leadership skills' and 'health and physical education'. Project work and seminars are integrated to develop these competencies. In an exceptional case, one school implemented an independent component in the school curriculum named 'Shilp Beyond', which includes five aspects: a) ShilpEncounter – soft skills, listening skills, group activity, inter-school debate, extempore debate; b) ShilpSparsh – community service, vocational training, teachers training (computer classes); c) ShilpDew – interschool creative writing, writing skills, group activities, know-how



programmes; d) Shilpreneurship – Publishing, vermicompost; and e) Shilpgrenergy – paper recycling, alternative energies, know-how programmes. Another school that focused on rural children emphasized on the development of TVC through various life skills activities such as gardening, agriculture (including costing and entrepreneurship), art, fabrics and crafts (embroidery), simple machines, cooking, field trips, health and nutrition, projects on bio-diversity, and leadership programmes. In 2015, rather than integrating TVC into specific subjects or across subjects, **Thailand's** Ministry of Education announced a new initiative called 'moderate classroom time, enhanced learning time' to reduce classroom teaching schedules and allocate more time in the afternoon for extracurricular activities designed to enhance students' TVC, such as creativity and collaboration.

Overall, the policy review findings from the case studies indicate that most schools across the countries/jurisdictions were aware of system-level mandates on TVC assessment. However, many school leaders reported that they were not provided with sufficient guidelines and/or handbooks on how to implement TVC assessment, and have had to independently source more materials and guidance.

The variety of approaches to integration of TVC shown in **Table 9** highlights the challenge for assessment. Where students' demonstration of development and use of TVC is dependent on content within specific subjects, there are difficulties in identifying whether overall performance is dictated by the TVC processes or by accumulation of content knowledge. Where TVC are a focus across subjects or within multidisciplinary subjects, well-designed assessments should have the capacity to show generalization of the competencies. Where TVC are targeted through extracurricular activities, additional characteristics of the student such as motivation, attitudes, beliefs and values, frequently come into play. This additional set of characteristics has typically been assessed through self-report tools, and is subject to response bias and the specific context.

Table 9: Integration of TVC into the curriculum by participating schools

	Number of sampled schools	Through what modalities does your school integrate TVC into the curriculum?				
		Specific subjects	Cross subjects	Multidisciplinary subjects	Extracurricular activities	Others
Australia	4	4	3	4	3	0
Hong Kong (China)	5	2	3	1	1	1 ^a
India	7	3	6	4	6	2 ^b
Malaysia	6	3	5	1	4	0
Mongolia	6	4	2	0	0	0
Philippines	4	3	2	1	2	0
Republic of Korea	5	2	0	0	1	0
Thailand	5	5	5	5	5	0
Viet Nam	6	3	4	3	3	0

Notes: ^aSoft integration, whereby TVC are considered as 'embedded skills' infused in curriculum and lesson delivery;

^bSports and school assembly.





Support and infrastructure

Many participating schools across the nine countries/jurisdictions reported that teacher groups have been established to support professional development needs in relation to TVC assessment.

As shown in **Table 10**, in addition to establishing teacher teams, schools reported that in-service training opportunities on TVC assessment have been provided to teachers and staff members within and by schools. In most countries, the in-service training opportunities were provided to at least some staff. Nevertheless, a small number of schools in **Hong Kong (China)**, **Malaysia**, and **Viet Nam** reported that they have not provided their staff with training opportunities on TVC assessment. The nature and types of training opportunities provided to teachers varied across schools in each jurisdiction. Lectures, lesson study and peer coaching were common methods used to deliver training to teachers. The in-service training opportunities commonly involved exchanging ideas and consulting with colleagues, engaging with specialists within or outside the school, and visiting other schools to observe and learn. Some schools in **Malaysia** prioritized peer coaching, exchanging ideas with colleagues, engaging with specialists, and visiting other schools to observe learning and for benchmarking purposes. The second priority was lectures, lesson study, and participating in a leadership role, whereas the last priority was self-directed professional development and opportunity and funding assistance to enrol in higher education to earn units or a degree.

Table 10: Support and infrastructure available in schools across countries/jurisdictions

	Number of sampled schools	Teacher teams established	In-service training provided to:		Training linked to broader education and/or curricular goals
		Yes	Some staff	All staff	Yes
Australia	4	4	1	3	4
Hong Kong (China)	5	5	3	1	5
India	7	5	2	5	7
Malaysia	6	6	3	2	5
Mongolia	6	6	3	3	6
Philippines	4	4	0	4	4
Republic of Korea	5	3	0	5	3
Thailand	5	5	4	1	4
Viet Nam	6	4	0	4	4



Apart from teacher teams and in-service training opportunities, many schools reported that they have established partnerships and initiatives with government training departments and with universities and colleges of education to help implement TVC assessment (Table 11). For example, one school in **Mongolia** established a partnership with the Ministry of Education, Culture and Science, and the Education Evaluation Center, which provided training to teachers from that school. Similarly, two schools in **Australia** reported partnering with universities, such as Victoria University, the University of New South Wales and La Trobe University, to provide teachers with practicum experience or placements. Schools in **Australia** also partnered with not-for-profit agencies such as Social Ventures Australia and aid organizations such as Save the Children. As a result of these partnerships, school leaders noted improvements in whole-school strategic thinking, broadening of teachers' knowledge and ideas about 'how to' and 'what to' assess, and increase in use of peer assessment and self-assessment strategies in classrooms. In **Malaysia**, schools relied heavily on universities, non-profit, non-government agencies and government agencies, as well as private sector assessment agencies to help implement TVC assessment. One school worked closely with the Malaysian Red Crescent to promote humanitarian values among students. Because of these partnerships, teachers were found to be more confident and knowledgeable in 'soft skills' assessment generally. Likewise, all school leaders in **India** perceived that partnerships changed their assessment practices and facilitated a better understanding of educational objectives and assessment processes. In **India**, the extent of support currently being received by the school leaders is seen as inadequate, with principals from five schools expressing the desire for additional support in providing teachers with training opportunities.

Table 11: Partnerships and initiatives sought, established and strengthened by schools

	Number of sampled schools	Partnerships and initiatives sought, established and strengthened by schools						
		Private sector assessment agencies	Private sector NEC	Government training department	Universities, colleges of education	Non-profit NGOs	Aid donors	Others
Australia	4	3	4	3	4	4	0	1 ^a
Hong Kong (China)	5	1	0	1	1	2	2	0
India	7	3	1	5	1	1	1	1 ^b
Malaysia	6	3	1	4	6	6	2	0
Mongolia	6	0	2	5	0	0	0	2 ^c
Philippines	4	2	1	4	2	2	1	0
Republic of Korea	5	2	0	2	2	0	2	0
Thailand	5	0	2	5	5	5	0	0
Viet Nam	6	0	1	0	2	0	1	0

Notes: NEC: not elsewhere specified; NGOs: non-government agencies; ^aThis school (i) is a member of the Western Adelaide Shores Partnership which is consists of a number of local schools focusing on powerful and engaged learners, and (ii) participates in exchanges with schools from Japan, Philippines and India; ^bIn-house training; ^cOne school partnered with neighbouring schools in the same district, another school is involved in the 'Monggen Project'.





Overall, principals or school leaders from most schools expressed intentions to encourage, initiate and expand TVC assessment.

For example (**Table 12**), one school in **Mongolia** indicated plans to share experiences with other schools in the district, and another school established a one-year plan to improve assessment of mathematics, language, art and design technology. One school in **Viet Nam** intends to include all relevant TVC in the new curriculum, while some participating schools in **Malaysia** intend to encourage and expand TVC assessment through academic planning and research. However, whether the school leaders believe TVC assessment reporting will become part of academic subject reporting at the national level is inconclusive. In **Hong Kong (China)**, all five primary and secondary schools have plans to encourage, initiate, or expand TVC assessment. The two primary schools, as well as two of the three secondary schools, have plans to include TVC assessment reporting as part of academic subjects reporting; and one of the two primary schools will also include TVC assessment reporting.

Table 12: Plans for TVC assessment

	Number of sampled schools	Plans to encourage, initiate or expand TVC assessments	TVC assessment to be included			
			As part of academic subjects reporting	In addition to academic subjects reporting	Both	Neither
Australia	4	4	0	0	4	0
Hong Kong (China)	5	5	3	0	1	1
India	7	6	4	1	2	0
Malaysia	6	6	4	2	0	0
Mongolia	6	6	6	0	0	0
Philippines	4	3	2	1	1	0
Republic of Korea	5	5	5	0	0	0
Thailand	5	3	3	0	0	2
Viet Nam	6	4	4	1	1	0

Summary at school level

School-level data indicate that most schools that participated in the case studies were aware of system-level mandates on TVC assessment, and some schools reported that they had disseminated system-level policy information related to TVC assessment to teachers in the past 12 months. The assessment of TVC was generally integrated into specific subjects, across subjects, and/or extracurricular activities. However, based on school leaders' responses, there appears to be a lack of resources such as guidelines, handbooks, and assessment tools for schools and teachers to implement TVC assessment. Many school leaders reported seeking



and sourcing materials and guidance independently; even so, some school leaders indicated that the resources found were not sufficient. This suggests that while schools are aware of system-level policy and mandates on TVC assessment, they are not provided with sufficient resources to help implement these policies and mandates at the school level. Furthermore, there may be limited resources (handbooks, assessment tools) available more generally and therefore the system and/or school may need to invest time and resources to develop these.

The picture of the challenges at school level appears to be a mix of *definitional* and *operational-systemic*, with the latter stemming clearly from the former. Lack of clarity about the nature of TVC has absolute flow-on effect for the capacity to understand and undertake TVC assessment.

Teacher level

Policy documentation and awareness

Responses given by teachers concerning awareness of policy documents related to TVC assessment varied considerably across countries/jurisdictions.

For example, in **Australia**, some teachers reported that they were aware of system-level (39 per cent) or school-level (31 per cent) mandates on TVC assessment, while others were aware of both (30 per cent). In contrast, 90 per cent of teachers in **Hong Kong (China)** reported that they were aware of both system- and school-level mandates on TVC assessment. Likewise, in **Mongolia**, 88 per cent of respondents reported that they were aware of both system and school level mandates. In the **Republic of Korea, Philippines**, and **Thailand**, at least 40 per cent of respondents reported that they were *not* aware of system or school-level mandates on TVC assessment. The different distribution of teacher responses between and within countries/jurisdictions is noteworthy. Between-country differences could be a reflection of the status or stage of implementation of TVC assessment. Within country differences may be due to communication and implementation issues between system and school.

In addition to mandates related to TVC assessment, a majority of teachers from most countries/jurisdictions reported that they were aware of policy documents that include *general assessment guidelines* (**Figure 2**), *TVC assessment guidelines* (**Figure 3**), and TVC-relevant *curriculum guidelines* (**Figure 4**). It may be assumed that long-term practices or guidelines will be most familiar to teachers, and that curriculum guidelines will be more familiar than assessment guidelines – since on a daily basis teachers tend to be focused on covering curricula. Due to the consistency of responses across countries/jurisdictions, the results have been combined in these figures. However, many teachers in the **Republic of Korea** and the **Philippines** reported that they were not aware of policy documents that include assessment guidelines in general, or assessment and curriculum guidelines that are relevant to TVC assessment. Two of the nine teachers interviewed in the **Republic of Korea** were aware of policy documents that include general assessment guidelines, and only one teacher was aware of policy





documents that include TVC assessment guidelines or TVC-relevant curriculum guidelines. In the **Philippines**, nine out of the 20 teachers expressed awareness of policies that included assessment guidelines. Eight of those nine teachers reported awareness of policy documents on TVC curriculum and assessment.

Different perceptions about school-level provision of information and teacher-level receiving of information are clear from comparison of data from these levels. In countries including **India, Malaysia, Mongolia, Philippines**, and **Viet Nam**, where school leaders respond that information has been provided, only in **Mongolia** is there an absolute match in all teachers' responses that such information has been received. These anomalies speak to the realities of the clarity of communication from systems, and daily workloads of teachers.

Teacher responses concerning the clarity of TVC assessment-related policy documents varied widely, reflecting insufficient information provided and a lack of clear communication protocols.

For example, in **Hong Kong (China), India, Mongolia, Republic of Korea**, and **Viet Nam**, at least 50 per cent of teachers noted that the policy documents were clear about how to assess TVC. In **Australia**, only 30 per cent of teachers reported that the documents were clear. Teachers from some countries/jurisdictions commented that the assessment guidelines were very general and do not provide sufficient information for teachers to know how to assess TVC. For example, in **Mongolia**, although the national curriculum emphasizes their importance, there are no specific assessment materials provided to the teachers. Two out of five primary teachers and four out of 11 secondary teachers stated that the national curriculum does not provide clear guidance on how to assess students' learning objectives and TVC. Similarly, in **Malaysia**, five out of the six teachers were exposed to policy or curriculum documents related to TVC assessment; however, these teachers felt that the documents were unclear. One teacher responded that many of the assessment-related examples and illustrations given dealt with primary school contexts and very few were suitable for use in upper secondary schools. Thus, teachers had to rely on other resources such as Professional Learning Teams (PLTs) with regard to how to assess TVC. It is important to note that some teachers who were not aware of TVC assessment policies or guidelines provided answers to questions about clarity of documentation. This anomaly indicates that teachers may not be entirely clear about the documents or materials referred to in the interview question. It also highlights concerns around the reliability and accuracy of responses provided by some teachers. These self-reports indicate that although most teachers are aware of policy documents and mandates related to TVC assessment, the documents are either not uniformly clear or contain insufficient information for some teachers to implement assessment.



Figure 2: Teachers' awareness of general assessment guidelines

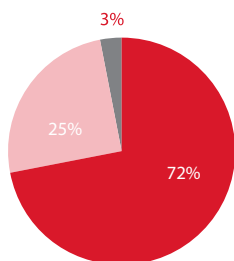


Figure 3: Teachers' awareness of TVC assessment guidelines

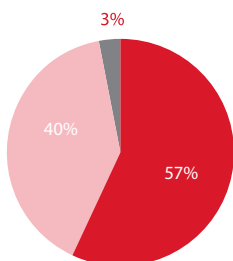
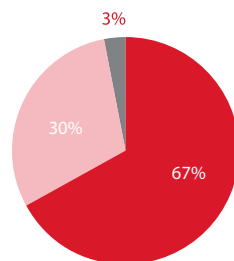


Figure 4: Teachers' awareness of TVC-relevant curriculum guidelines



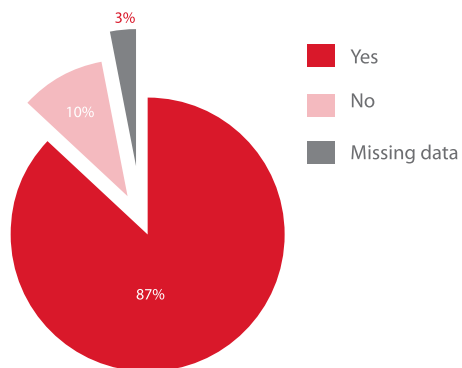
■ Yes ■ No ■ Missing data

Alignment between assessment, teaching and student learning

Despite the lack of awareness of system and school level mandates and policy documents by some teachers, a large number of teachers from participating countries/jurisdictions reported including TVC in their teaching and/or assessment activities.

Of the 129 teachers who participated in the study, 90 per cent reported that they include TVC in their teaching and/or assessment activities. Of this subgroup of teachers who included TVC, many reported that the ways they teach (for instance lesson planning) and assess students have changed. **Figure 5** presents this proportion. Of interest is that the two or three countries/jurisdictions which reported least inclusion of TVC in their teaching and/or assessment (less than 70 per cent), were also those which reported least change of practices among their teacher subgroups (again less than 70 per cent). This may imply a natural sequence in progression of integrating TVC – that the mere awareness, and then start of integration is required before the need for changes in practice are recognized.

Figure 5: Change in ways of teaching and assessment



Note: This graph represents the sub-group of teachers who reported integrating TVC.

Some teachers from **Viet Nam** and **Australia** noted that they plan lessons more explicitly based on a particular TVC. Some examples of change in teaching and assessment include the use of 'new' teaching methods such as conducting field studies and using technology (for example computer-based tasks), assessments that focus on both skills and knowledge, and assessments that cover more competencies. Assessment strategies such as portfolio assessments, practical tasks, character assessments, etc., have been implemented by some teachers in **Australia, Mongolia, Philippines, and Thailand**. Teachers in **Malaysia** use hands-on activities, such as science

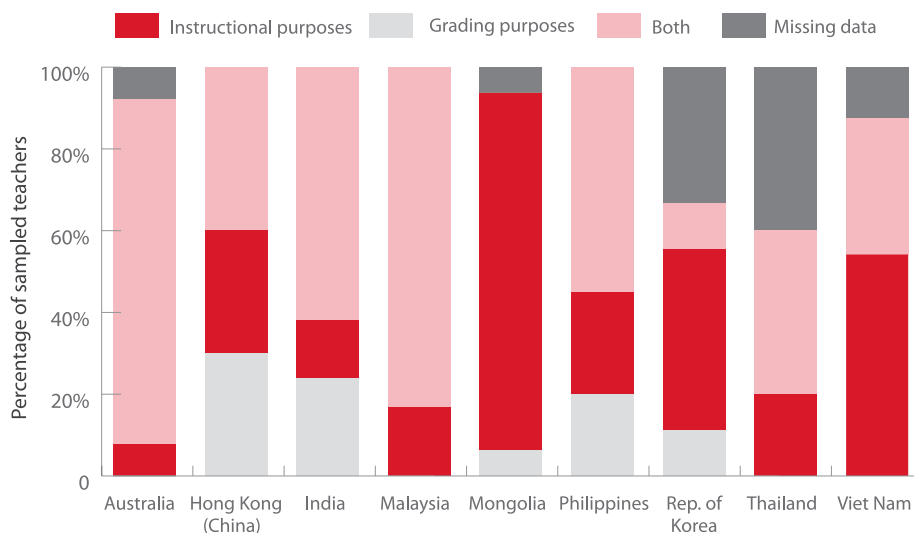


experiments and student-centered projects, to assess students' TVC, such as collaboration skills, resourcefulness, and 'creativity in presentation'. According to teachers in **India**, teaching practices have changed in terms of their pattern of questioning, wherein more opportunities are provided for students to express their thoughts or to reflect, visualize, engage and interact; TVC assessments were done through classroom observations, integrated projects across subjects, and through performance or skill-based activities. Some of the skills assessed by teachers are: self-awareness, problem solving, decision-making, critical thinking, creative thinking, interpersonal relationships, effective communication and empathy.

A majority of teachers in each country/jurisdiction reported having learning objectives related to TVC included in lessons, and that these learning objectives guided their assessment practices. According to the teachers, TVC assessment was included in academic and non-academic subjects as well as co-curricular activities.

The main subjects or activities identified were national language and/or other language subjects, science (e.g. chemistry), mathematics, and social sciences (e.g. history). A large proportion of teachers noted that TVC assessment was included for both grading and instructional purposes (**Figure 6**). Use of assessment for instructional purposes is similar to the more formal aspects of formative assessment – whereby how students perform on assessments is then used to inform teachers about how to intervene in subsequent teaching. This finding requires additional exploration. Its extent is beyond what might be expected given the diversity of responses concerning most other aspects of TVC implementation and assessment. Such exploration could usefully incorporate the gathering of evidence around specific assessment examples.

Figure 6: Purposes of TVC assessment



Note: There are unequal numbers of respondents across countries.

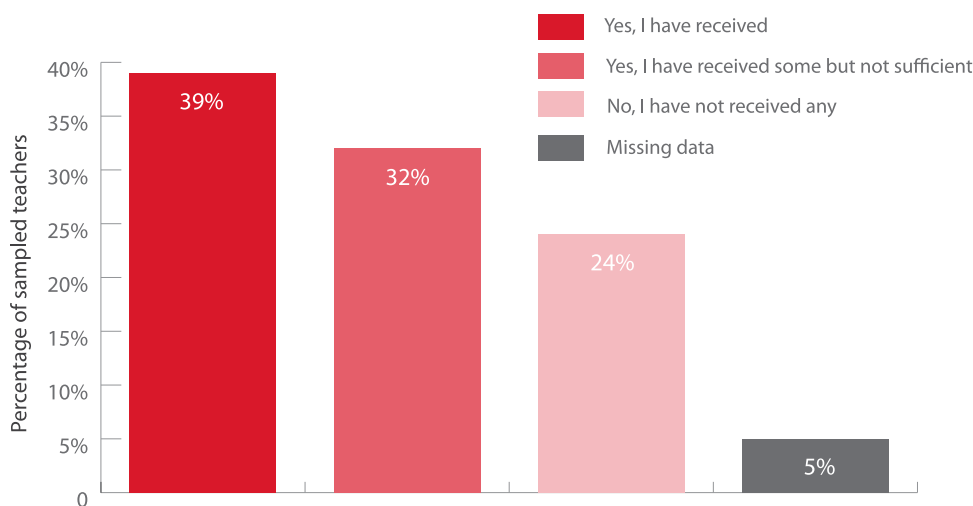


Support and infrastructure

The case studies examined whether teachers received specific guidelines and/or handbooks to implement TVC assessment in their classroom. As shown in **Figure 7**, almost 40 per cent of teachers across all nine countries/jurisdictions reported that they have received materials and guidance from the school or system; although at school level, only teachers in two countries, **India** and the **Philippines**, reported all schools having provided these resources. Regardless of receipt, some teachers (32 per cent) responded that the materials and guidance received were not sufficient to support their practice. In **Viet Nam**, more than half of teachers (13 out of 24 surveyed) reported that they did not receive any materials or guidance relevant to TVC assessment.

Figure 7: Specific guidelines and/or handbooks received by teachers

Distribution of sampled teachers' responses to the question: 'Have you received specific guidelines and/or handbooks on how to implement TVC assessments in your classroom?'



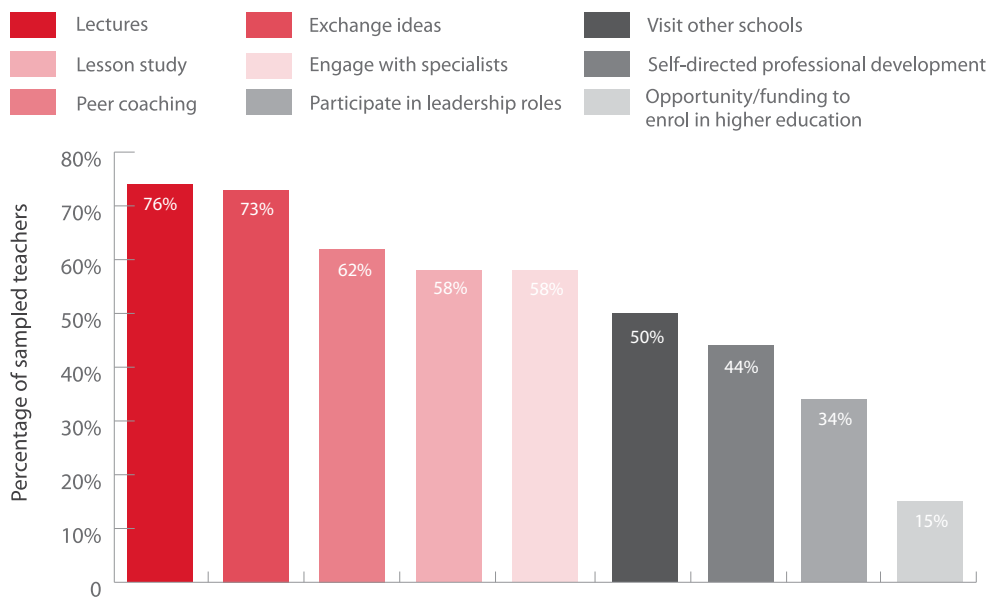
Note: There are unequal numbers of respondents across countries.

Most teachers reported having been formally informed about where to access specific guidelines and/or handbooks to implement TVC assessment in the classroom. However, half to two-thirds of teachers in the **Philippines**, **Republic of Korea**, and **Viet Nam** respectively said that they have not been told how to access the TVC assessment materials and guidelines. In addition, many teachers across all countries/jurisdictions reported that they independently sourced materials and guidance to help them implement TVC assessment in the classroom. For example, five out of six teachers in **Malaysia** accessed independently sourced materials. One teacher commented that she had 'to source the materials from the internet to have a better understanding of what is meant by TVC and its implementation in the classroom. Interpreted it by myself, customized and tailored it to my class.' In some cases, teachers commented that the materials and guidelines which they found were not sufficient; however, the country case studies did not describe why materials and guidelines were not sufficient.



Most teachers from all case studies reported having received training on how to implement TVC assessment. The exception was **Viet Nam**, where more than half (58 per cent) of the teachers report not having received relevant training despite reasonably high frequency reporting of (other) training from system and school. In general, teacher training was most commonly delivered through lectures (**Figure 8**). Teacher training also commonly involved exchanging ideas or consulting with colleagues, and visiting other schools to observe and learn about TVC assessment. The content of training varied across the countries/jurisdictions. Most of the training provided to teachers covered content such as the nature of TVC in terms of definitions and nature of development, and methods of assessing TVC such as embedding assessment within subjects. In most countries/jurisdictions, when training was provided, it was linked to broader educational and/or curricular goals. Note that in the **Philippines** and the **Republic of Korea**, approximately 15 per cent of teachers reported that the training provided to them was not linked to broader educational and/or curricular goals.

Figure 8: Style of training relevant to TVC assessment provided to teachers



Note: n=91; There are unequal numbers of respondents across countries.

To support teachers' professional development needs in relation to TVC assessment, teacher teams such as PLTs for instance, have been used in many schools.

In particular, all teachers from **Australia** and **Thailand** reported that teacher teams have been used or established to help them with TVC assessment. PLTs are a reasonably common professional development phenomenon in **Australia**, and they range widely in terms of their focus. PLTs were reported as especially useful in **Thailand** where it is called 'Professional



Learning Community (PLC)' because teachers receive training in the pedagogy and assessment of cognitive skills and TVC through a six-step model: 1) targeting students and outcomes; 2) designing curriculum and pedagogical approaches; 3) coaching, where teachers act like facilitators, rather than instructors, by asking questions that enlighten students; 4) embedded formative assessments that examine skills at each step of the learning process; 5) feedback provided to students to help them improve; and 6) reflection about the lessons. In **Hong Kong (China)** and **Viet Nam**, around 40-50 per cent of teachers noted that no teacher teams have been formed or used to support teachers in TVC assessment. In contrast to this finding, all school leaders from **Hong Kong (China)** who were interviewed reported teacher teams have been established at their school to support teacher professional development needs in relation to TVC assessment. The anomalies between information provided by teachers and school leaders from **Hong Kong (China)** may represent differences in perspectives and beliefs about school level activities. This is an important issue when exploring provision of support services – what might be presumed to be supportive by one group is not necessarily similarly perceived at another.

In addition to teacher teams, teachers and schools have sought or strengthened partnerships with different institutions, agencies or departments to help implement TVC assessment. Across several countries/jurisdictions, for instance, **India**, **Mongolia**, and the **Philippines**, initiatives and partnerships between teachers, school and government departments were the most common. Many teachers from different countries/jurisdictions reported partnering with universities and colleges of education to help them implement TVC assessment, namely: Flinders University in Australia; Sultan Idris Education University and teacher training institutes in Malaysia; the Korea Institute of Curriculum and Evaluation in the Republic of Korea; non-profit, non-government agencies and aid institutions such as local NGOs, the Vivekananda Youth Movement and the British Council in India. As a result of these partnerships, teachers reported gaining more knowledge and better understanding of TVC assessment. Some teachers also noted change in their teaching and assessment practices, for instance applying a range of methods of assessing TVC and conducting more assessments in class, as well as changes in the ways they design lessons and homework. Teachers in the **Republic of Korea** noted that they have gained more information on teaching and assessment, gained a better understanding of TVC, and learned methods of assessing TVC such as critical thinking. One teacher in **Mongolia** reported that her teaching practices have changed and are now more efficient, while two teachers reported they are learning how to develop TVC assessments. Overall, the partnerships or initiatives established by schools resulted in some positive changes in teachers.

Availability and use of assessment tools

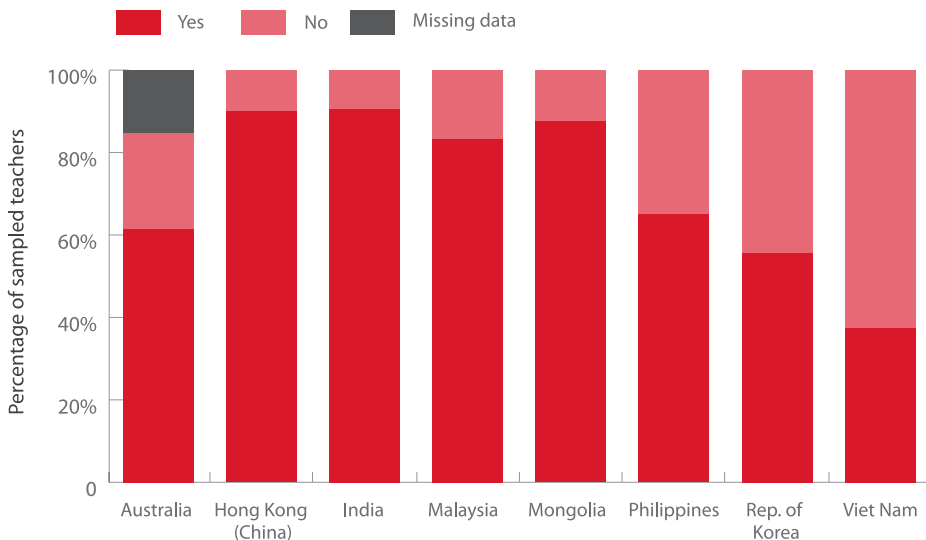
Many teachers across the countries/jurisdictions indicated that they have access to tools specifically designed for assessing students' TVC, although there are different patterns across the countries/jurisdictions.





Figure 9 presents the percentage of teachers with or without access to such tools. Some of the tools were developed by the system, but most were developed either by the teachers or by teachers and schools.

Figure 9: Teacher responses regarding access to TVC assessment tools



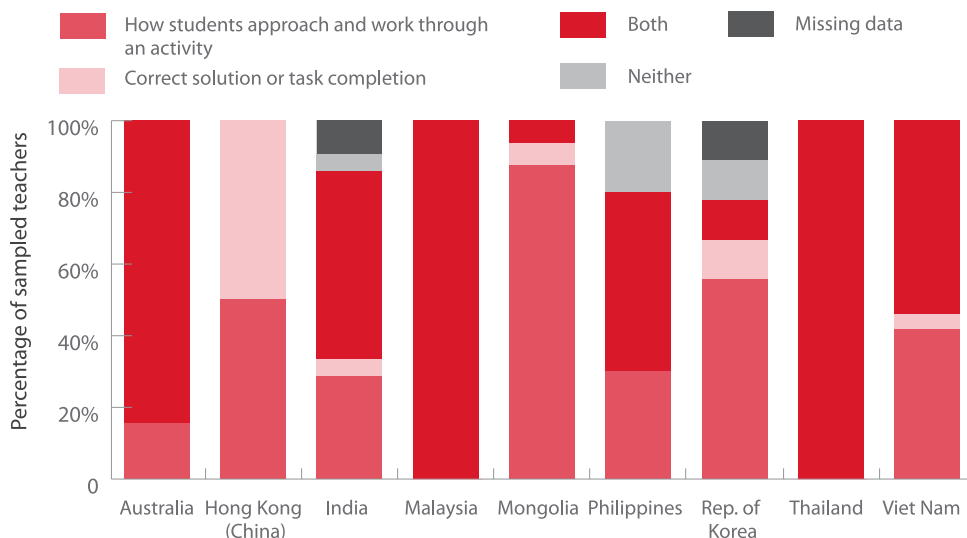
Notes: Missing data for Thailand. There are unequal numbers of respondents across countries.

Within each country/jurisdiction, teachers indicated that the information generated from the assessment tools were primarily used as a record of student achievement for class purposes. As shown in **Figure 10**, most teachers in **Australia, Hong Kong (China), India, Malaysia, Philippines, Thailand** and **Viet Nam** focused on how students approach and work through an activity and students' correct solution or task completion. In **Mongolia** and the **Republic of Korea**, a higher proportion of teachers reported that TVC assessment focused more on how students approach and work through an assessment than on students' correct solution or task completion. This may imply greater understanding of the nature of TVC by a larger proportion of teachers sampled in these two countries.

To assess TVC, methods ranging from standardized tests to school or classroom based assessments were used by teachers. Although online assessments (from external providers) were available in many countries, this method of assessment was used the least according to teachers. For most countries, teachers reported that their assessments evaluate students' understanding of content and critical analysis. The degree to which student understanding of content can be interpreted as related to TVC is questionable, and may imply lack of deep understanding of the phenomena. The assessment also focused on students' performance in areas such as: 1) evidence-based opinion; 2) students' constructive participation in discussion; 3) collaboration; and 4) formulation of innovative ideas.



Figure 10: Focus of TVC assessment



Note: There are unequal numbers of respondents across countries.

Results at teacher-level indicate that, to varying degrees, teachers are aware of system and/or school-level mandates on TVC assessment, and assessment guidelines that are related to TVC. TVC assessment practices were reportedly integrated into academic and non-academic subjects, and co-curricular activities. A variety of support and infrastructure was available for teachers. This support and infrastructure included guidelines and/or handbooks on implementing TVC assessment, training for teachers, and establishment of teacher teams to support teacher professional development needs. However, the availability of such support and resources varied between and within countries.

Summary at teacher level

The mismatch in most countries between what is reported as provided by school level and what is received at teacher level may highlight lack of clear signaling or identification of materials provided. It is important to note that the mismatch is not one-way; teachers sometimes report having received materials or guidance in the absence of school level reporting of having provided these. The findings highlight the need for appropriate guidelines, resources and materials to be developed, and for more consistent implementation within countries. The results point to a possible lack of technical understanding of the implications of TVC for teaching as well as assessment, in that not all teachers who reported integrating TVC in their teaching and/or assessment activities believe that their teaching and assessment practices have actually changed. Integration of TVC requires change in practice, so its absence may imply surface level implementation practices in some contexts. This is a relatively important finding from the study, implying that deep understanding of the TVC phenomena is not present.



5 Challenges in implementing TVC assessment

A number of challenges for the implementation of TVC assessment were identified. In order to simplify these, and as described at the beginning of the Key Findings chapter of this report, the issues and challenges can be seen as falling within, and at times across *definitional* and *operational-systemic* categories.

System level

The countries/jurisdictions experienced challenges in implementing government policies on TVC assessment, ranging from lack of training to lack of IT infrastructure or technical expertise (**Table 13**). The vast majority of these are *operational-systemic* issues. These may indicate a lack of understanding of the full repercussions of including TVC in the educational philosophy of a country. The system needs to appreciate the functional flow of *definitional* to *operational-systemic* issues.

According to **Australia's** system-level respondent, the main challenge in implementing relevant policy is the divided view within the Australian education system about the value of assessing student performance in TVC. **Hong Kong (China)** reported issues with whole-school curriculum leadership and teachers' knowledge and capacity. In other words, the challenges to implementing government policies on TVC assessment concern whether school leaders can incorporate the assessments within a whole-school approach and subject-based teaching and learning, and equip teachers to teach and assess TVC through the curriculum. **Malaysia** reported that the major challenges were: 1) parents' understanding of policy; 2) teachers' understanding and interpretation of policy implementation at school level; and 3) the discrepancy between ministry policy and implementation and practices at school level. In addition, **Malaysia** identified inadequate Information Technology (IT) infrastructure and inadequate budget as challenges. This scenario speaks to *operational-systemic* issues but there are obvious substantive issues around the nature of the change that integrating TVC demands.

Mongolia and the **Philippines** reported challenges that are primarily *operational-systemic*, including insufficient lead time to implement policy, lack of teacher training and incentives, lack of IT infrastructure and technical expertise, insufficient classroom materials and inadequate budget. Similar challenges were encountered in **India**. The only challenge reported by the **Republic of Korea** was insufficient lead time to implement policies surrounding TVC assessment. **Thailand** reported the same challenge but also noted lack of pre-service and in-service teacher training and incentives, and that current assessment practices were focused heavily on cognitive assessment.



Table 13: Challenges to implementation of government policies

Note: • = Yes	Insufficient lead time to implement policy	Lack of pre-service teacher training	Lack of in-service teacher training	Lack of incentives for teachers	Lack of necessary IT infrastructure	Insufficient classroom materials	Inadequate budget	Lack of technical expertise	Others
Australia									Divided views within Australia's education system regarding the value of assessing TVC
Hong Kong (China)									1) Whole-school curriculum leadership 2) Teachers' knowledge and capacity
India		•	•	•	•	•		•	
Malaysia					•		•		1) Parents and teachers' understanding of policy 2) Teachers' understanding and interpretation on policy implementation at school level 3) The discrepancy between the ministry policy and the implementation and practices at school level
Mongolia	•	•	•	•	•	•	•	•	
Philippines	•	•	•	•	•	•	•	•	
Republic of Korea	•								
Thailand	•	•	•	•				•	Too much focus on cognitive assessment
Viet Nam	•				•		•	•	

Note: • = Yes

School level

Definitional

At least half the school leaders from all countries except the **Philippines** and the **Republic of Korea** reported that they encountered *definitional* issues while implementing TVC assessment in their schools. Namely, countries/jurisdictions reported that there is a lack of knowledge and understanding about the nature of TVC, and a lack of understanding about what outcomes to





expect in the teaching and learning of TVC. For example, in **Hong Kong (China)**, one school administrator indicated that the definition of TVC was not clear, despite the fact that some work on TVC assessment has already been carried out. To resolve this issue, many countries/jurisdictions suggest providing more training and professional development to teachers and school staff.

Operational-systemic

At the school level, *operational-systemic* challenges were identified more frequently than *definitional* issues. These former challenges are of course the more visible. Respondents consistently reported that the lack of teaching, learning and assessment materials and guides was one of the main challenges encountered by schools. Other challenges were: 1) lack of teacher capability; 2) lack of assessment expertise (school and/or teacher); 3) lack of time; 4) high teacher workload; and 5) budget availability.

Some respondents suggested teacher training, mentoring and support, and better human resources management as strategies to be put in place to resolve teachers' lack of capability. Similarly, professional learning and training for teachers, and clearer guidelines were suggested as ways to address the lack of assessment expertise among schools and/or teachers. To reduce teacher workload, several respondents suggested reducing or minimizing teachers' administrative work.

In the case studies of **Hong Kong (China)**, **India**, **Malaysia**, **Viet Nam**, and **Thailand**, four *operational-systemic* challenges were reported by school leaders: 1) large class size; 2) competing curriculum requirements; 3) pressure to achieve academic success; and 4) overall school and community culture. The remaining countries reported at least two of these challenges, with the exception of the **Republic of Korea**. Two out of five school respondents from the **Republic of Korea** reported that none of these challenges were encountered in the process of implementing TVC assessment, while two respondents highlighted pressure to achieve academic success as a major challenge in implementing TVC assessment. To reduce academic pressure and curriculum requirements, one school leader suggested reducing the number of subjects students are required to take, and to make changes to the college entrance examination so that students are ranked on performance on subjects as well as knowledge and experience in other non-academic areas. It should be noted that the **Republic of Korea** has self-consciously embarked on a large-scale initiative to balance academic and 'whole student' needs – a strategy to focus on the systemic challenges.



Teacher level

While many teachers believed that it was important to assess students' TVC, they noted challenges in doing so.

Definitional

Teachers from all countries/jurisdictions reported that they encountered *definitional* challenges. In **Malaysia** and **Thailand**, these challenges were consistently reported by almost all the teachers interviewed. These included lack of knowledge or understanding of the nature of TVC and of what outcomes to expect in its teaching and learning. Consistent with school level findings, teachers suggested *operational-systemic* responses to these, including more training, professional development and guidance. The finding that most significantly illustrates the *definitional* challenges for teachers, is that although more than 60 per cent across all countries reported including TVC in their teaching and assessment, not all of these teachers report that their teaching and assessment practices have changed. Where the nature of what is to be taught and assessed is qualitatively different from what has been taught in the past, there is no doubt that teaching and assessment practices must also be different. That some teachers are not aware of this points to a lack of understanding of the nature of TVC and how these might be nourished in the formal education system. At the same time, the fact that some teachers do report a change in practice is the most significant positive demonstration that the need for alignment across teaching, curriculum and assessment is understood by some.

An associated issue is the use of TVC assessment for grading purposes. Again, in the context where not all teachers adjusted their assessment and teaching methods, the fact that roughly 90 per cent of all participating teachers report including TVC assessment for either or both instructional and grading purposes (**Figure 7**) may be a matter of concern. Given these uses, it is natural that so much of the *operational-systemic* challenge lies around access to training, materials, and guides.

Operational-systemic

As was the case with school level respondents, teachers across countries/jurisdictions also identified several operational challenges in implementing TVC assessment in their classrooms. The lack of teaching, learning and assessment materials and guides was the most frequently indicated challenge. To resolve this issue, some teachers commented that more support and guiding documents are needed. The lack of time to implement TVC assessment and high teacher workload were also significant issues reported. Other challenges reported include lack of teacher capability, lack of assessment expertise, budget availability and teacher performance bonus incentives.

Large class size is one of the issues frequently reported across countries/jurisdictions. All teachers from **Thailand** reported that large class size was a major challenge for them in implementing TVC assessment, as well as the curriculum more generally. A large proportion





of teachers from **Australia, India, Malaysia, and Viet Nam** reported that the pressure to prepare their students to achieve academic success in non-TVC areas is a competing priority. In all countries/jurisdictions except **Mongolia**, which has a national curriculum that explicitly includes TVC, teachers reported that the overall school or community culture has been a road block for implementing TVC assessment. Some teachers suggested smaller class size as a solution. The degree to which this is seen as a solution specific to TVC assessment as opposed to a more general belief that smaller class sizes are optimal, is not clear from these data. These results highlight the need for in-depth discussion about the degree to which TVC can be taught effectively at class level, as opposed to there being the opportunity for differentiated instruction in the classroom.

Summary of challenges faced by countries/jurisdictions

In the implementation of TVC assessment, countries/jurisdictions encountered challenges across all three levels: system, school and teacher. Most commonly the countries/jurisdictions report *operational-systemic* issues with schools and teachers consistently reporting high teacher workload, the lack of time and resources such as materials and guidelines. The degree to which such challenges might be generic issues rather than specific only to TVC is unclear. In some countries/jurisdictions, the *definitional* issue of a lack of understanding of TVC was reported at the system-level, and was reflected increasingly at school and then at teacher level. *Operational-systemic* issues were also made explicit at the teacher level.



6 Discussion

TVC are clearly on the education agenda of the countries/jurisdictions that participated in this study, and the preceding ERI-Net studies. The fact that these countries/jurisdictions have formulated assessment policies, engaged in pilot and research work, have facilitated the development of assessment materials, and provided training is clear confirmation that TVC are being taken seriously. There are differences across the countries/jurisdictions in depth and breadth of implementation. Some have more fulsome documentation at policy level than others; most experience some anomalies between what support is perceived to be provided to schools and teachers and what is received; some jurisdictions report on activity in specialized rather than mainstream schools, which underscores the fact that most are in the early stages of introducing such reforms. All appear to be experiencing consequences of lack of technical knowledge of implications of the nature of TVC for assessment. This lack is not peculiar to these countries/jurisdictions, but more of a global phenomenon. Although cultural and political issues might be most broadly responsible for challenges experienced in the introduction of TVC into education systems, technical issues are more broadly responsible for the challenges experienced in the assessment of these competencies.

There are three primary challenges to assessment of TVC. First, the mission itself is not well understood. Although many countries have espoused the notion of holistic education, of developing the whole child, and educating the student to be able to contribute to a changed and changing world; the implications of these notions for curriculum, pedagogy and assessment are not well understood. There is a primary *definitional* challenge confronting countries not only in the Asia-Pacific, but globally. What is the nature of these skills or competencies? Which are valued to the extent that a system wants to commit to their implementation? And which can be understood sufficiently to incorporate in a formal education system? If a competency itself is not well understood, then it is not possible to teach it or to assess it. In addition, it is plausible that different cultures will define and interpret TVC differently, reflecting their value systems. This will have influence on the degree to which assessment tools can be shared across countries/jurisdictions.

This leads to the second area, which touches on teacher capacity. In order to teach effectively, the teacher needs to understand what is to be taught; how this develops over time and its hierarchical nature or developmental sequence; the match between students' readiness to learn and the demands of what is to be taught; and pedagogical strategies aligned with what is to be taught and a student's stage of learning. In addition, some expertise in the area of assessment is required. Knowledge and competencies vary widely in nature. Assessment of a skill or competency will look very different from assessment of content knowledge. So the teacher is subject to *definitional* issues that lead to *operational-systemic* challenges.

And the third area is the system perspective on what is most valued for and by a country/jurisdiction. 21st century expectations of education may be at odds with long-held views about what the education system is expected to produce. Unless there is acceptance that development of the 'whole child' is the duty of the education system, that system is unlikely to initiate the process of major disruption which requires more explicit focus on competencies development.

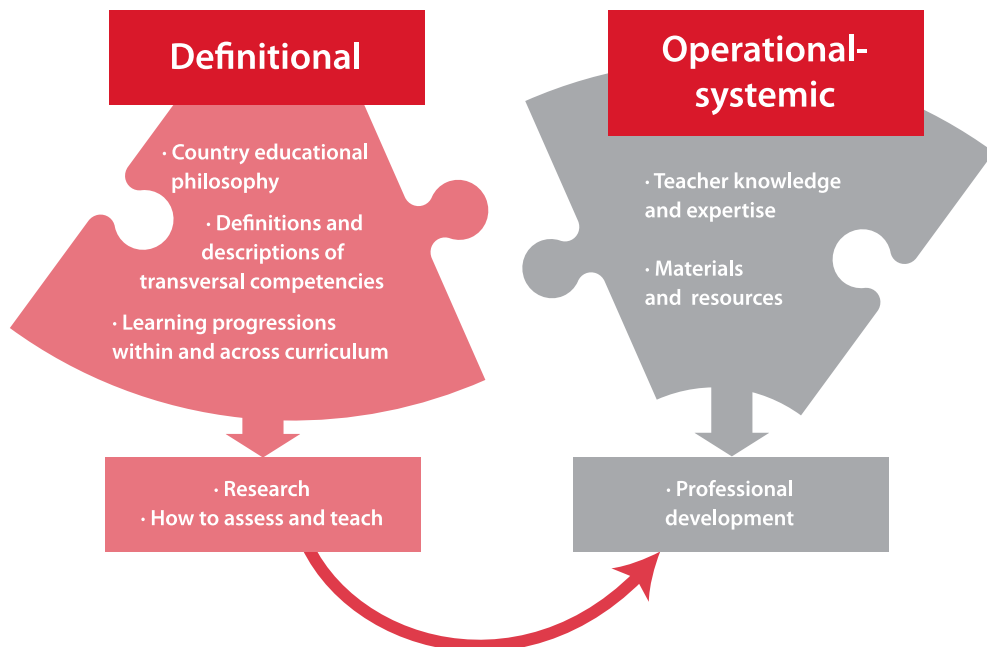




Operational issues are the most frequently identified challenges. However, the flow-on effect of obstacles raised by issues of educational philosophy and policy, and the definitional obstacles of lack of understanding of TVC and their teaching, learning and assessment, are responsible for these operational challenges, and in fact predict them (**Figure 11**). The need for provision of training and materials are the consequences of definitional demands, and where these latter are not resolved, the operational consequences are automatic.

Taking into consideration the radical differences in assessment and teaching of TVC in comparison to traditional and academic disciplines, and the relatively recent innovations in the field, it is essential to explore the actual substance and nature of assessment and teaching of TVC, and how these might be implemented in the classroom.

Figure 11: Categories of challenges

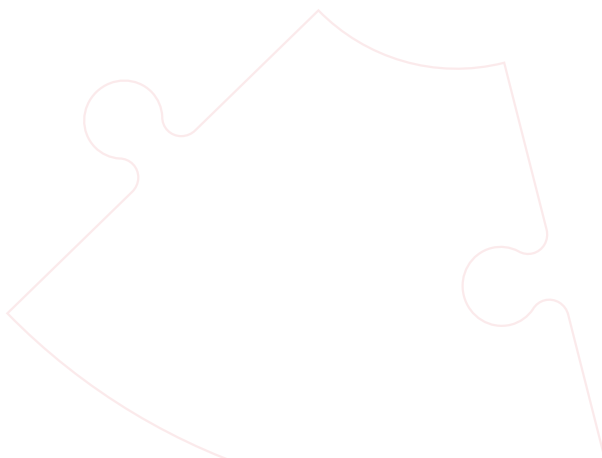


The conviction that students need to develop TVC is widespread. It is found both in review documents by global organizations (e.g. OECD, 2015), and at country level (as seen repeatedly in country vision statements for education). Sustainable Development Goal 4 (United Nations, 2016) calls for 'relevant and effective learning outcomes' (Target 4.1), and for 'knowledge and skills needed to promote sustainable development', including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture and skills needed to promote sustainability (Target 4.7), both of which are targets particularly associated with TVC.



There is little discussion in the literature about the implementation challenges this raises. Prior to implementation is the need for us to understand the nature of these competencies, how they develop, and how they are best nurtured, as identified in the Phase II ERI-Net report. Whitehurst (2016) discusses the gap between known content and skills in reading and mathematics, and the fuzziness of descriptions of the 'broad domain of social and emotional learning'. Similarly, Care and Anderson (2016) highlight the implications of known discipline areas versus relatively unknown '21st century skills' for teaching and assessment. The need to research and pilot is the critical priority to enable implementation of broader curricula with the teaching and assessment opportunities that it enables. The fact that there are such pilots in some of the Asia-Pacific countries/jurisdictions which participated in this research work demonstrates acknowledgement of the major change that this implementation will require at systemic, definitional, and operational levels.

Challenges around definition were identified in the ERI-Net Phase I study. Technical progress in assessment of TVC has a lag in terms of its impact at school and classroom level. International large-scale programmes designed to address the field are few and relatively inaccessible to educators. Noteworthy is the pioneering work of the Assessment and Teaching of 21st Century Skills project (Griffin and Care, 2015), and more recently the inclusion of collaborative problem solving in OECD's PISA round in 2015. Translation of the technical innovations made by these initiatives into the classroom use has not occurred, highlighting the divide between academic research, global assessment studies, and the classroom. The majority of accessible information (e.g. Lai and Viering, 2012; Soland et al., 2013) provides descriptions of competencies and frameworks with overviews of generally well-known assessment methods, and do not extend to the complexities and practicalities of designing and developing assessment tools of constructs that are still ill-defined.





7 Recommendations

The country case studies provide a rich picture of the variety of responses to key issues in assessment of TVC. Some of the recommendations for assessing TVC could apply equally to any system reform focused on education content or philosophy. These include the need for training, and the development of and access to resources. The responses in this study indicate that the logistic or systemic-operational resources that introduction of TVC assessment require may be no different from that required for education reform more generally. However, other responses make clear the qualitatively different demands of the reform due to the nature of TVC. The very nature of TVC highlights the learning that assessment cannot be treated as independent of other delivery strategies in an education system. Consequently, there are some recommendations that are specific to this reform, and may have disruptive influence on traditional education systems.

At the operational level, training recommendations include **addressing pre-service teacher education** courses, and increasing the competence of school improvement coaches. Associated recommendations include the **creation of over-arching reform implementation teams and research institutions**. These recommendations recognize that the expertise to implement assessment of these particular competencies does not currently exist. This is quite different from merely requiring that more teachers are better trained in areas of expertise that are already well understood. This requirement for training arises due to lack of understanding more globally about how to assess these competencies.

The rationale for the call for research is found in the intersection between *definitional* and *operational-systemic* issues – wherein the challenges are identified as understanding how to balance TVC with traditional values around education, the need to align assessment with pedagogy and curriculum, and understanding how to crystallize the formative and developmental nature of these skills and leverage these as inputs to all studies. System-level directives to integrate TVC teaching and learning would best be accompanied by presentation of the expected benefits of the reform.

Apart from development of the TVC themselves, consistent with the calls of the workforce for these competencies in employees, the degree to which their development will have reciprocal benefits for existing curricular studies could be explored. Unfortunately, research on such outcomes remains limited in these early days.

In the case where policy decisions are made to include transversal competencies teaching and assessment for students, the next step is to ensure that evidence-based strategies that show how this can best be achieved, are implemented. Research is the key to providing that evidence (**Figure 12**).

More knowledge about TVC is required — about how they develop and their typical developmental pathways, and the degree to which teaching enhances or influences their natural development. More knowledge about how much TVC have the capacity to influence



student performance in their general studies is also needed. This information is essential if appropriate and useful assessment approaches are to be designed. It would also inform teacher preparation and the infrastructure required. Given the regional coherence around TVC, it may be most beneficial if an over-arching educational research group could contribute the expertise required for each country/jurisdiction to act on in terms of teacher training, and consequent materials development.

Figure 12: Acting on recommendations



Regional research group

The key to acting on these recommendations lies in increasing regional competence in the nature of the competencies, and methods of assessment and teaching that are aligned with this. The next step is to move into this practical set of activities at a regional level in order to maximize efficiency, and take advantage of the collaborative creativity of the contributing countries/jurisdictions. The focus of these activities should be on assessment, taking the approach that effective assessment provides information and advice for instructional processes in the classroom.

As well as general recommendations around teacher preparation and resourcing that might be seen as required for any curriculum reform, this specific recommendation is made due to the qualitatively different nature of TVC and its implications for teaching, curriculum, and assessment.





It is recommended that the regional research group:

1. Contribute to the development of definitional understanding:

- Establish detailed descriptions of each of the TVC in terms that identify the student behaviours that teachers might expect to see, and that will vary according to the proficiency level of the student;
- Locate where these behaviours might appropriately be manifested within mainstream school subjects, and how they might be evaluated;
- Draw on the regional resource bank of research completed and assessment tools developed;
- Draw on the competencies, and develop activity, task, and assessment templates which may be applied across subjects for teachers to adopt.

2. Make decisions concerning the purpose and functionality of assessment:

- Query the philosophy behind assessment of TVC;
- Identify the purposes of assessment;
- Describe how the information that is derived from assessment will be used.

3. Consult with the community:

- Generate discussion about intended inclusion of TVC in the formal education system;
- Make explicit the balance or tension between educational achievement that has been valued historically and what will be valued in the future;
- Work towards attitude change around the purpose of assessment.

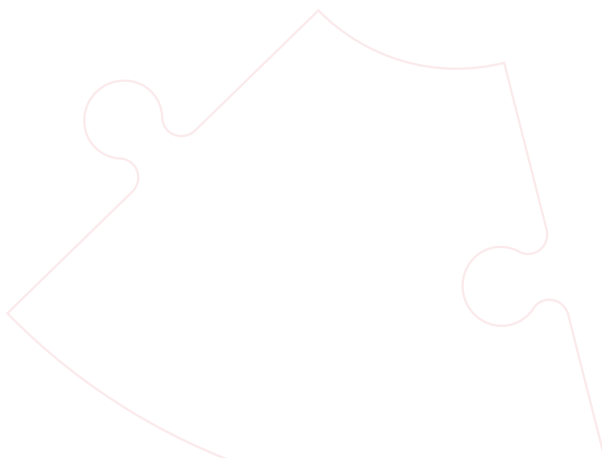


8 Conclusion

Rather than providing a picture of typical practices in the countries/jurisdictions participating in this study, the information gathered through these case studies should be regarded as a snapshot of the early stages of a major innovation. This innovation requires modification of curriculum and pedagogy as well as assessment. The findings provide insights into a range of strategies adopted by countries/jurisdictions as they move into a previously unexplored domain, but the mainstream nature of these strategies may imply a lack of deep understanding of the technical nature of the reforms required.

There is no doubt that there is growing enthusiasm in many countries/jurisdictions for focus on education beyond traditional academic disciplines. This is illustrated in countries such as the Philippines through their leading vision of the 'holistically developed Filipino', and the Republic of Korea's focus on 'happy education for all' as it seeks to balance its swift academic achievements with quality of life issues for its youth.

Existence of assessment frameworks for TVC or plans for assessment itself, demonstrate that countries/jurisdictions intend to prioritize this learning area. The challenges identified in this study provide a clear message about the need for formally disseminated articulation of education goals, and consequent development of technical competencies in integrating changing goals into curriculum, pedagogy and assessment.





References

- ACARA. 2016. The Australian Curriculum. <http://www.australiancurriculum.edu.au> (Accessed 13 October 2016.)
- Autor, D., Levy, F. and Murnane, R. 2003. The Skill Content of Recent Technological Change: An Empirical Exploration. *The Quarterly Journal of Economics*, Vol. 118, No. 4, pp. 1279-1333.
- Binkley, M., Erstad, O., Herman, J., Raizen, S., Ripley, M., Miller-Ricci, M. and Rumble, M. 2012. Defining Twenty-first Century Skills. P. Griffin, B. McGaw, and E. Care (eds), *Assessment and Teaching of 21st Century Skills*. Dordrecht, Springer.
- Brewer, L. 2013. *Enhancing Youth Employability: What? Why? and How? Guide to Core Work Skills*. Geneva, International Labour Organization. http://www.ilo.org/wcmsp5/groups/public/--ed_emp/--ifp_skills/documents/publication/wcms_213452.pdf (Accessed 12 October 2016.)
- Care, E. and Anderson, K. 2016. *How Education Systems Approach Breadth of Skills*. Washington DC, Brookings Institution. https://www.brookings.edu/wpcontent/uploads/2016/07/Brookings_How-Education-Systems-Approach-Breadth-of-Skills_v2.pdf (Accessed 12 October 2016.)
- Care, E. and Griffin, P. 2014. An Approach to Assessment of Collaborative Problem Solving. Special Issue: Assessment in Computer Supported Collaborative Learning. *Research and Practice in Technology Enhanced Learning*, Vol. 9, No.3, pp. 367-388.
- Claro, M., Preiss, D. D., San Martin, E., Jara, I., Hinostroza, J. E., Valenzuela, S., ... Nussbaum, M. 2012. Assessment of 21st Century ICT Skills in Chile: Test Design and Results from High School Level Students. *Computers & Education*, Vol. 59, No. 3, pp. 1042-1053.
- Delors, J. (ed). 1996. *Learning: The Treasure Within*. Paris, UNESCO.
- DepEd. 2016. Features. K to 12 Curriculum. <http://www.deped.gov.ph/k-to-12/features> (Accessed 13 October 2016.)
- ECDL. 2016. ECDL Foundation. Homepage. <http://ecd.org> (Accessed 13 October 2016.)
- Fischer, A., Greiff, S. and Funke, J. 2012. The Process of Solving Complex Problems. *Journal of Problem Solving*, Vol. 4, No. 1, pp. 19- 42.
- Fraillon, J., Ainley, J., Schulz, W., Friedman, T. and Gebhardt, E. 2014. Preparing for Life in a Digital Age: The IEA International Computer and Information Literacy Study International Report. Cham, Springer. http://www.iea.nl/fileadmin/user_upload/Publications/Electronic_versions/ICILS_2013_International_Report.pdf (Accessed 13 October 2016.)
- Gordon, J., Halasz, G., Krawczyk, M., Leney, T., Michel, A., Pepper, D., Putkiewitz, E. and Wisniewski, J. 2009. *Key Competences in Europe: Opening Doors for Lifelong Learners across the School Curriculum and Teacher Education*. CASE Network Report, No. 87. Warsaw, Center for Social and Economic Research. <https://www.econstor.eu/bitstream/10419/87621/1/613705459.pdf> (Accessed 13 October 2016.)
- Griffin, P., and Care, E. (eds.). 2015. *Assessment and Teaching of 21st Century Skills: Methods and Approach*. Dordrecht: Springer.
- Lai, E. R. and Viering, M. 2012. *Assessing 21st Century Skills: Integrating Research Findings*. Vancouver BC, NCME.



Lippman, L. H., Ryberg, R., Carney, R. and Moore, K. A. 2015. Key “Soft Skills” that Foster Youth Workforce Success: Toward a Consensus Across Fields. Workforce Connections, June 2015. Child Trends. <http://www.childtrends.org/wp-content/uploads/2015/06/2015-24AWFCSoftSkillsExecSum.pdf> (Accessed 12 October 2016.)

OECD. 2015. *Skills for Social Progress: The Power of Social and Emotional Skills*. OECD Skills Studies. Paris, OECD Publishing. <http://dx.doi.org/10.1787/9789264226159-en> (Accessed 12 October 2016.)

Park, R. K. E. 2016. *Preparing Students for South Korea’s Creative Economy: The Successes and Challenges of Educational Reform*. https://www.asiapacific.ca/sites/default/files/filefield/south_korea_education_report_updated.pdf (Accessed 12 October 2016.)

Pellegrino, J. W. and Hilton, M. L. 2012. *Education for Life and Work: Developing Transferable Knowledge and Skills in the 21st Century*. Washington DC, National Academy of Sciences.

Polya, G. 1973. *How to Solve It: A New Aspect of Mathematical Method*. Princeton, NJ, Princeton University Press.

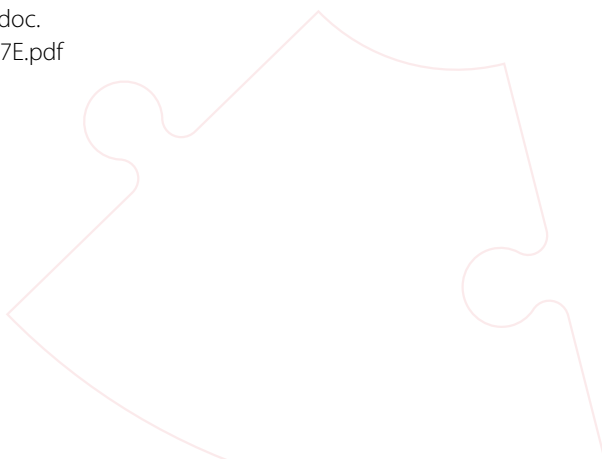
Soland, J., Hamilton, L. S. and Stecher, B. M. 2013. *Measuring 21st Century Competencies: Guidance for Educators*. Global Cities Education Network, Asia Society and Rand Corporation. <http://asiasociety.org/files/gcen-measuring21cskills.pdf> (Accessed 12 October 2016.)

UNESCO. 2015. *Transversal Competencies in Education Policy and Practice (Phase I)*. Asia-Pacific Education Research Institutes Network (ERI-NET). Paris and Bangkok, UNESCO. <http://unesdoc.unesco.org/images/0023/002319/231907E.pdf> (Accessed 12 October 2016.)

UNESCO. 2016. *2014 Regional Study on Transversal Competencies in Education Policy and Practice (Phase II)*. Asia-Pacific Education Research Institutes Network (ERI-NET). Paris and Bangkok, UNESCO. <http://unesdoc.unesco.org/images/0024/002440/244022E.pdf> (Accessed 12 October 2016.)

United Nations. 2016. *The Sustainable Development Goals Report 2016*. New York, United Nations. <http://unstats.un.org/sdgs/report/2016/The%20Sustainable%20Development%20Goals%20Report%202016.pdf> (Accessed 12 October 2016.)

Whitehurst, G. J. 2016. Hard Thinking on Soft Skills. *Evidence Speaks Reports*, Vol. 1, No. 14. Washington DC, Brookings Institution. <https://www.brookings.edu/wp-content/uploads/2016/07/Download-the-paper2.pdf> (Accessed 12 October 2016.)



UNESCO Bangkok Office
Asia and Pacific Regional Bureau for Education

Mom Luang Pin Malakul Centenary Building
920 Sukhumvit Road, Prakanong, Klongtoei
Bangkok 10110, Thailand
Email: iqe.bgk@unesco.org
Website: www.unesco.org/bangkok
Tel: +66-2-3910577 Fax: +66-2-3910866