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# Assessment of Transversal Competencies

## Current Tools in the Asian Region



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UNESCO and The Brookings Institution

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# Acronyms

<b>BCSEA</b>	The Bhutan Council for School Examinations and Assessment
<b>GNH</b>	Gross National Happiness
<b>ERI-Net</b>	Education Research Institutes Network in the Asia-Pacific
<b>NEQMAP</b>	Network on Education Quality Monitoring in the Asia-Pacific
<b>OECD</b>	The Organisation for Economic Co-operation and Development
<b>P21</b>	Partnership for 21st Century Skills
<b>PIRLS</b>	Progress in International Reading Literacy Study
<b>PISA</b>	Programme for International Student Assessment
<b>SDG</b>	Sustainable Development Goal
<b>SES</b>	Socio-Economic Status
<b>SSDP</b>	Nepali School Sector Development Plan 2016/17 – 2022/23
<b>TIMSS</b>	Trends in International Mathematics and Science Study
<b>TVC</b>	Transversal Competencies
<b>UNESCO</b>	United Nations Educational, Scientific and Cultural Organization



# Foreword

Our contemporary world is full of both opportunities and challenges for human development. The social and economic landscape is fast evolving in terms of lifestyles, job markets and human relationships due to the rapid progress of science and technology. At the same time, crises such as climate change, natural disasters and enduring conflicts and tensions among people and nations are providing additional obstacles. In this unpredictable and rapidly changing global environment, with urgent challenges for people and the planet, and for human progress and intercultural understanding, there is a strong call for rethinking our approach to education and learning. How are the learners of the today expected to address and overcome these challenges and harness these opportunities? What skills will people need in an ever-changing landscape? Currently, a larger global education trend seeks to embed education systems with so-called transversal competencies or 21st century skills. These competencies and skills go by many names but what they all have in common is an understanding that, while important, academic performance is only as good or as meaningful as the complementary skills and competencies that learners develop. These complementary skills ultimately play a significant role in what helps learners to achieve success.

To make learning meaningful, motivating and truly empowering, it should deal with relevant local and global issues close to the lives of learners. With a re-emphasis on 'learning' and what is relevant, Member States have committed to re-think traditional ways of teaching and learning. Sustainable Development Goal (SDG) 4 underscores the crucial role education plays in achieving all other SDGs related to poverty eradication, gender equality, environment, health and peace. Of particular relevance is SDG4 Target 4.7, which aims to empower learners to assume active roles to face and resolve local and global challenges, and to become proactive contributors to a more peaceful, tolerant, inclusive and secure world. Such roles are based on, and include, three interconnected and indivisible domains of cognitive, socio-emotional and behavioral learning. UNESCO, as the lead agency for SDG4, promotes an emphasis on quality education and learning and works closely with Member States to prepare their education systems to develop and harness these skills.

UNESCO's Asia-Pacific Regional Bureau for Education has been working on this area of education quality under the name of 'transversal competencies' since 2013. From previous studies, we know that many of these competencies have been included in national education policy and curricula of many countries in the region, but now the importance accorded them is increasingly gaining attention. As policy makers increasingly require their systems to provide evidence of 21st century skills acquired by their learners, implementation challenges highlight the need for a stronger alignment between curricula, pedagogy and learning assessments.

This publication seeks to help education stakeholders address some of the more pressing concerns regarding transversal competencies. These include 'how can we assess our learners if we do not fully comprehend what it is that we want to measure?' and 'how do we overcome the subjective nature of 'observation' vs the objective standards that most mainstream assessments provide?' Equally important for the use and assessment of transversal competencies is that



we are focusing on effective teaching and learning, and not simply praising those that 'show' more compassion, empathy or confidence in public speaking or communication skills.

The study examines components within countries' learning assessments that are already in use, and shows how these apply to and can measure transversal competencies (TVC). These studies on TVC keep us focused on how to measure and assess these hard to define skills and competencies. Particularly important for us to highlight is the need to align these skills and competencies across the entire education system.

This report provides valuable information on how learning assessments are already capturing TVC. This is useful for a broad range of education stakeholders, not only test developers, but also curriculum developers, teacher trainers and teachers. By highlighting the potential resources that education systems already have, teachers and education officials can reach a greater understanding on how to fully harness and develop quality and relevant skills. Curriculum, pedagogy and assessment must work together in order to ensure that we are measuring what matters most. The report examines some of the existing resources in the Asian region for the assessment of transversal competencies. It confirms that, for a majority of countries, teaching and learning of transversal competencies are indeed a component of their educational aspirations. At the same time, this remains to be more clearly reflected in curricula and in teacher training. Among participating countries in this study, although there is only slight evidence of tools that aim specifically to measure transversal competencies, it is clear that a good part of existing national- or school-based tools for assessment may have the capacity to be adapted to capture some transversal competencies.

As part of these efforts, UNESCO Bangkok, through the Network on Education Quality Monitoring in the Asia-Pacific (NEQMAP) convenes the space of knowledge sharing, capacity development and further research for Member States in the region. UNESCO Bangkok is grateful for the authors of this study for their insightful contributions, and hopes the paper will be useful for education partners in Asia and the Pacific and beyond in their continued efforts for inclusive and quality education.



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This synthesis report was written by Esther Care, Alvin Vista, and Helyn Kim of the Brookings Institution, based on materials and analyses contributed by the participating country researchers noted above.

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# Executive Summary

In this small-scale study, eight countries in Asia contributed material from their national- and classroom-based tests to be reviewed as potential resources for the assessment of transversal competencies. The study builds upon previous studies undertaken by country research groups organized within the Education Research Institutes Network in the Asia-Pacific (ERI-Net) and the Network on Education Quality Monitoring in the Asia-Pacific (NEQMAP), both regional networks coordinated by UNESCO Bangkok.

Starting in 2013, ERI-Net carried out three research studies (hereafter identified as Phase I, Phase II and Phase III) that examined how Asia-Pacific countries integrated transversal skills and competencies into education policy and practice. The Phase I study looked at how countries define and integrate transversal competencies in educational policies and practices at the national level. Through the study, it became clear that there is a growing interest and emphasis on transversal competencies among the countries and jurisdictions in the region and many have reflected these competencies and skills in their educational policies and/or national curricula. As a follow-up to this research, the Phase II study was undertaken to examine implementation aspects, particularly looking at how these competencies are interpreted and integrated in school and teaching practices. The study highlighted a change in the role of teachers and the need for teachers to acquire new skills and pedagogical approaches to teach transversal competencies. This called for further in-depth analysis of teachers' competencies and issues related to their capacity development.

Therefore, the Phase III study explored teacher preparedness and the support they receive in terms of professional development for integrating transversal competencies into teaching and learning. The study findings demonstrated that, while teachers understand the importance of transversal competencies and are motivated to support the learning of these competencies in the classroom, there are notable gaps and challenges that need to be addressed. The challenges include lack of integration of transversal competencies in school curricula and limited availability of detailed guidelines to assist teachers to teach.

To complement these previous research efforts of ERI-Net, NEQMAP carried out a regional study focusing on assessment of transversal competencies. The objective of this study was to explore policies or practices that countries of the region have adopted in assessing these competencies and the challenges encountered in the process. The study findings revealed that assessment of transversal competencies is reflected in educational policies of some countries/jurisdictions in the region, but its implementation at school level still poses many challenges, including lack of teacher professional development, clear guidance and guidelines, as well as lack of support in terms of access to assessment tools.

The current study was launched under the banner of NEQMAP with the goal of collecting and examining the existing tools used by countries/jurisdictions in the region that might assess transversal competencies. The materials presented and discussed in this qualitative study were not originally designed as assessments of transversal competencies or 21st century skills.

Significantly, however, they do sample aspects of student behaviour that can be interpreted as demonstrating these skills. Examples of tools from countries are presented and discussed in terms of how they currently inform, or might be adapted to inform, teachers about student skills. Researchers from departments and ministries of education and from academic institutions drew from national and school-based assessment resources for this study. The countries/ jurisdictions that collaborated and are represented in this document are: Bhutan, Cambodia, Hong Kong [SAR China], Malaysia, Mongolia, Nepal, Pakistan, and Viet Nam. The contributions from the researchers highlight the preparedness of countries to identify opportunities in their current curricular and assessment resources to support the shifting education goals of many countries in the Asia region. The potential of the resources described in this report draw attention to the understanding of educators in the region of the need to align curricular goals with both pedagogical strategies and assessment resources and approaches.





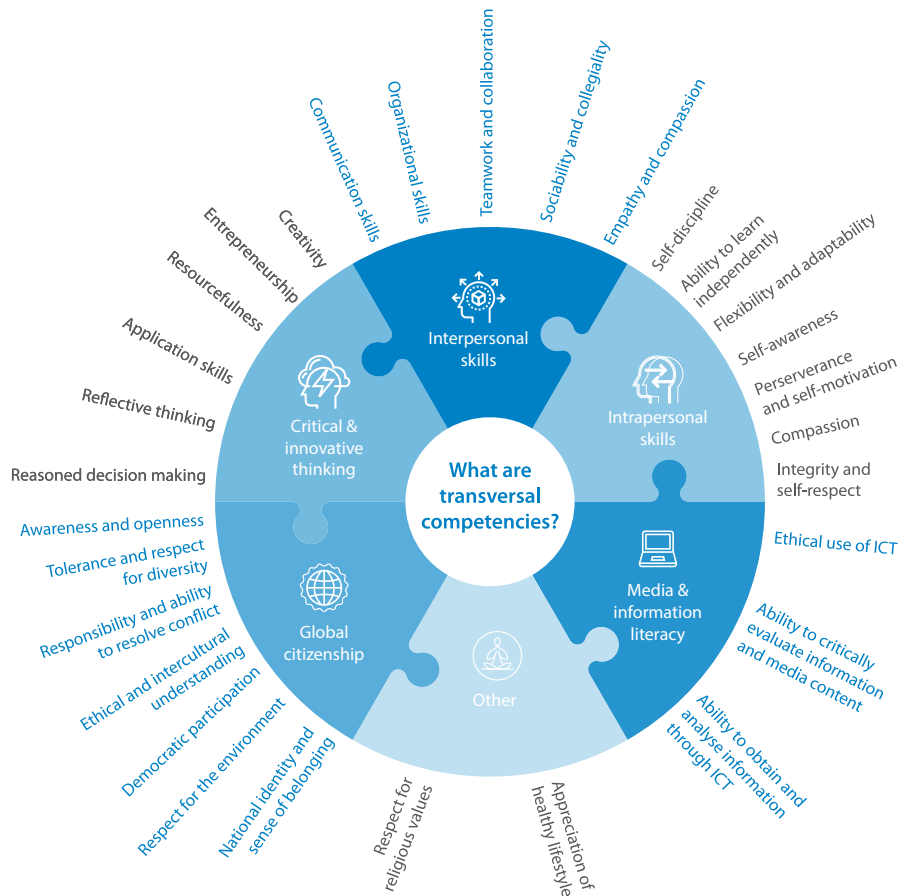
# 1 Introduction

## Background

Based in the UNESCO Bangkok Asia and Pacific Regional Bureau for Education, two networks, the Education Research Institutes Network in the Asia-Pacific (ERI-Net) and the Network on Education Quality Monitoring in the Asia-Pacific (NEQMAP) have completed a series of studies which explored awareness and recognition of transversal competencies (TVC), also known as 21st century skills, in the education sector in the Asia-Pacific region. The UNESCO Bangkok framework on transversal competencies (Figure 1) provided the working structure for this study. For description of the competencies and subskills, refer to Appendix B.

The first report from the series of studies (UNESCO, 2015a) described a framework for transversal competencies arrived at through an ERI-Net consensus process. Ten countries/jurisdictions (Australia, Shanghai [China], Hong Kong [SAR China], Republic of Korea, Japan, Malaysia, Mongolia, Philippines, and Thailand) documented the variety of approaches to adoption of transversal competencies that these countries took at educational policy and practice levels. The second ERI-Net report (UNESCO, 2016) explored associations between policy and practice. The need for pedagogical practices which emphasized student-centred practical tasks was documented, as was the lack of teacher training to support these practices. There was little identification of implications of changed learning goals necessary for alignment of the main delivery mechanisms within the system – namely curriculum, pedagogy, and assessment, nor did the majority of responses question that existing mechanisms might not be appropriate for assessment of transversal competencies. This finding was supported in UNESCO's fourth report through NEQMAP (Care and Luo, 2016) which explored the implementation infrastructure of assessment of transversal competencies. Across the nine participating countries in the fourth study, there was strong evidence of awareness at policy and school levels of the drive for assessment, but equally strong evidence of lack of depth of understanding about the implications of adoption of a "skills agenda" for teaching and assessment practices. At a more nuanced level, teacher respondents across the countries indicated that they needed training and resources to support their teaching and assessment of transversal competencies – which may be interpreted as awareness that inclusion of the competencies would raise questions about approaches to teaching. This fourth report, supporting the ERI-Net studies, was very clear in its findings about the definitional, operational and systemic challenges to implementation of transversal competencies in the education system. Definitional challenges include understanding what these competencies are, operational challenges include availability of resources, and systemic issues include attitudes to education including ranking systems and access to continued learning opportunities. The report did not, however, provide examples of the types of tools to which countries have access that could be interpreted as having the capacity to assess these competencies. This present study now reports on such examples, and discusses their potential.

Figure 1: Transversal Competencies



Source: Adapted from UNESCO (2016)

Although we used the UNESCO Bangkok framework for this study, it should be noted that there are various frameworks on the broader 21st century skills that have been adopted by other studies and referenced by assessment programmes across the world. In particular, the OECD definitions of key competencies (OECD, 2005) and the Partnership for 21st Century Learning (P21, 2009) definitions of 21st century student outcomes are frameworks that broadly share commonalities with the UNESCO Bangkok framework. In these frameworks, the individual skills may differ in operational definitions slightly, but there is general consensus on the theoretical definitions of the constructs that are more established in the literature (e.g., critical thinking, problem solving). Differences arise in the groupings of the skills into structural categories such as cognitive, interpersonal, intrapersonal and global citizenship depending on the missions of the institutions that develop each framework and their goals for the use of the framework.



Other frameworks are more focused and describe the structure of specific constructs within the broader frameworks. For example, the ATC21S framework (Binkley et al., 2012) includes the specific constructs for collaborative problem solving (Hesse, Care, Buder, Sassenberg and Griffin, 2015) and ICT literacy in digital networks (Wilson and Scalise, 2018). The choice of the UNESCO Bangkok framework for this study was due to the regional context and the aim of collecting tools that capture as diverse a set of skills as possible.

## Transitions in educational assessment

The eight participating countries/jurisdictions in the Asian region contributed examples of national, school, and classroom-based tests and test items. The study was agnostic as to discipline or subject source of the materials, and the criteria for inclusion of the tools were flexible with respect to measurement approach and method. Note that tools used in education systems are typically grounded in a traditional academic paradigm where learning of content has been prioritized and pedagogical methods mostly rely on direct instruction. Therefore, the majority of assessment tools are designed to identify correct versus incorrect solutions. This design tradition influences how education stakeholders view assessments, including those that target non-traditional domains. This effect is reflected in one of the case studies in the ERI-Net report which found that although teachers realize that traditional methods of teaching and assessment may not be appropriate for non-traditional domains, “the current assessment system, which is used for measuring academic scores, cannot adapt to the current demands of developing innovative skills” (UNESCO, 2016, p. 37). It is clear that if systems intend to assess transversal competencies, a change in perspective on educational assessment is needed.

How to reflect complex 21st century skills in educational assessment has not been extensively explored. In the Asia-Pacific region, there is evidence that some countries have begun to shift their focus from content-correctness to capturing behaviours and processes (UNESCO, 2016). For example, using group work activities to teach and assess collaboration, or using behavioural checklists to capture global citizenship skills, have been reported in the UNESCO (2016) case studies. However, there has been little information concerning the actual tools that are currently used in real classrooms across the region.

## Study purpose and target beneficiaries

The purpose of this study was to undertake a scan of tools, whether tests, test items, or assessment tasks that might relate to transversal competencies, by examining examples provided by participating countries. Although there are many countries that have adopted a “transferable skills” agenda as captured in a review of education systems of over 150 countries (Care, 2018; Care, Anderson and Kim, 2016), this has not translated into clearly delineated implementation plans, description of appropriate teaching strategies, or development of

well-designed assessment tools. This study was designed to capture what currently exists, in order to identify the starting point for those plans and guide future development of tools that will enable the capture of transversal competencies both accurately and in a mode that supports teaching and learning. Although being small scale in nature, the data in this study provides a picture of the current state of skills assessment across the region. This picture may belie official views concerning what resources are available to schools. Policy makers may therefore benefit from understanding the detail of what is available in schools so that their policies can be translated more specifically into needed resources. And, practitioners in schools may benefit from the analyses of tools so that they are better equipped to explore what these tools are able to reflect in terms of student competencies. This study provides illustrations of how to revise tools for potential repurposing.

## Research questions

1. What is the current state of skills assessment in transversal competencies or 21st century skills in each of the participating countries/jurisdictions? What patterns can be identified from the sampling of available tools?
2. What are the characteristics of the available assessment tools collected? Specifically, the following characteristics were examined in the content and context analysis of the tools/tasks:
  - a. primary function (teaching and learning, information, and accountability);
  - b. text/item formats (e.g., true-false, correct- incorrect, fill in the blanks, check list, rating scale, open/close constructed response, etc); and
  - c. scoring mechanisms and score reporting formats.
3. What transversal competencies, or sets of competencies, predominate? In what academic subjects or learning domains are these competencies embedded?
4. Can current tools be improved or repurposed, and are there practical ways to do so?

These research questions guided analyses of the tools collected. The discussion of the findings has been undertaken both at individual country and regional levels.





## Participants

NEQMAP member institutions and individual experts in the Asia-Pacific region were invited to participate in this study, and eight of these agreed to contribute. The countries/jurisdictions that participated are diverse in terms of education structure and resources. It should be noted that the distribution of socio-political characteristics, including income levels, political stability, and demographic diversity of the participating countries may not be representative of the Asia region. These factors can significantly affect country contexts and is a limitation of the study's scope.

The researchers were affiliated with either ministries, departments of education, or research institutions/universities in their respective countries/jurisdictions (see Appendix A). Many of these and their representatives participated in the earlier studies undertaken by ERI-Net and NEQMAP on TVC, and hence, were familiar with 21st century skills concepts and their hypothesized structure across the main domains shown in Table 1.

The eight participating countries/jurisdictions<sup>1</sup> are Bhutan, Cambodia, Hong Kong [SAR China], Malaysia, Mongolia, Nepal, Pakistan, and Viet Nam. A brief description of the education structure, existing assessments, curriculum statements, and data sources, including the agency responsible for collecting resources for the current study are provided for each country in Appendix A. In this section, the degree to which these countries have identified TVC as part of their educational goals is outlined in order to contextualize the discussion of findings.

### **Bhutan**

Bhutan's education is founded upon the government's central concept and goal of Gross National Happiness (GNH). GNH broadly comprises four policy areas for Bhutan: good governance, sustainable and equitable socio-economic development, preservation and promotion of culture and environmental conservation. The education system accordingly focuses on a variety of elements to enhance the capacity of citizens to be self-reliant yet communally productive. The curricular vision explicitly references skills such as communication, creativity, and competencies for self-directed learning, and also emphasizes various values and attitudes.

### **Cambodia**

The Education Sector Plan covers the years 2014 to 2018. The curriculum specifies eight core competencies: literacy and numeracy, foreign languages, ICT, communication and teamwork, analysis and creativity, applying knowledge skills, personal, family, and social development, and entrepreneurship and leadership. Each level of education has expected learning outcomes that include these skills. The skills are expected to build upon one another through the system. Objectives for each core area are defined at the subject level.

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<sup>1</sup> Hereafter referred to as "countries"



### **Hong Kong [SAR China]**

The curriculum focuses on three main components: knowledge in eight Key Learning Areas (Chinese language, English language, mathematics, science, technology, personal, social, and humanities education, arts, and physical education); nine generic skills (collaboration, communication, creativity, critical thinking, information technology, numeracy, problem solving, self-management, and study skills); and seven priority values and attitudes (perseverance, respect for others, responsibility, national identity, commitment, integrity, and care for others). These core components, including all subjects and seven broad learning goals stretch across all levels of the system with the aim of fostering development of the whole person.

### **Malaysia**

Since 2017, a revised curricula for primary school (KSSR) and secondary schools (KSSM) have been introduced gradually from Grade 1 and Grade 7, respectively. These curricula emphasize not only subject content knowledge but also embed TVC such as critical thinking, creativity, communication and collaborative skills, as well as a variety of attitudes and values relevant to 21st century competencies. Through the revised curricula, KSSR and KSSM are designed in alignment with emphasis on the Malaysia Education Blueprint 2013 - 2025 which identifies the Ministry's aspirations for students: knowledge, thinking skills, leadership skills, bilingual proficiency, ethics and spirituality, and national identity.

### **Mongolia**

The core primary curriculum includes a focus on several key areas: critical thinking, problem solving, communication, collaboration, independent study, ICT skills, life skills, and environmental sustainability. These skills are described across Grades 1–3 and Grades 4–5, and across the subject areas. The core curricula for lower and upper secondary include similar key areas.

### **Nepal**

The Nepali School Sector Development Plan 2016/17 – 2022/23 (SSDP) explicitly references “soft skills”, but does not define them. Instead, the SSDP appears to lay groundwork for another agency to develop the curriculum and define the skills more fully.

### **Pakistan**

The Ministry of Federal Education and Professional Training recently reformed the curriculum for Grades 1–5. The new curricular subjects contain a variety of references to TVC, including oral communication, creativity, and critical thinking. There is not currently a progression of skills made explicit across subject areas, and the curriculum for later grades is under reform. The overall intention for the education system, however, includes three pillars: Taleem (Seek, Use and Evaluate Knowledge), Tarbiyya (Social, Technical, Moral, and Ethical Training) and Tazkyya (Purification of Soul).



## **Viet Nam**

The general education curriculum references several TVC in its general objectives, including autonomy, self-learning, communication, collaboration, and problem solving and creativity. It also lists a variety of values and attitudes. Specific capacities are thought to be formed through subject areas, and the competencies are suggested to progress from primary to secondary levels, though linkage across subjects is not clear from available documents.

## **Summary of participating countries**

It is notable that the vast majority of countries clearly delineate that TVC are a component of their educational aspirations. Information about actual frameworks is less prominent than identification of specific skills. Nepal and Pakistan are less explicit about a TVC focus than the other participating countries. All countries are explicit about their examinations schedules, and their national and provincial examinations are all focused on traditional academic areas (see Appendix A). The lack of congruence between aspirations and the symbolization of what is valued through the assessment system is a reminder of the recency of the educational goal shift embodied by TVC.



## 2 Approach

### Sampling and data collection approach

The study focused specifically on late primary (Grades 4–6) to early secondary education grades (Grades 7–9). Participating countries were asked to collect examples of assessment tools (“tools” is the term being used to describe tests, test items, assessments, assessment tasks, and broadly any measurement tool used in the classroom) from a small number of schools and at the national level.

The guidelines specified that the participating researchers collect only examples of assessment tools that capture TVC. This was to include tools that directly and intentionally reflect TVC and those that might reflect the TVC indirectly - that is, where the TVC is neither the primary nor intentional focus of assessment. Assessment tools that reflect subject or knowledge domain competencies only (for example, a science item that is purely focused on memorization and recall of symbols associated with specific chemicals) were not to be collected. The researchers were to collect a variety of tools, rather than multiple examples of the same assessment type. Diversity, as opposed to a specific number of tools to collect, was therefore prioritized.

The participating researchers engaged in a workshop prior to data collection in order to familiarize themselves with skills descriptions, the guidelines, and scope of data collection. The workshop used the UNESCO Bangkok framework as the basis for the identification of skills and their descriptions. Exemplar assessment items were discussed in order to demonstrate how to identify where content knowledge as opposed to TVC was the focus of assessment.

For national level tests, researchers were asked to collect sample items, as well as technical information about the tests. For tests collected in schools, the tests, items, and information about how they are scored were requested. Countries were given the option to contribute information and also to limit access to the materials. Tools used at national level, for either census or sample-based assessment, were understood to require higher levels of confidentiality and test security for access. The following permissions were specified:

- Permission to use materials to inform article writing but not to provide sample items;
- Permission to include sample items in the article;
- Permission to include technical information in the article; and
- Permission to include both sample items and technical information in the article.

For obtaining school-level tools, due to the small scale of the study, a convenience sample of five or six schools was to be selected. The main goal was to access as many diverse assessment tools as possible. Since there is no current information about how different types of schools might be approaching the assessment of TVC, there were no criteria specific to TVC outlined for school selection. Instead, general criteria were set – government and private schools, urban and rural, large and small, and high and low achieving (as recognized through national assessments).





Researchers were encouraged to include: an urban-government school, an urban-private school, a rural-government school, and a rural-private school. Criteria to be considered were:

- School size – It was recommended that the schools should have diverse numbers of enrolled students. The following ranges were provided to serve as broad guideline for school size: small = less than 400, medium = 400–800, large = more than 800.
- Academic performance – It was recommended that schools should be selected from across a range of academic learning outcomes (i.e., a mix of low, average and high performing schools). The classification for low, average, and high was flexible and would typically be based on national/local standards.
- Socio-economic status (SES) – It was recommended that the selected schools have a mix of socio-economic and/or financial resource status. The classification for low, average, and high was flexible and would typically be based on national/local standards.

### Verification process

Verification was a process through which original coding and classification of the tools was reviewed. The process relied substantially on referring back to the UNESCO Bangkok framework for skills descriptions and identification of subskills.

Whether supplied tools were in scope was verified by identification of what domain or skill the tool was targeting. The original classifications were undertaken by the country researchers. For verification, the core authors of the report followed a three-step process. First, each researcher independently classified each tool and/or item according to the elements shown in Appendix C. Second, these independent classifications were discussed within the group iteratively until consensus was achieved. Third, the consensus classifications were compared with the original classifications provided by the country researchers to reach final decisions. This last step was accompanied in some cases by additional discussion with country researchers to clarify details. Where there was disagreement between the researchers, this was predominantly due to different interpretations of what was being assessed. Examples of such differences are discussed.



## Limitations of the study

The study is limited in the sampling approach, for both the schools, and the tools selected. This was a small exploratory study designed to collect evidence in support of findings from NEQMAP's assessment of TVC study (Care and Luo, 2016). In that study, school personnel indicated that there were difficulties in accessing appropriate assessment tools of TVC. This study provided the opportunity to identify what sorts of tools teachers are using, and the extent to which their perceptions of inadequacy can be verified. There is no claim that the findings of this study are representative of the participating countries. However, by selecting schools across a range of location, size, and academic performance it was hoped that a reasonable snapshot of the status quo could be reached. The second sampling issue lies in the actual collection of tools. The country researchers could only collect those tools that schools were willing to provide; the provision itself was an act of trust, and it is reasonable that schools might not provide all possible examples of their assessment tools. Similarly, since it might be assumed that many school personnel might not be deeply familiar with 21st century skills their selection of tools might have missed some that could have been of interest.

An issue that is increasingly highlighted in the literature on education systems is that of alignment. One aspect of alignment is congruence between policy and practice. The countries, although sharing an interest in TVC, prioritize specific TVC differently in their curricula, as noted in the descriptions of the participating countries. Table 1 places these policy statements in relation to the domains and subskills (described in Figure 1) which are reflected in the results of this study. Data that show the degree of congruence between aspiration and practice can provide an invaluable baseline for tracking progressive implementation of education reform, and so is illustrated here. However, this is where the convenience sampling approach of this study is clearly a limitation. Not only is the sample not necessarily representative, there are also different numbers of tools collected in the countries. These quantity differences will have limited the validity of the frequency reflections.





Table 1: Alignment of TVC across policy and study results

Country	Policy statement	Main TVC domains reflected	Main subskills reflected
Bhutan	The curricular vision explicitly references skills such as communication, creativity, and competencies for self-directed learning	Critical and innovative thinking Interpersonal skills	creativity and communication
Cambodia	The curriculum specifies eight core competencies: literacy and numeracy, foreign languages, ICT, communication and teamwork, analysis and creativity, applying knowledge skills, personal, family, and social development, and entrepreneurship and leadership.	[Tools provided were assessments of subject areas]	
Hong Kong [SAR China]	..nine generic skills (collaboration, communication, creativity, critical thinking, information technology, numeracy, problem solving, self-management, and study skills); and seven priority values and attitudes (perseverance, respect for others, responsibility, national identity, commitment, integrity, and care for others)	Media and information literacy Critical and innovative thinking	creativity, resourcefulness, reflective thinking, teamwork, collaboration, ability to obtain and analyse information through ICTs, sense of belonging, and self-motivation
Malaysia	..critical thinking, creativity, communication and collaborative skills, and leadership skills	Critical and innovative thinking Global citizenship	reasoned decision-making, application skills, and respect for the environment
Mongolia	..key areas: critical thinking, problem solving, communication, collaboration, independent study, ICT skills, life skills, and environmental sustainability	Critical and innovative thinking Interpersonal skills	communication skills and creativity
Nepal	..references “soft skills”, but does not define them	Critical and innovative thinking Global citizenship	
Pakistan	..a variety of references to TVC, including oral communication, creativity, and critical thinking..  three pillars: Taleem (Seek, Use and Evaluate Knowledge), Tarbiyya (Social, Technical, Moral, and Ethical Training) and Tazkyya (Purification of Soul)	Interpersonal skills	Decision-making, communication skills, collaboration, organizational skills, teamwork and adaptability
Viet Nam	..general objectives, including autonomy, self-learning, communication, collaboration, and problem solving and creativity	Critical and innovative thinking	application skills and reasoned decision making

Note: The policy statement extracts are taken directly from the Participating Country section



## 3 Findings

### Summary of country inputs

The guidelines for data collection discussed with the researchers acknowledged the probable absence of tools explicitly designed to assess TVC, and encouraged searching for school and national materials that they or their school associates could reasonably interpret as sampling some aspect of the competencies outlined in Table 1.

Table 2 reports a summary of the data collected by the researchers. Materials that were identified during the verification process as not actually constituting assessment tools (e.g., a description of a classroom activity) are not included in the table. Of particular interest is identification of whether tools were designed to assess TVC. This is also shown in Figure 2, as well as whether the TVC were scored – an explicit indicator of intended and direct targeting of TVC. Where results from a test are aggregated to provide a score on a particular competence, this may be presumed to constitute a clear statement of the intention for the tool to generate information about that competence. As can be seen, there is relatively little separate scoring for TVC, with the notable exception of the tools from Bhutan.

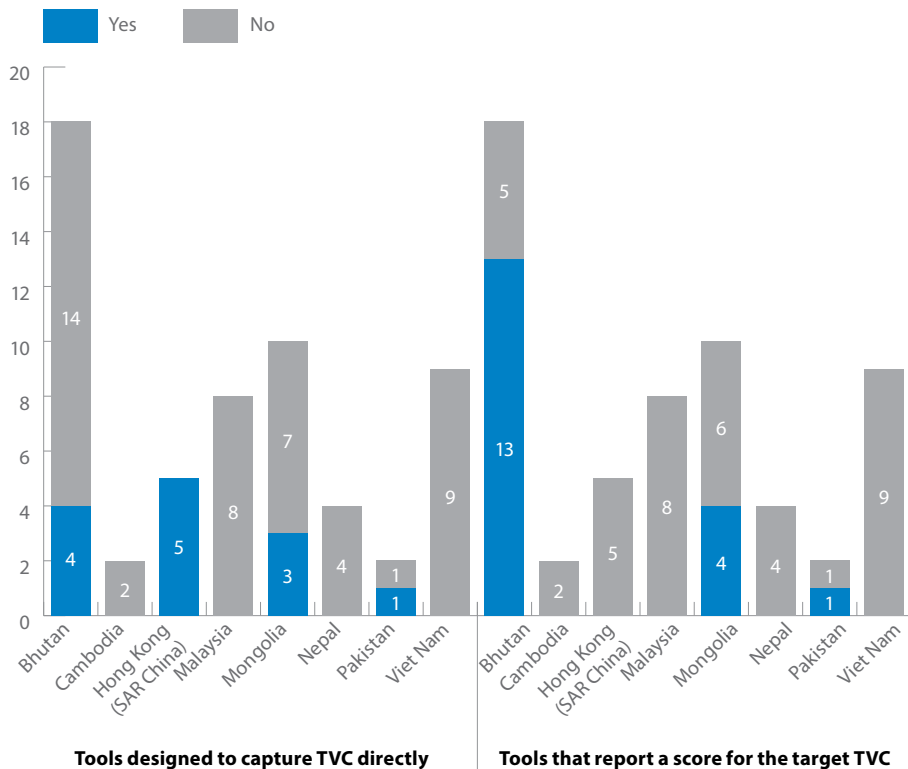
Table 2: Summary of data collection

Participating country	National tools	School tools	Number of tools designed to capture TVC directly
Bhutan	2	16	4 of 18
Cambodia	2	-	0 of 2
Hong Kong [SAR China]	-	5	5 of 5
Malaysia	2	6	0 of 8
Mongolia	3	7	3 of 10
Nepal	1	3	0 of 4
Pakistan	-	2	1 of 2
Viet Nam	1	8	0 of 9

Note: Tools included multiple items.



Figure 2: Summary of intentional capture and score reporting



This study collected examples of assessment tools designed to provide national and school level information. “Tools” is used in this report to describe tests, assessment tasks, or individual items. In the majority of instances, the TVC are not the primary focus of assessment; rather there are specific items that tap into TVC while being embedded within conventional tests of other learning domains.

The eight countries each provided between two and eighteen tools (both national and school level tools). Two countries, Hong Kong [SAR China] and Pakistan, provided school level tools only, while Cambodia provided national level tools only; the other five countries provided a mix of national and school level tools, with the majority of the tools being at the school level. Some tools contained several items of interest which captured different TVC.

Countries identified the learning area in which the tool was used, whether the TVC were intentionally captured, scoring mechanisms, and tool/item format; and where available, technical information about the tools, including their design and purpose, and psychometric standards (summarized in Table 3). The tools and this accompanying information are discussed in the following sections.



The small-scale nature of the study and the convenience-sample selection of schools which contributed resources mean that there can be no claim that these are representative of each participating country. Also, it should be kept in mind that each country generously provided the examples in the spirit of sharing current practices, not for cross-country comparisons.

Table 3: Summary of tool and item characteristics

Country	Most common reported function		Most common test/item format		Most common scoring mechanism	Available psychometric standards
	National tools	School/classroom tools	National tools	School/classroom tools		
Bhutan	Accountability	Formative	MCQ, closed CR	Open CR, rating	Raw score, rating scale	National only
Cambodia	Accountability	Not available	MCQ majority, some rating and closed CR	Not available	Raw score	National only
Hong Kong [SAR China]	Not available	Formative, summative	Not available	Rating majority, some closed and open CR	Raw score	Not available
Malaysia	Summative, accountability	Summative	Closed and open CR	Closed and open CR	Percentage for classroom tools, criterion scaled score for national tools	National only
Mongolia	Formative	Formative, summative	Rating, closed and open CR	Rating	Raw score, criterion scaled score	Not available
Nepal	Accountability	Summative	Dichotomous, MCQ, open and closed CR	Open and closed CR	Raw score for classroom tools, percentile for national tools	National only
Pakistan	Not available	Formative, summative	Not available	Rating, open and closed CR	Raw score	Not available
Viet Nam	Summative, accountability	Formative, summative	MCQ	MCQ, open and closed CR	Raw score	National only

Key: MCQ = multiple choice question; CR = constructed response



## Characteristics of collected samples

The majority of the tools were not designed to capture TVC directly. More commonly, the tasks or items were embedded in conventional tests. A consequence is that the interpretation of TVC targeting for most items is primarily post-hoc. Very few tools were designed specifically to target TVC, and of course the degree to which that is successfully achieved will vary according to the understanding that the tool developers have of the domains of interest, as well as their assessment design expertise. Where items that were developed initially to target subject domains were reviewed for their capacity to target TVC, the data suggest that country data collectors sometimes “over-interpreted” the items, seeing the potential in items for capture of TVC rather than the reality of what was currently being captured. Such interpretations in fact led to a major finding of the study – that some traditional assessment tools have the capacity for extension in order to capture TVC. Therefore, although some tools were verified as being over-interpreted, the important fact is that such tools demonstrate the potential to capture the targets of interest. Examples of such interpretations include the following styles and types of tools and items:

- Behaviour checklists (e.g., being quiet in class, cleaning the classroom);
- Student journal entries (e.g., a daily diary, “lessons learned” notes);
- Tools that reflect topics about TVC, rather than tools that elicit TVC; and
- Tools that reflect academic and general reasoning competencies as distinct from TVC.

The tools were analysed according to (1) characteristics of the tools themselves, as represented by primary function, test and item format, scoring and reporting mechanisms, and reporting; (2) TVC and subject predominance, as represented by most common TVC sampling, and most common subject embedding; and (3) interpretation and item types and examples.

### Primary function

The tools were classified into three main groups with respect to their primary function:

- Teaching and learning (e.g., for formative use)
- Information (e.g., for summative reporting to student)
- Accountability (e.g., for reporting to school, region, or system).

As might be expected, tools which are used at national level most commonly function for accountability. All countries which provided samples of national level tools reported that the primary function of these tools was for summative reporting at systems level. It should be noted that this summative function was focused on traditional academic domains – not the TVC. The TVC just happened to be embedded in these tools, based on post-hoc analysis.



Most countries provided tools for school or subnational use. The most commonly reported primary function of these tools was for summative use, although half of the researchers reported that the tools were also used for formative purposes. The study did not query the nature of formative use of assessment data, and so understanding of formative use could have varied across countries and across researchers and school associates.

## Test and item formats and scoring

The formats of tools from the national level reflect traditional test and item formats. Multiple choice questions<sup>2</sup> and dichotomous (e.g., true-false, correct-incorrect) formats are common (Box 1), but some examples of closed-constructed-response<sup>3</sup> items (Box 2) were collected. The types of item formats are more diverse for tools that were designed for school or classroom use. They include a variety of checklists (Box 3), rating scales (Box 4), and open constructed response items. The open response formats include essay-type responses and creative products (Box 5), although scoring becomes more complicated, and potentially problematic, due to increased subjectivity of the scorer.

Box 1: Sample dichotomously scored item from Nepal

**A. Match the following words in column 'A' with the words in column 'B' which have the closest meaning: 4x0.5=2**

**Column A**

- (a) messy
- (b) ashamed
- (c) trouble
- (d) hopeless

**Column B**

- i. worry or difficulty
- ii. despair
- iii. dirty or untidy
- iv. embarrassment

**B. Write 'True' or 'False' against the following sentences: 4x0.5=2**

- (a) Teddy played well with his friends.
- (b) She got surprised to see Teddy's future record teacher.
- (c) Teddy was brilliant according to his second grade
- (d) Teddy got into trouble since his mother got terminal illness.

2 Multiple choice questions (MCQ) are composed of two parts – a stem that acts as a question or stimulus, and a set of alternative answers from which one correct answer should be selected from among the set of plausible answers.

3 Closed constructed-response items require respondents to supply their own response within a defined space, format and alphanumeric style; open constructed-response items typically require students to construct extended responses beyond a simple word or phrase – examples include essays or responses in other media such as graphics or objects.



Box 2: Sample closed response type item from Viet Nam

**Item 4 (1.5 marks) Fill in the blanks with these words (private substances, air, food, waste, dump) to complete the following paragraph on the process of human metabolism:**

During the life process, a human takes in \_\_\_\_\_, water, and \_\_\_\_\_ from the environment to create \_\_\_\_\_ for the body and \_\_\_\_\_ in the environment the redundant \_\_\_\_\_. That process is called human metabolism.

Box 3: Sample checklist type item from Hong Kong (SAR China)

### 五年級境外遊自理項目

Primary 5 Overseas field trip: Self-care items

活動後檢討：如果你能做到，請在每項後面的方格加「✓」

~行李篇：

Post-activity evaluation:  
Put a tick if you could do it.

1. 執拾行李時，把外衣及內衣摺好，然後用袋子分別袋好，才放進行李包。
2. 回程時，要把穿過及未穿過的衣物，用袋子分開擺放。
3. 其他日用品亦須用袋子分類放妥。

"Fold your clothes and put the used and unworn clothes into different bags"  
--> TVC: Self-discipline

~酒店篇：

1. 在酒店內，起床後須把被子及枕頭收拾好。
2. 外套及褲子請用衣架掛好，切忌把衣物隨處亂放。
3. 垃圾須自行放進垃圾桶內。
4. 在酒店沐浴時要拉好浴簾，切忌弄濕地板。
5. 酒店內的一切陳設須在離開前回復原狀。

"Hang up your clothes, don't just leave it around" "Use the bathtub splash guard accordingly, to keep the floor dry"  
--> TVC: Self-discipline

Box 4: Sample rating scale item from Mongolia

**Сурагчийг хамтдаа төлөвшүүлэх багш, эцэг эхийн хамтын үнэлгээний шалгуур**

1. Сурах хүсэл эрмэлзэл			2. Зөв дадал чадвар		
Үзүүлэлт	Эцэг эх	Багш	Үзүүлэлт	Эцэг эх	Багш
Сурах үүргээ ухамсарладаг	Motivation for learning		Дүрэмт хувцсаа өмсдөг	Appropriate habits	
Гэрийн даалгавраа тогтмол хийдэг			Хогоо хогийн саванд хийдэг		
Ном унших дуртай			Цүнх эд зүйлдээ эзэн байдаг		
Бодсоноо чөлөөтэй илэрхийлдэг			Туслах үйлд суралцах		
Нийт оноо			Нийт оноо		

3. Зан төлөв харилцаа			4. Монгол бахархал		
Үзүүлэлт	Эцэг эх	Багш	Үзүүлэлт	Эцэг эх	Багш
Мэндлэх хүндлэх	Communication		Монгол ардын үлгэр домог унших дуртай	Patriotism	
Бусдыг хайрлах			Монгол ёс заншлаас мэддэг		
Дэг журамд суралцах			Монгол тоглоом наадгайгаар тоглодог		
Хариуцлагаа мэдэж шударга байх			Төрийн дууллаа хүндэтгэлтэй дуулдаг		
Чин сэтгэлээсээ уучлалт гүйх			Ардын зүйр цэцэн үг оньсого мэддэг		
Нийт оноо			Нийт оноо		

Note: This item captures teacher and parent ratings for students' attitudes and habits

Box 5: Sample open response (essay) type item from Nepal

लामो उत्तरात्मक प्रश्नहरू (long answer questions) 3×8=24

१७. तपाईं खोटाङको पवित्र तीर्थस्थल हलेसी भ्रमणमा जानुभयो । त्यहाँ गई अवलोकन गर्दा तथा स्थानीयबासीसँग छलफल गर्दा हलेसी एउटा पर्यटकीय स्थलका रूपमा विकास हुन सक्ने कुरा जानकारी प्राप्त गर्नुभयो । यस तथ्यका आधारमा हलेसीको पर्यटकीय सम्भावना र महत्त्व समेटी तलका बुँदाका आधारमा एउटा प्रतिवेदन लेख्नुहोस् ।

क) शीर्षक      ख) उद्देश्य      ग) विधि      घ) प्राप्त जानकारी      ङ) निष्कर्ष

Suppose you have visited the holy historical place Halesi in Khotang. In this place, you have to discuss with the local people and observe by yourself. Find out some ideas to promote it as a tourism destination. Prepare a report on the basis of its potential and its importance, and format your report using the given sections.

a. Title      b. Objectives      c. Methods      d. Findings      e. Conclusion



## Scoring mechanisms and score reporting

The majority of the tools capture and report raw scores,<sup>4</sup> most often in the form of counts, while there are a few examples of reporting transformed scores in the form of percentages or criterion-based scaled scores. Raw scores or percentages provide very limited information about what is being measured. Complex skills are best measured by tools that allow for substantive responses to be captured for subsequent interpretation. The information capture can be richer through task designs that allow for qualitatively different levels of response, or through development of scoring rubrics which can systematically quantify the responses, as when scoring open-constructed-response items.

There were examples that demonstrate the potential to capture richer data and show promise for the capture of complex TVC. These examples include essay-type tasks that tap into global citizenship skills, literary analysis tasks that tap into critical thinking, and performance tasks that tap into creativity. However, scoring rubrics for these were typically not made available to, or not collected by, country participants. It may be that rubrics had not been constructed – notwithstanding that classroom-based tasks provide an opportunity for comprehensive collection and evaluation of student performance. In instances where the rubrics are available (e.g., a literature test rubric from Viet Nam), interpretations of parts of the task indicate that TVC are targeted, notwithstanding that the main task itself was not designed to measure TVC directly.

In addition to limited availability of scoring mechanisms for items generally, the majority of tools do not report a score for the target TVC, even when items tap into the target skills.

## TVC and subject predominance

### Most common TVC and subskills

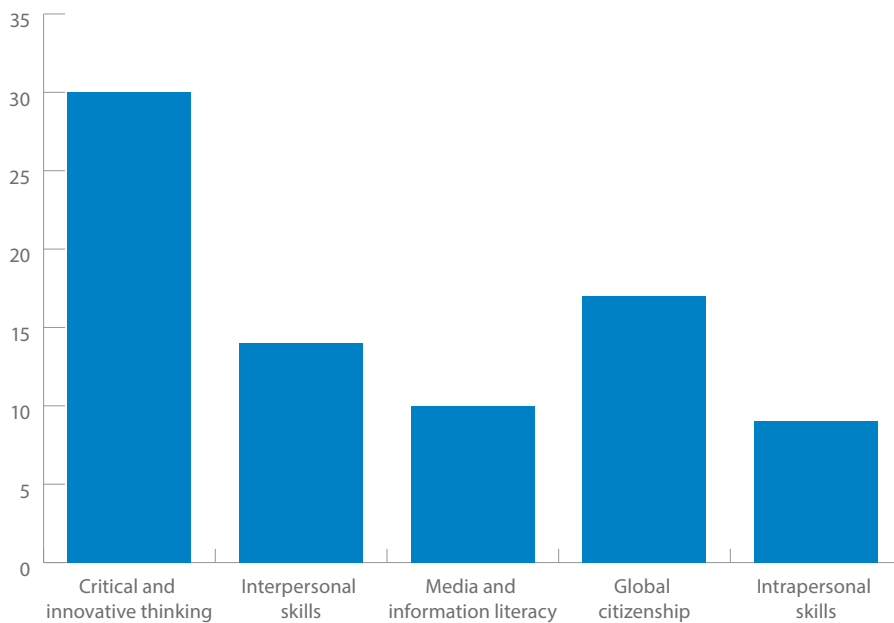
Figure 3 shows the five groups of TVC that were captured by the tools and items. The categories are not mutually exclusive for each tool and/or item. In other words, countries could identify multiple TVC as being captured by a single tool or item. Critical and innovative thinking was the most common group of skills identified. In fact, out of the forty-one items in the overall sample that capture TVC, thirty items captured critical and innovative thinking; this was followed by global citizenship (17 items), interpersonal skills (14 items), media and information literacy (10 items), and intrapersonal skills (9 items).

Figure 4 shows the most common subskills, namely, creativity, reasoned decision-making, and application skills, all of which are listed under the critical and innovative thinking category (UNESCO, 2016). Note that the analysis maintained the specific skill label

<sup>4</sup> A raw score is an original data point that has not been transformed in any way.

allocated by the country researchers when the verification process showed consensus. The most common subskill for each TVC was creativity for critical and innovative thinking; communication for interpersonal skills; ability to obtain and analyse information through ICTs for media and information literacy; respect for environment for global citizenship; and self-discipline for intrapersonal skills. Subskills not mentioned include ethical use of ICTs (media and information literacy); conflict resolution (global citizenship); and self-awareness, perseverance, and compassion (intrapersonal skills).

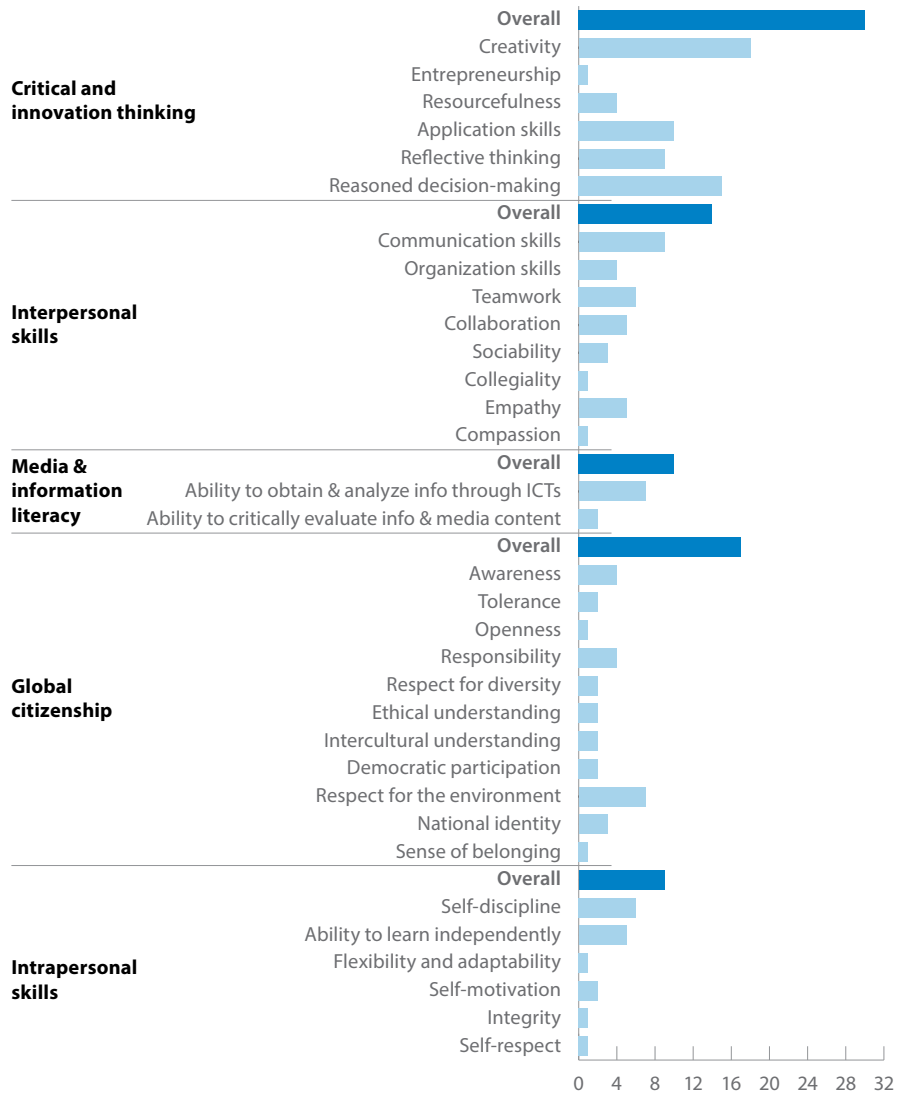
Figure 3: Groups of TVC identified in tools and items



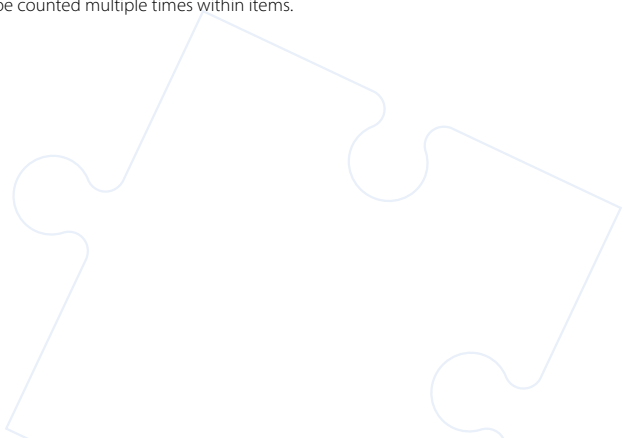
This finding provides evidence that existing tools tap into TVC that are aligned with the skills that previous regional surveys (UNESCO, 2016) have identified as most valued by school teachers and leaders. This alignment of evidence strengthens the case that educational systems have curricular aspirations regarding the teaching and learning of TVC that are broadly in sync across the region.



Figure 4: Most common TVC and subskills identified in tools



Note: Subskills can be counted multiple times within items.

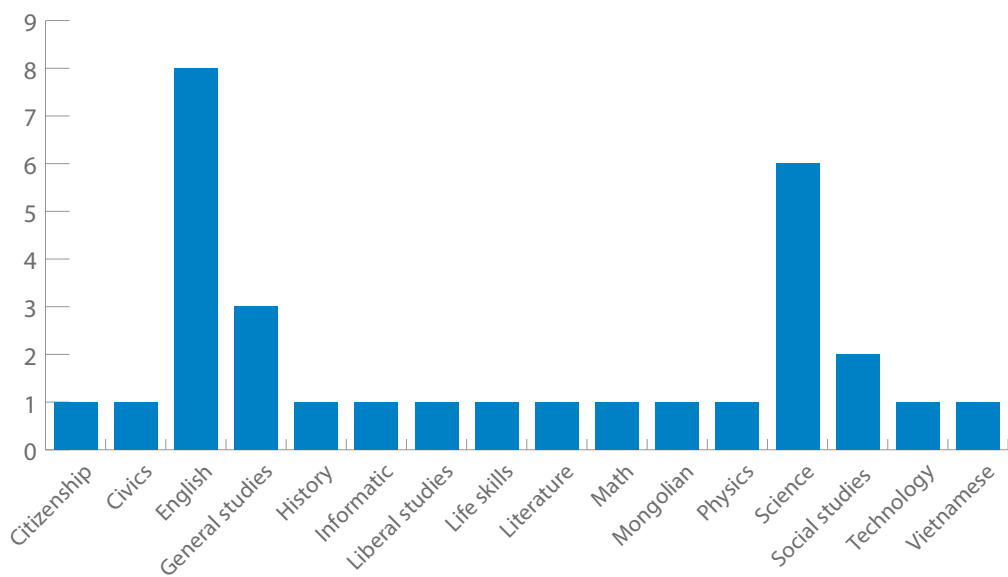




## Most common subjects in which the items/tools are embedded

There were less than five tools and items provided that were designed to capture TVC directly, rather than within subject areas. For example, in Hong Kong [SAR China], a classroom-based activity called “World Famous People Show” asks students to collect information and present a drama of a selected world famous person to teachers, students, and parents. Students are evaluated by teachers, students, parents, and themselves on creativity, resourcefulness, and respect for the environment. In Mongolia, teachers and parents complete a co-assessment concerning development of students’ characteristics, such as motivation for learning, communication, national pride, and socializing. In most cases, however, the tools and items are embedded within subject areas such as civics, language (e.g. English or other national language), science, and history. This aligns with findings from the UNESCO (2016) case studies that show existing assessment systems remain the most readily-available, accessible, and therefore most utilized mechanisms to assess TVC. Because existing assessment mechanisms tend to focus on learning domains that are deemed important or core, it is not surprising to find that the sample TVC in this study were embedded in these core learning domains. Across all tools where the subject (or learning domain) was identified (this information was not supplied for all tools and items), the most common subjects were languages/literacy (including English and other national languages), followed by the sciences (including technology, informatics, and physics) and social studies (including history, general studies, and civics) (Figure 5). This reflects the findings by Care and Luo (2016) that one of the most common modes of integrating TVC into the curriculum in the Asia-Pacific region is via integration within and across specific subjects.

Figure 5: Subjects in which tools and items reflecting TVC are embedded





## Analysis of tool characteristics

### Tools identified as capturing TVC were more likely to be:

Open-ended items that include “why” questions, and requests to “explain your answer”, were the most common type. For example, one science item from Viet Nam asks: “Why do we need to eat many kinds of food [in combination] and regularly change our meal?” Students need to apply their science learning in order to answer correctly, as well as apply critical thinking to that knowledge.

Presentations and/or project-based activities. For example, Pakistan provided activities such as classroom presentations, where students work with a small group of peers to explore a subject area on their own and present back to their teacher and peers. The teacher not only assesses them on the content area and background knowledge, but also on their communication and ICT skills. Students engage in project-based activities where they participate in the research process from creating a hypothesis, collecting material and data, and drawing conclusions from findings.

A method or strategy where students are taught a concept, and then are prompted to apply that concept in speaking or writing. For example, in Hong Kong [SAR China], there is a strategy called Six Hats Thinking Method that teaches students how to write a commentary or select news articles, and students are given these tasks to see whether they are able to apply what they have learned.

### Tools and items unlikely to capture TVC include:

Multiple choice, fact-based or rote-knowledge questions with right or wrong answers, such as “What is the area of the rectangle?” or “What is the chemical formula for calcium nitrate?” These are content-based items that require application of memorized information that can be applied without understanding.

Conventional problems in subject areas which were interpreted as assessing critical and innovative thinking, application skills, and/or reasoned decision-making. For example, mathematics tasks that require inserting numbers into a formula to find the answer or fill-in-the-blank questions, such as “a straight line has \_\_\_\_ end points” and “what is the square root of 6400?”

Reading and comprehension tests that ask students to read a passage and then answer questions based on the passage without extrapolating or making any inferences.

Going on field trips with the class. In some cases, the assessment was for accountability purposes to a funding agency to state that they took a field trip, but not necessarily accompanied by individual assessment of the students. In other cases, the assessment was a questionnaire for students to fill out after the field trip to ask what they thought about the field trip.

Taking part in national or regional competitions, such as games and sports competitions (e.g., track and field). Presumably these might have been interpreted as TVC due to their extra-curricular nature rather than due to clear application of TVC.

Classroom activities, such as drawing a picture: although these might be interpreted as creative, a drawing in its own right may not be a creative act.

Comprehension of reading passages where the topics related to global competence and global citizenship. Example topics include volunteering, taking part in political activities, being kind to neighbors. However, the activity is actually targeting reading and comprehension rather than global citizenship.

## Interpretation and identification

Tools that tap into the TVC domains that are relatively more difficult to measure, such as global citizenship and intrapersonal skills, are those most over-interpreted as capturing skills. Of the eight participating countries, six provided such examples in global citizenship and intrapersonal skills. One of the main reasons for this is the confusion between content (topic) and skill. For example, items that are about global citizenship topics may be assumed to measure skills when in fact they measure only the content knowledge to which such skills could be applied. Another reason for these interpretations is the absence of clear assessment criteria. This limitation is presumably the outcome of confusing constructs that are actually psychological traits, cultural values, or morals, with skills. Thus, TVC such as “self-awareness” and “perseverance” are among the most commonly confused across the given examples.

The characteristics of the tools appropriately identified as TVC and the tools often over-interpreted provide clear guidelines for school personnel to consider as they develop assessments of TVC. Tools and items that can capture TVC most easily tend to be more activity oriented, more open-ended, and may be more characteristic of a constructivist classroom (Zuzovsky, 2013). This has important implications for building capacity in developing assessments of TVC in the region, where written examinations, focus on memorization or content knowledge, and transmission pedagogy (including direct instruction and one-way teaching methods) are common (UNESCO, 2015b). This is not to suggest that constructivist and active-learning approaches are absent in the countries that participated in this study. These pedagogical approaches, however, are less common. This poses a challenge to the embedding of teaching and learning of TVC in the classroom, as well as the development of assessment approaches that effectively capture TVC. One important step in building capacity in TVC assessment is supporting teachers to recognize how tools and items capture skills rather than just content. Tools and items that were over-interpreted in this study typically target literacy and numeracy skills, are extra-curricular, or include content that is recognizable as associated with complex skills but do not actually require the application of those skills. These latter types basically “talk about” something rather than require any TVC application.

## Expanding existing items to capture TVC

Over-interpreted tools hold promise, as they present opportunities for revision for potential repurposing. Examples of tools provided by the countries are presented below with brief descriptions of the original tools, how they have the potential to capture TVC, and/or how they might be expanded so that they capture TVC.





Box 6 shows a school level tool provided by Mongolia that prompts students to compose a story that uses all of the pictures presented, in 100–120 words. The primary function of the tool is to teach creativity. In fact, beyond that, it also requires students to exercise Critical Thinking. The stories are assessed on whether all of the pictures were used and whether there is a logical sequence in the story. Although the assessment criteria are “in teachers’ heads” rather than based on a rubric, the stimulus task itself demonstrates the potential of such an activity.

Box 6: Example item from Mongolia

Зургийг ажиглан 100-120 үгтэй эх зохиогоорой.

Ловчицтой арав

Нашар баяр хөгчийн шинэ жилий жарганыг илгээ,  
 Жарваг, Нара гурав нэг ангийн сайн найзууд. Дөтөн-  
 шийн хамтэй өдөр болж нь гуржлагын дөтөн бүрэн  
 талуур тивийн сөрөг Довчой гуу нь баурай Бэлдэ,  
 үргэлжт үргэлжт, арвантын хаан бишээ гуравин  
 тусгай байж нь цэвэр/үршгээр. Лууртуур шийн ангаа  
 радтай сарва. Чинээт үршилт өдөр Зуургууртот  
 болж нь асуулт, баурай Жарваг, гарда өдөр! Зуурга  
 харуулагдай, бэлдэ. Сайн сайна, тийш нь  
 тийш нь Дөтөнхөгсөт хөдөг Нара ажигтээ,  
 адийдаг гурж! Ил ангаа үг? хөдөг бэлдэ. Зуура,  
 дөтөнхөгс! Эвдэг амт! Эргэлд/суурааг дуу  
 дуураа хөгчийнхөгс. Баурай! гарда.

Дөтөнхөгсөт, илш тийш нь хаана  
 байх. Тийш рүү өртөн өвдөр, үгтэн  
 цэвэрлийн! бэлдүүр нь байх! Лууртуур  
 тийш нь бэлдүүр, гарда, хөгсөт.  
 тийш нь сайн найзууд байх.

Үндэсний лаборатори "Эрэмийн далай" нэгилбор  
 сургуулийн "Э" ангийн сурагч Б.Цохиурсал

The item can be extended so that it captures not only creativity but other TVC. A rubric that clearly lays out the criteria with indicators ranging from basic to more sophisticated forms of the TVC could be included with the item. For example, “basic” indicators of competency could include ‘makes connections to existing knowledge’ and ‘creates standard products following exact direction from teacher; “developing” indicators could be ‘makes prediction based on existing knowledge and poses questions’ and ‘engages in creating a product’; and “higher level” indicators could be ‘applies communication tools and research methods to create original work’ and ‘brings together information from multiple sources beyond the classroom and collaborates effectively with others to create original work’. By developing appropriate scoring rubrics, the item has the potential to capture several TVC and subskills, such as creativity, application skills, resourcefulness, and communication skills.

There are numerous examples of tools which assess knowledge within conventional domain areas, such as numeracy, literacy, or science, rather than TVC. These tools also could be extended beyond conventional domains to reflect TVC. Box 7 shows such an item from a Grade 6 national level reading and writing assessment.

Box 7: Example item from Cambodia

**Read the text below and answer the questions from 23 until 33 by ticking (✓) in the box (□). Only one answer is correct.**

The Text: .....

The forest has many benefits. Tree can be used to build a house, a building, a factory or a bridge. Tree can be produced to such furniture as tables, cabinets, chairs and so on. The root of the tree and the bark of some trees can be used as medicines to cure other illness. Majority of people use wood as firewood for cooking. The wood, which exceeds the local needs, is sold abroad. The trees bring fresh and cold air. Rotted leaves and its decomposed branches make a soil fertile. If there is no tree, the land will be unfertile. The root helps to prevent from erosion. Forest also helps to prevent from flooding. Forest attracts the rainfall. When an area covered by a huge land of forest, there will be a lot of rainfall. Forest is good shelter for all kinds of animals, such as wild birds including wild duck, water chicken, peacock ... and wild animals: tiger, antelope, deer... etc. If we will cut down or burn the forests, the wild lives will be destructive.

**12. What is forest attracting?**

- A. Flooding
- B. Rainfall
- C. All kinds of animals
- D. Tourists

The verification process did not identify this item as capturing global citizenship. Rather, it tests for comprehension based on the reading of a passage. As additional examples will show, the broad scope of this domain (including subskills that range from environmental awareness to conflict resolution and social responsibility) makes it particularly well-suited for tool adaptation. Global citizenship relevant elements are often embedded in subjects such as environmental science. Re-purposing such items provides a solid stepping stone for classroom teachers, who may have limited experience in developing TVC items. As an introductory approach to re-thinking the items, follow-up questions could be asked, "Why did you select this particular answer? Which alternative is second best? Why?" Asking these questions provides



opportunities for students to focus on the thinking that supports answering the item, rather than the answer itself, and has the potential for capturing Critical Thinking, reflective thinking, and reasoned decision-making. The assessment approach has consequences for selection of appropriate pedagogical strategies.

Another example of an item that has the potential to be expanded to capture TVC is shown in Box 8. In its current form, this is a conventional literacy item, but it has characteristics that enable its expansion to capture global citizenship skills. Additionally, the item could tap into creative skills if transformed to allow for open responses.

Box 8: Example item from Pakistan

★ **Read the passage carefully and answer the Q. No. 11, 12, 13.**

Chitral valley is one of the most beautiful valleys in North of Pakistan. It is a peaceful place. Its natural beauty is charming for the visitors. It is not thickly populated. The culture and tradition of the Kalash people is the main attraction for the tourist in Chitral valley.

**11. People living in Chitral valley are called \_\_\_\_\_.**

(a)	Chitral people	(b)	Northern people	(c)	Pakistani people	(d)	Kalash people
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**12. The word “valley” means:**

(a)	beautiful area among flowers	(b)	beautiful area among mountains
(c)	beautiful area among rivers	(d)	beautiful area among trees

**13. Chitral valley is famous for its \_\_\_\_\_.**

(a)	shopping malls	(b)	natural beauty	(c)	stadiums	(d)	Play grounds
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There are also items that already capture some TVC but could be extended. Box 9 shows items that have been identified to capture application and reasoned decision-making, both of which are in the critical and innovative thinking domain. However, items in this example also potentially capture global citizenship. In particular, the following items capture subskills under the global citizenship domain: Item 1 = national identity, Item 2 = tolerance and respect for diversity; Item 3 = responsibility and conflict resolution; and Item 6 = democratic participation.

Box 9: Example items with TVC capture potential from Nepal

**समूह क (Group A)**


संक्षिप्त उत्तरात्मक प्रश्नहरू (Very short answer questions) 9×1=9

१. समाजलाई तपाईं कसरी परिभाषित गर्नुहुन्छ ?  
How would you define society?
२. नेपालमा धार्मिक सहिष्णुता कायम राख्न हामीले के गर्नुपर्छ ? एक वाक्यमा लेख्नुहोस् ।  
What should we do to maintain religious tolerance in Nepal? Write in a sentence.
३. नेपाली जनता शान्ति, विकास, अपनत्व चाहन्छन् तर यहाँ अपहरण र हत्या रोकिएको छैन, विद्यालयमा बम राख्न छोडिएको छैन । यसलाई कसरी नियन्त्रण गर्न सकिन्छ ? एक वाक्यमा सुझाव लेख्नुहोस् ।  
Nepalese people want to peace, development and ownership, but kidnaps, murders and keeping Booms in school are still existing. Suggest ways to control it.
४. राज्यको कुन अंगले कानूनको पालना गराउँछ ?  
Which organ is the state executes the law?
५. नक्सामा तलको तथ्यलाई कस्तो संकेतबाट देखाइन्छ ।  
क) राजधानी                      ख) नदी
६. Which symbols are used to show the following fact in a map?  
a. Capital city                      b. River
७. संविधान निर्माणको अन्तरीम अवधिमा संसारभर किन संयुक्त सरकारको निर्माण गरिन्छ ? आफ्नो उत्तर एक वाक्यमा लेख्नुहोस् ।  
Why do we mostly practice the formation of coalition government throughout the world during the interim period of the constitution making. Write your answer in a sentence.




Box 10 shows a task on composing a mini essay titled “My Contribution” for protecting the local area environment and drawing the associated concept. This task had been identified as capturing respect for environment, a component skill of global citizenship. While this has good face validity, the task can capture more than global citizenship. With more detailed rubrics, the task could capture creativity through a drawing subtask, as well as reflective thinking and application skills through an essay subtask. It could also capture other skills in the interpersonal skills domain (e.g., collaboration and organization), if further modified into a group or team-based task.

Box 10: Example items with TVC capture potential from Mongolia




Манай нутагт хүүхэд бидний төлөө үйл ажиллагаа явуулдаг олон байгууллага байдаг. Тэдгээр байгууллагын ажилтан ах, эгч нар орон нутагтаа, хүүхдийн хөгжих, боловсрох ээлтэй орчинг бий болгодог. Тэд бидний эрүүл, аюулгүй байдлыг хангах нөхцөлийг бүрдүүлэхийн төлөө ажилладаг.




**Гэрийн даалгавар**  
Нутгийнхаа байгаль, орчныг хэвийн байлгахад "Миний оруулах хувь нэмэр" сэдвээр дараах даалгавраас сонгож хийгээрэй.

1. Эх зохион бичээрэй. (30 үгтэй)

2. Дүрслэн зурж үзүүлээрэй.





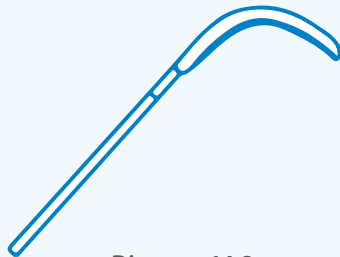


Items that capture multiple TVC are particularly efficient, assuming that their indicators are discriminable from each other. Box 11 from Malaysia shows how a science item can capture critical and innovative thinking and could be extended to capture environmental awareness as a component skill of global citizenship. An example from Bhutan of another science item shows that creativity and reflective thinking can be captured simultaneously (Box 12). This item also encourages the application of science knowledge in composing the creative text, thus capturing application and reasoned decision-making. Examples such as these show that conventional items have the potential to capture multiple TVC even if they were not originally designed to do so.

Box 11: Example item that captures multiple TVC from Malaysia

The settlers need to cut the fronds and bunches to harvest the oil palm fruits. Diagram 14.2 shows a tool used to harvest the fruits.

*Peneroka perlu memotong pelepah dan tandan untuk menuai buah kelapa sawit. Rajah 14.2 menunjukkan satu alat yang digunakan untuk menuai buah kelapa sawit.*



**Diagram 14.2**  
**Rajah 14.2**

You are required to modify the tool so that it can be used to harvest oil palm fruits from trees with different heights. Sketch your modification on Diagram 14.2 and explain.

*Anda dikehendaki membuat pengubahsuaian pada alat tersebut supaya alat itu boleh digunakan untuk menuai buah kelapa sawit daripada pokok-pokok yang berbeza ketinggian. Lakarkan pengubahsuaian anda pada Rajah 14.2 dan terangkan.*

Explanation:

*Penerangan:*

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[3 marks]

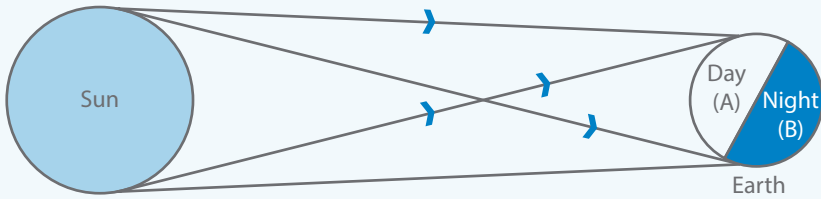


Box 12: Examlle item with multiple TVC capture potential from Bhutan

**Question 6**

**[9 Marks]**

a. Study the diagram given below.



Write a short imaginary story about the plants and animals living in position B, if such position of Earth remains same for six months. [3]

.....

.....

.....

.....

.....

.....

.....



## 4 Discussion

There are four “big issues and findings” highlighted by this study. The first is the need for better understanding of the nature of transversal competencies or 21st century skills. This issue has been highlighted in previous ERI-Net and NEQMAP studies. The more specific issue identified in this study is the need to clarify the differences between both academic and general reasoning skills, and the broader TVC which shift focus from cognitive abilities only, to how students can transfer and apply more generic competencies. For example, it is important to discriminate between written comprehension associated with language studies and critical thinking. Related to this issue, in the context of interpersonal and intrapersonal competencies, is that behaviours that might more appropriately be considered as indicators of values or morals, are interpreted as skills. The consideration of complex concepts such as global citizenship illustrates the point. OECD’s definition of global competence (2018), as assessed in part in the PISA 2018 cycle, includes skills, knowledge and attitudes, yet a great deal of the global conversation treats the concept as one of skills alone. The relatively high proportion of over-identification of tools that represent competency implies that the construct is not well understood (Figure 24). To some extent the structure and content of the UNESCO (2016) TVC framework exacerbates this issue due to its inclusion of morals, religion, and other psychosocial constructs that are not strictly skills, in its later iterations (Care and Luo, 2016). This issue is reflected in the challenges found in the ERI-Net Phase II case studies (UNESCO, 2016), where the lack of assessment frameworks compounds the confusion when it comes to integrating the assessment of TVC with more conventional assessment mechanisms, especially at the classroom level.

A second issue concerns ways in which the social skills of communication and collaboration might be advanced and assessed. The tools in this study that touch on interpersonal, intrapersonal and “citizen-like” behaviours were interpreted as indicative of TVC. However, the inferences that can be drawn from behaviours are many and complex. The same behaviour exhibited by two individuals may indicate very different underlying traits rather than skills, as exemplified by a task that interpreted completion of a long essay as signifying perseverance (see Appendix D). So, although assessment of TVC is more likely to be informed by behaviour based activities and rich tasks, the interpretation of the evidence gathered is not as straightforward as interpretation of a correct or incorrect answer to a fact-based question. That social skills are difficult to measure in a formal education environment is testament to the long-term focus of the sector on academic, or cognitive, capabilities.

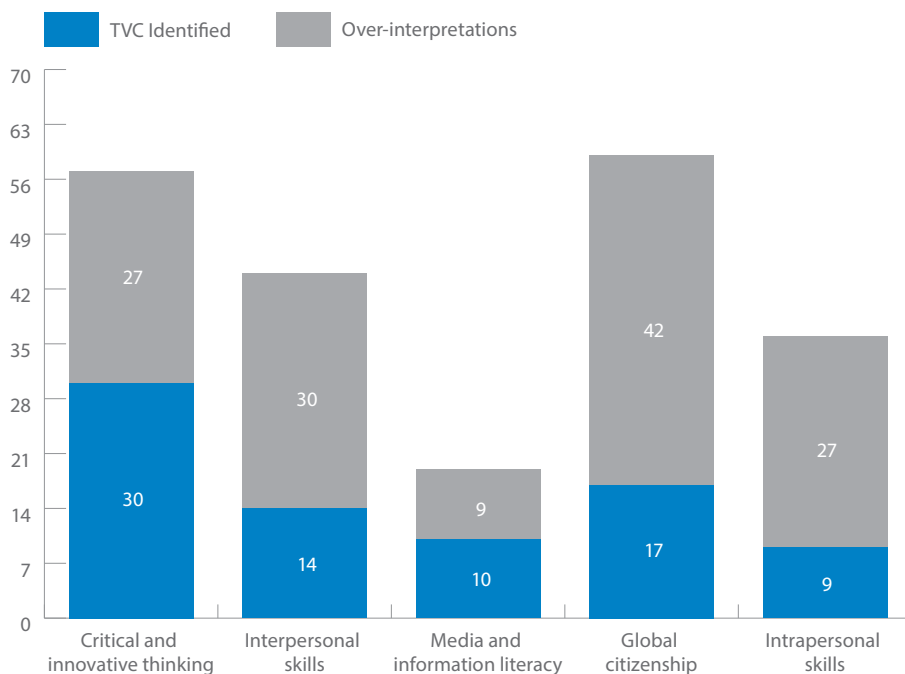
A third issue concerns the likelihood of some school subjects lending themselves more easily to the teaching, learning and assessment of particular TVC than others. For example, the majority of teachers would immediately identify science as an excellent nurturing environment for problem solving, and identify literature as a compatible learning environment for communication or creativity. Care and Scoular (2018) report on this variable distribution of skills across subjects based on feedback from teachers who had the option to select skills to focus on in subject areas spanning from religion, to maths, and to language, etc. The materials





analysed for this study tended to cluster mostly in the critical and innovative thinking category and the global citizenship category (Figure 6). Many of the more traditional cognitive capabilities sit within the critical and innovative thinking category, and also more assessment takes place in academic subjects – hence this finding makes sense. However, opportunities for the teaching, learning and assessment of interpersonal and intrapersonal skills, media and information literacy, and global citizenship have been relatively rare historically.

Figure 6: Face validity of materials identified as TVC



The fourth and most encouraging finding from this study is recognition of the capacity of current assessment tasks to encompass learning beyond the traditional academic requirements. The identification by school-based participants and country researchers that many of the items have potential to capture TVC is an explicit signal that educators can find a way to re-orient their assessments, given appropriate support. Re-orientation of the assessments would reasonably lead to a re-appraisal of pedagogical strategies – a necessary alignment.

Each of these four issues has policy implications. As highlighted in UNESCO NEQMAP's Assessment of Transversal Competencies report (Care and Luo, 2016), a lack of understanding of TVC is one of the biggest barriers to its teaching and learning. This means that more attention needs to be directed toward research about the nature and development of the competencies and how they are best nurtured; and then to act on this through integration within curricula. Naming skills or competencies as goals, for example "our students will develop

problem-solving skills”, is not sufficient. It does not provide a roadmap for learning in the same way that roadmaps for established subjects in the curriculum are described.

Addressing social skills in the formal education sector encounters additional challenges. Again, there are no roadmaps which identify which behavioural competencies or levels of performance should be seen as reasonable expectations. While teachers have training in the teaching of cognitive-based subjects, they typically have little training in development of social-emotional competencies. Therefore, if TVC are valued in national education goals, teacher training will need to review current approaches to equipping young professionals to work with future generations.

That TVC are variably distributed across different subjects is common sense. There is no doubt that critical thinking might promote better learning outcomes in the social sciences, such as history, than in mathematics; that communication facility might promote better learning outcomes in language and performance-based subjects. The implication here is that curricular design that expects that TVC be equally targeted across all subjects is bound to fail. We use some skills for some activities, and others for others. This reality needs to be reflected in curriculum design.

The capacity to design assessments that reflect student transversal competencies has been regarded as a major hurdle to integration of a 21st century skills agenda in the classroom. Rather than exploring how current assessments might be made appropriate, there has been an assumption that new and innovative methods must always be implemented. It is well understood in education circles that one must teach at the point at which a student is able to learn. This philosophy can equally be applied to this situation, where teachers need support to shift their assessment practices. The view that past practices must be totally replaced by the unknown is obstructive to moving forward. Building the capacity of teachers in educational assessment is a strategy more likely to ensure alignment with national education goals in both assessment and teaching practices. The isolating of assessment development expertise from the classroom continues to mystify the process and leads to many of the negative outcomes associated with assessment. These latter include teaching to the test, exclusion of students from learning opportunities, and punitive accountability practices.





## 5 Conclusion

The interpretations of how country contributed materials tap into TVC demonstrate clearly the readiness of researchers and teachers to interrogate existing resources for their capacity to capture these elusive competencies. Equally, that current tools and items designed to sample traditional subject domains can provide opportunities for assessment of TVC justifies the view that tools can be developed not only at national level by assessment experts but also in the classroom by teachers. The country researchers provided rich resources to illustrate the potential in their systems to extend current assessment approaches to new ways of designing and interpreting tools.

Taking a regional view, tools developed specifically to measure TVC do not exist at national or classroom levels. This lack of explicitly designed TVC tools is related to the lack of formal teacher training in teaching TVC, as well as to major attention being directed in assessment toward measurement of more traditional domains. Since the majority of current curricula in the countries which participated in this research do not describe TVC learning goals in detail, this is totally reasonable. It is equally clear that current subject-based assessment tools offer opportunities for more explicit identification of TVC.

Being able to identify these opportunities for teaching and for assessment is the path to implementation of the shifting education goals of national systems (Care, 2018). This, however, is predicated on the explicit incorporation of TVC in national curricula – at policy level, at curriculum design and development level, and through guidance to school leadership and teachers. Curricular materials need to be developed that provide guidance to teachers, and the implications of these materials for selection of appropriate teaching strategies need to be made explicit. Logical next steps include further explication of the nature of the skills, development of learning progressions and integration of these into curriculum, and full-scale work with teachers to pilot pedagogical approaches. This study provides data on what current assessment tools exist in the classroom. Its main contribution therefore lies in identifying what is needed in order to link high level policy agendas with practical school-based initiatives. The Asia region has made major strides in highlighting the relevance of TVC or any of the skills categorized under the broad term of 21st century skills, but now, the focus must shift to implementation.

This regional study demonstrates that there are already materials in use in classrooms and in national assessments that lend themselves to the measurement of TVC. As an alternative to a model of creating new assessments of TVC from the ground up, the extension and adaptation of current tools should be considered. The advantages of this approach are many. In the classroom, teachers may be more likely to engage with a process of adaptation, (dealing at least in part with what is familiar), than with totally new paradigms of assessment; the adaptation exercise itself would act as a learning experience through the re-envisioning of assessment tools through a skills lens; and the process would likely generalize to consideration of pedagogical practices. For national assessment, the approach would constitute a less radical shift than a full-scale creation of TVC tools, and would likely attract less push-back from those who are concerned that the “skills agenda” may weaken traditional academic subject areas.



Steps to be taken to implement this model include selection of specific TVC on which to focus rather than assuming that all TVC can be targeted initially; and developing comprehensive descriptions of TVC that identify what students can reasonably be expected to do, say, make or write. Having assessment experts work together with teachers to adapt classroom items would build capacity in both groups, improve assessment literacy among teachers, and familiarize assessment experts with the nature of the skills. Although many of the technical elements of test development for traditional academic domains apply to the development of tools for TVC, item writers who have specialized in curriculum achievement need to shift their perspectives as much as do teachers in the classroom, in order to develop assessment tools that can measure students' transversal competencies.





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# Appendix A: Country researchers and education systems

The details of the lead researcher for each participating country, and their designation within their institution/organization are listed below.

Table 4: Country Researchers

Country	Name	Designation	Organization
Bhutan	Ms. Yuden Y	Research officer	Royal Education Council
Cambodia	Mr. Ung Chinna	Director of Education Quality Assurance Department	Education Quality Assurance Department Ministry of Education, Youth and Sport
	Mr. Khou Hav	Deputy Chief of Education Quality Assurance Department	Education Quality Assurance Department Ministry of Education, Youth and Sport
Hong Kong [SAR China]	Dr. Samuel Kai Wah Chu	Associate Professor	Division of Information and Technology Studies Faculty of Education, The University of Hong Kong
Malaysia	Dr. Thien	Senior Lecturer	School of Educational Studies, Universiti Sains Malaysia
Mongolia	Ms. Amarjargal Adiyasuren	Lecturer	Mongolian National University of Education
	Dr. Khishigbayar Badamsambuu	Researcher	Mongolian Education Development
Nepal	Mr. Deviram Acharya	Section Officer/Data Analyst	Education Review Office Ministry of Education
Pakistan	Dr. Nasir Mahmood	Professor	Department of Early Childhood and Elementary Teacher Education Allama Iqbal Open University
Viet Nam	Ms. Tran Thi Huong Giang	Leader of international and national assessment unit	Center for Education Outcomes Assessment, Vietnam Institute of Education Sciences (VNIES)

## Bhutan

Bhutan's basic education structure consists of eleven years of free education, including one year of pre-primary school. Grade K is the pre-primary level, Grades 1–6 are the primary level, Grades 7–10 are lower and middle secondary. After Grade 10, students take a national examination to determine if they can continue on to grades 11–12, the higher secondary education level. Students who do not attend Grades 11–12 can attend technical/vocational schools or enter the job market.



Assessment at all levels, from pre-primary to Grade 12, includes continuous formative and summative assessment and an end-of-term summative examination. At the end of Grade 10, students take the Bhutan Certificate for Secondary Education Examination, and their performance on this exam determines their ability to move to higher secondary education. There is a similar exam at the end of Grade 12 to determine the students' ability to move to tertiary education. The Bhutan Council for School Examinations and Assessment (BCSEA) conducts these exams. BCSEA also provides exam support for Grades 3 and 6, though the exams are carried out by the schools. Bhutan participated in OECD's PISA for Development (PISA-D) in 2017.

Bhutan's education is founded upon the government's central concept and goal of Gross National Happiness (GNH). GNH broadly comprises four policy areas for Bhutan: good governance, sustainable and equitable socio-economic development, preservation and promotion of culture, and environmental conservation. The education system accordingly focuses on a variety of elements to enhance the capacity of citizens to be self-reliant yet communally productive. The curricular vision explicitly references skills such as communication, creativity, and competencies for self-directed learning, and also emphasizes various values and attitudes. The curriculum defines the following eight essential capabilities for Bhutan's students: languages, mathematics, social science, science, health and physical education, visual arts, performing arts, and ICT. Each area is broken into strands with defined components, and there are learning standards to be achieved at each strand for K-12, as well as performance standards and learning experiences to help further break down the competencies for teachers.

The Royal Education Council, a government autonomous organization mandated to determine the national school curriculum and teacher development programmes, collected the data for this study. Five schools provided resources, three government-run in urban areas, one government run in a rural area, and one privately operated in an urban area. All the schools were high or average in both SES and academic performance. The Council also contributed items from city municipality-held competitions in the field of cultural programmes, and from national assessments.

## **Cambodia**

Cambodia has a 12-year education structure from Grades 1 to 12, with Grades 1–6 in the primary level, Grades 7–9 in lower secondary, and Grades 10–12 in the upper secondary. The Ministry also offers a three-year technical and vocational education and training (TVET) cycle in replacement of upper secondary.

School-based and continuous assessment take place at all grade levels, with sample based national assessments at Grades 3, 6, 8 and 11, and a census (i.e., population-based, rather than sample-based) national assessment at Grade 9 and 12. Cambodia participates in regional and international assessment programmes such as the South East Asia Primary Learning Metrics, the Early Grade Reading Assessment and the Early Grade Mathematic Assessment. It is also participating in PISA-D.



The Education Sector Plan, titled “Education Strategic Plan”, has been developed and covers the years 2014 to 2018. The curriculum specifies eight core competencies: literacy and numeracy, foreign languages, ICT, communication and teamwork, analysis and creativity, applying knowledge skills, personal, family, and social development, and entrepreneurship and leadership. Each level of education has expected learning outcomes that include these skills. The skills are expected to build upon one another through the system. Objectives for each core area are defined at the subject level.

The data for this study was collected by Education Quality Assurance Department, which is the department within the Ministry of Education, Youth and Sport that is responsible for assessments in Cambodia’s education system. The items examined were taken from national assessments for Grades 6 and 8.

### **Hong Kong [SAR China]**

Hong Kong has a 12-year free education system, with six years of primary, three years of junior secondary, and three years of upper secondary education. The government also offers TVET courses as an alternative for upper secondary students.

The Hong Kong Examinations and Assessment Authority conducts Territory-wide System Assessments<sup>5</sup> of Chinese, English, and mathematics at Primary 3, Primary 6, and Secondary 3 levels.<sup>6</sup> Additionally, at the end of secondary education, most students take the Hong Kong Diploma of Secondary Education Examination. School-based and continuous assessment takes place at all grade levels. Hong Kong has also participated in PISA, TIMSS, and PIRLS for several cycles.

The curriculum focuses on three main components: knowledge in eight Key Learning Areas (Chinese language, English language, mathematics, science, technology, personal, social, and humanities education, arts, and physical education); nine generic skills (collaboration, communication, creativity, critical thinking, information technology, numeracy, problem solving, self-management, and study skills); and seven priority values and attitudes (perseverance, respect for others, responsibility, national identity, commitment, integrity, and care for others). These core components stretch across all levels of the system, including all subjects and the seven broad learning goals, with the aim of fostering the development of the whole person.

The Division of Information and Technology Studies, Faculty of Education at the University of Hong Kong, conducted the study and collected teaching materials and tools from five schools. Four were government schools (three urban, one rural), and one was an urban private school. The schools were distributed across low to high income levels and low to high achievement outcomes.

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5 Source: <http://www.edb.gov.hk/attachment/en/curriculum-development/tsa/fullreport.pdf>

6 Source: <https://www.bca.hkeaa.edu.hk/web/TSA/zh/SecPaperSchema.html>





## Malaysia

Malaysia has an 11-year compulsory formal education system. Grades 1–6 are primary, Grades 7–9 are lower secondary and Grades 10–11 are upper secondary. Preschool education is encouraged, but not compulsory, and it is not part of the formal system. The government also offers alternative TVET education at the secondary level.

Assessment takes place at all levels. The Examination Syndicate or Lembaga Peperiksaan conducts national public assessment and examinations at the end of Grades 6, 9, and 11. The exams at the end of Grades 6 and 9 are parts of school-based assessment and used to assess students' learning progress before moving to lower secondary school (Grade 7) and upper secondary (Grade 10), respectively. Core subjects that are examined include Bahasa Melayu, English language, history, mathematics, science, and Islamic studies or moral education. Malaysia has participated in international large scale assessments such as TIMSS and PISA.

Since 2017, the revised curricula for primary school (KSSR) and secondary schools (KSSM) have been introduced gradually from Grade 1 and Grade 7, respectively. These curricula emphasize not only subject content knowledge but also embed TVC such as critical thinking, creativity, communication and collaborative skills, as well as a variety of attitudes and values relevant to 21st century competencies. The revised curricula, KSSR and KSSM, are designed in alignment with the Malaysia Education Blueprint 2013 - 2025 which identifies the Ministry's aspirations for students: knowledge, thinking skills, leadership skills, bilingual proficiency, ethics and spirituality, and national identity.

The study was conducted through the School of Educational Studies at the Universiti Sains Malaysia. Five government-funded primary and secondary schools from rural and urban areas were carefully selected to participate in the study to cover the diverse characteristics of schools, ranging from small to large in student size, and from average to high range in both SES and academic performance.

## Mongolia

Mongolia has a basic education structure from Grades 1 to 12, with Grades 1–5 in the primary level, Grades 6–9 in lower secondary, and Grades 10–12 in the upper secondary. Preschool education is available as part of the general education structure and starts at age three years, but this is not compulsory. Primary, lower and upper secondary schools in Mongolia generally do not exist separately. Most schools have at least eight grades, while schools up to Grade 10 are mainly found in urban areas. TVET is available and largely provided by the government although the private sector also participates.

The national education quality assessment is administered to 5th, 9th and 12th grade. For 5th grade, the domains are Mongolian language, mathematics and science; for 9th grade, Mongolian language, mathematics, science and social science; and for 12th grade, Mongolian language, mathematics, an elective from science or social science; and foreign language. Mongolia has implemented a large scale educational assessment through TIMSS in 2007.

The core primary curriculum includes a focus on several key areas: critical thinking, problem solving, communication, collaboration, independent study, ICT skills, life skills, and environmental sustainability. These skills are described across Grades 1–3 and Grades 4–5 and across the subject areas. The core curricula for lower and upper secondary include similar key areas.

The study was conducted through the kind offices of the Mongolian Education Development, a non-governmental organization, and the Mongolian National University of Education. Five schools participated, comprising rural and urban areas, government and private jurisdictions, large and small student populations, and average and high SES and student academic performance. Tools developed at the national level but used at the classroom level, as well as school level tools, were included.

## **Nepal**

Nepal has a 12-year education structure from Grades 1 to 12, with Grades 1–8 in the basic education, and Grades 9–12 in the secondary. TVET entry is an option in Grade 9 or 11, and within the mainstream curriculum, students in Grade 11 can select subject specializations.

School-based and continuous assessment takes place at all grade levels, with public examinations held at end of Grade 8 (district level), and Grades, 10, 11 and 12 (national level). Sample based national assessments also take place at Grades 3, 5 and 8 in English, Nepali, mathematics and science. In 2018, a sample based national assessment will be administered for the first time in Grade 10 for English, Nepali, mathematics and science.

The Nepali School Sector Development Plan 2016/17 – 2022/23 (SSDP) explicitly references “soft skills” but does not define them. Instead, the SSDP appears to lay groundwork for another agency to develop the curriculum and define the skills more fully.

The Education Review Office, which is responsible for Nepal’s assessment, undertook this study, and collected resources from both school and district levels. Three public and two private schools participated and contributed assessment resources. The schools were distributed across low to high income levels, low to high achievement outcomes, small to large school size, and were in both urban and rural settings. In addition, items were contributed from the Grade 5 and Grade 8 district level exams.

## **Pakistan**

Pakistan has a 12-year basic education structure and its constitution mandates free and compulsory education for all the children from age 5 to 16. Education is decentralized in Pakistan, with provincial governments responsible for developing policy, planning and curriculum, and standards. The federal government sets the standards for higher education, establishes scientific research institutions, and coordinates interprovincial activities. However, although curriculum is the responsibility of the provinces, none have yet prepared a provincial





curriculum, and thus they are, in fact, following a national curriculum. Across the country, provinces follow a 12-year system, with primary level at Grades 1–5 and secondary education at Grades 6–12. Secondary education is further divided into middle level (6–8), secondary (9–10), and higher secondary (11–12) education. TVET education and provision widely varies from province to province.

Grade 1–4 and 6–7 examinations are conducted by schools. Grades 5, 8, and 9 have provincial-level standard exams. The Grade 5 exam is high stakes and determines student eligibility for secondary education. There are also certificate exams held system-wide after Grades 10 and 12. The National Education Assessment System, a country-wide agency, conducts a National Assessment Test (NAT) every few years, using a sample of students at various levels across the country in Grades 4 and 8. To date, the NAT has focused on mathematics, Urdu, English, science and social studies. Pakistan will participate in TIMSS 2019.

The Ministry of Federal Education and Professional Training recently reformed the curriculum for Grades 1–5. The new curricular subjects contain a variety of references to TVC, including oral communication, creativity, and critical thinking. There is not currently a progression of skills made explicit across subject areas, and the curriculum for later grades is still under reform. The overall intention for the education system, however, includes three pillars: Taleem (Seek, Use and Evaluate Knowledge), Tarbiyya (Social, Technical, Moral, and Ethical Training) and Tazkyya (Purification of Soul).

This study was conducted through the Department of Early Childhood and Elementary Teacher Education at the Allama Iqbal Open University. Materials collected include national and provincial subject tests, teacher-prepared monthly tests, and school level manuals focused on TVC. The three teacher and three school items were sourced from a diverse array of schools, including urban and rural districts, private and urban jurisdictions, low to high SES and academic performance, and small to large school size.

### **Viet Nam**

Basic education in Viet Nam consists of 12 years: five of primary (Grades 1–5), four of basic secondary (6–9), and three of upper secondary (10–12) education. Students who complete Basic secondary education can elect to enroll in TVET.

Viet Nam conducts a national, sample-based assessment of achievement at Grades 5 and 9. The Grade 5 assessment includes language and numeracy; the Grade 9 assessment includes the same subjects as well as sciences. Viet Nam has participated in PISA since 2012.

The general education curriculum references several TVC in its general objectives, including autonomy, self-learning, communication, collaboration, and problem solving and creativity. It also lists a variety of values and attitudes. Specific capacities are thought to be formed through subject areas, and the competencies are suggested to progress from primary to secondary levels, though linkage across subjects is not clear from available documents.

This study was led by the Vietnam Institute for Education Sciences (VNIES), which operates under the Ministry of Education and Training and leads in research in education science. Materials collected included eight teacher-level tools and one national level tool. The teacher materials were all sourced from urban, government-run schools which had a medium-to-large student population. The academic performance and socio-economic status of the schools ranged from average to high.





# Appendix B: Brief definitions of component skills

*These are broad definitions from various sources, including the OECD definitions of key competencies and the Partnership for 21st Century Learning (P21) definitions of 21st century student outcomes. These definitions are not exhaustive, are only for guidance, and are not intended to be prescriptive. The 2013 Asia-Pacific Education Research Institutes Network (ERI-Net) Phase 1 Regional Synthesis Report noted that “each domain would remain generic. Each country and economy would clarify and use their own definitions of transversal competencies under each domain in their studies” (UNESCO, 2015a, p.4).*

<b>Critical and innovative thinking</b>	<b>Creativity</b>	the ability to use a wide range of creation techniques (such as brainstorming) to create new and worthwhile ideas (both incremental and radical concepts) as well as observable creations (such as artworks and performances). This includes the skills necessary to elaborate, refine, analyse and evaluate their own creations in order to improve and maximize creative efforts.
	<b>Entrepreneurship</b>	a combination of technical, business management, and personal determination, innovation and risk-taking skills necessary to turn ideas into action, as well as plan and manage projects in order to achieve objectives.
	<b>Application skills</b>	refers to skills necessary to implement innovations. This includes the ability to act on creative ideas to make a tangible and useful contribution to the field in which the innovation will occur.
	<b>Reflective thinking</b>	is the ability to reflect critically on learning experiences and processes in order to inform future progress.
	<b>Reasoned decision-making</b>	the ability to use various types of reasoning (inductive, deductive, etc.) as appropriate to the situation, to effectively analyse and evaluate evidence, arguments, claims and beliefs in making judgments and decisions.
<b>Interpersonal skills</b>	<b>Communication skills</b>	include the ability to articulate thoughts and ideas effectively using oral, written and nonverbal communication skills in a variety of forms and contexts.
	<b>Organizational skills</b>	refers to skills such as general organizing, team administration, planning, time management, coordinating resources and meeting deadlines.
	<b>Teamwork</b>	refers to skills necessary to be able to work with others towards a common goal. These include the ability to negotiate, follow an agenda, and make group decisions.
	<b>Collaboration</b>	the ability to work effectively and respectfully with diverse teams, including the skills necessary to exercise flexibility and willingness to be helpful in making necessary compromises to accomplish a common goal.



<b>Media and information literacy</b>	<b>Ability to obtain and analyse information through ICTs</b>	refers to skills required to identify, locate and access appropriate information sources (including assembling knowledge and information in cyberspace), and interpret this information and draw conclusions based on analysis.
	<b>Ability to critically evaluate information and media content</b>	refers to the skills required to evaluate the quality, appropriateness and value of the information, as well as its sources.
	<b>Ethical use of ICTs</b>	refers to the skills required and the ability to apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information technologies.
<b>Global citizenship</b>	<b>Respect for diversity</b>	this includes the skills to understand, negotiate and balance diverse views and beliefs to reach workable solutions, particularly in multi-cultural environments.
	<b>Intercultural understanding</b>	this refers to respecting cultural differences and work effectively with people from a range of cultural backgrounds, and responding open-mindedly to different ideas and values.
	<b>Democratic participation</b>	refers to skills necessary for participating effectively in civic life through knowing how to stay informed and understanding governmental processes. This includes the skills for exercising the rights and obligations of citizenship at the local, state, national and global level.
	<b>Conflict resolution</b>	refers to skills, such as the ability to identify areas of agreement and disagreement, reframe a problem, and analyse the issues and interests at stake that are necessary to manage and resolve conflicts.
	<b>Respect for the environment</b>	refers to skills and knowledge necessary for understanding of the environment and the circumstances and conditions affecting it, particularly as relates to air, climate, land, food, energy, water and ecosystems. This can also include the capability to take individual and collective action towards addressing environmental challenges.
<b>Intrapersonal skills</b>	<b>Self-discipline</b>	being able to set goals with tangible and intangible success criteria, balance short- and long-term goals, and manage one's workload efficiently. This includes the set of skills necessary to manage one's life in an organized manner to give it meaning and purpose in a changing environment.
	<b>Ability to learn independently</b>	being able to monitor, define, prioritize and complete tasks without direct oversight. This includes being able to independently exercise control over one's learning and progress.
	<b>Flexibility and adaptability</b>	refers to skills necessary to adapt to varied roles, jobs responsibilities, schedules and contexts. This also includes the ability to work effectively in a climate of ambiguity and changing priorities.
	<b>Self-awareness</b>	being able to interpret effectively one's own underlying emotional and motivational states. This includes skills necessary to recognize and understand personal strengths, weaknesses, behaviours, and development areas, in order to self-improve.
	<b>Self-motivation</b>	refers to skills necessary to be self-directed learners who go beyond basic mastery of skills and/or curriculum to explore and expand one's own learning and opportunities to gain expertise.



# Appendix C: Classification template

Table 5: Classification template

Task name	Applicable primary function:
TVC specifically targeted (from list)	<b>Teaching and learning</b>
TVC identified within subjects (from list)	Information
Subject area	Accountability
Topic area	<b>Item type or format:</b>
Skills included (e.g., comprehension)	Dichotomous (e.g., correct-incorrect)
<b>TVC interpretation by:</b>	MCQ
Researcher	Rating
Test developer	Closed Constructed Response
Applicable TVC domain/s	Open Constructed Response
Name Specific TVC (detail)	Other
<b>Developed by national, school, teacher</b>	<b>Target age/grade level</b>
<b>School [school-developed tools only]:</b>	<b>Scoring format for this tool/instrument:</b>
School type	TVC items scored separately
School size (approx. number of students)	TVC items reported separately
Academic performance	Teacher/parent/ student/peer rating
SES	Is the instrument standardized?
<b>Item/test sourced from textbook</b>	<b>Validity evidence available:</b>
<b>Standardization sample:</b>	Type of validity evidence
Normative sample size	<b>Reliability estimate available:</b>
Normative sample age/level range	Type of reliability

# Appendix D: Country Summaries

## Bhutan

Bhutan provided twenty-five tools; seven of which did not meet criteria for identification of targeting TVC. The tools that were excluded sampled activities such as participating in inter-school games and competitions, attending field trips, and participating in school-wide programmes, all of which were not designed as assessments and were not scored. Of the eighteen tools that were included in the study, two were national level tools and sixteen were school level tools. The two national level tools consisted of multiple choice questions and closed constructed response items, and were scored by summing correct/incorrect responses, and rating scales. The most common function was for accountability purposes. The school or classroom level tools were used formatively and consisted of rating scales and open-ended response items. For example, one assessment called Ethics Banking was designed to capture transversal skills directly by observing the behaviour and conduct of daily activities of students, such as “volunteering to clean that [sic] class”, “helping others to read”, and “donating food”. This was seen more as capturing global citizenship, such as responsibility, ethical understanding, and respect for the environment, as well as identifying interpersonal skills, such as teamwork. In addition, four of the eighteen tools were designed to capture TVC directly, and thirteen report a score for the target TVC; the most commonly targeted TVC across the provided tools were global citizenship, creativity, and communication skills.

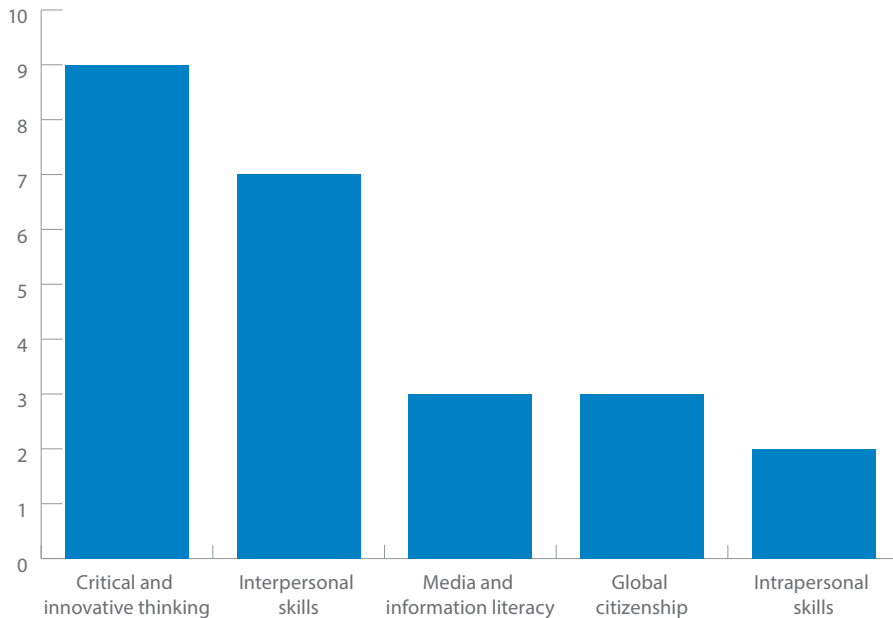
Based on the verification process, it was determined that twelve of the eighteen provided tools were assessing TVC; the remaining six either assessed knowledge within content areas, or there was insufficient description provided about the tool in order to determine whether or not TVC were being targeted.

The majority of the twelve TVC tools were embedded within subject or topic area tools, including English, history, science, biology, and mathematics, and were identified as capturing a range of TVC, including critical and innovative thinking, interpersonal skills, media and information literacy, global citizenship, and intrapersonal skills (Figure 7). Note that throughout the country cases, the categories are not mutually exclusive for each tool and/or item. In other words, countries could identify several TVC as being captured by a single tool or item. Critical and innovative thinking and interpersonal skills were the two most frequently mentioned TVC, and creativity and communication skills were the two most frequently mentioned subskills.





Figure 7: TVC captured in Bhutanese tools



Some tools were interpreted as capturing TVC when they actually captured domain knowledge. This was a common occurrence with tools identified as capturing global citizenship, critical and innovative thinking, and intrapersonal skills. For example, one assessment tool was a social studies project, where students compared cultural practices from “olden days” (“Before we used to sit down and eat.”) to current times (“Nowadays we sit on chairs, keep the food on the table and eat”). This was considered to capture critical and innovative thinking (creativity, reflective thinking), interpersonal skills (organization skills), and global citizenship (responsibility, national identity), among other TVC and subskills (e.g., self-awareness, self-respect). This over-interpretation illustrates one of the vexing issues around TVC – that many of the cognitive processes that are an intrinsic part of education, such as making comparisons, also are associated with a TVC such as critical thinking.

## Cambodia

Cambodia provided two tools that were national level standardized assessments of Khmer language in Grades 6 and 8 and used primarily for accountability purposes. Contained within the two tools were twenty-three items that were associated with capturing a range of TVC, including critical and innovative thinking, global citizenship, interpersonal skills, and intrapersonal skills. None of the items were identified as explicitly designed to capture TVC directly or to report a score for the target TVC.

Most of the items provided were multiple choice questions, with some rating and closed constructed response questions. The verification process determined that none of the tools and items indirectly or directly captured TVC. Rather, these items were general tests of language and comprehension (e.g., “What is the main idea of the poem?”; “Which quarrel is external conflict?”). Interpretation therefore was influenced by these general reasoning processes of comprehension and clear thinking that colour much of education and its assessment. Also, some of the interpretation seemed to be due to the subject matter of the item, such as when global citizenship is the topic of the question (for example, reading a poem about traffic and accidents) as opposed to a “skill” of global citizenship.

## Hong Kong [SAR China]

Hong Kong provided five school level tools that were in the format of ratings (e.g., on a scale from 1–5, how well does the student use the appropriate data?); no national level tools were provided. The functions of the tools were for both summative and formative purposes. Each tool had multiple items, for a total of ten items identified as capturing TVC directly, although none of the items report a score specifically for the target TVC.

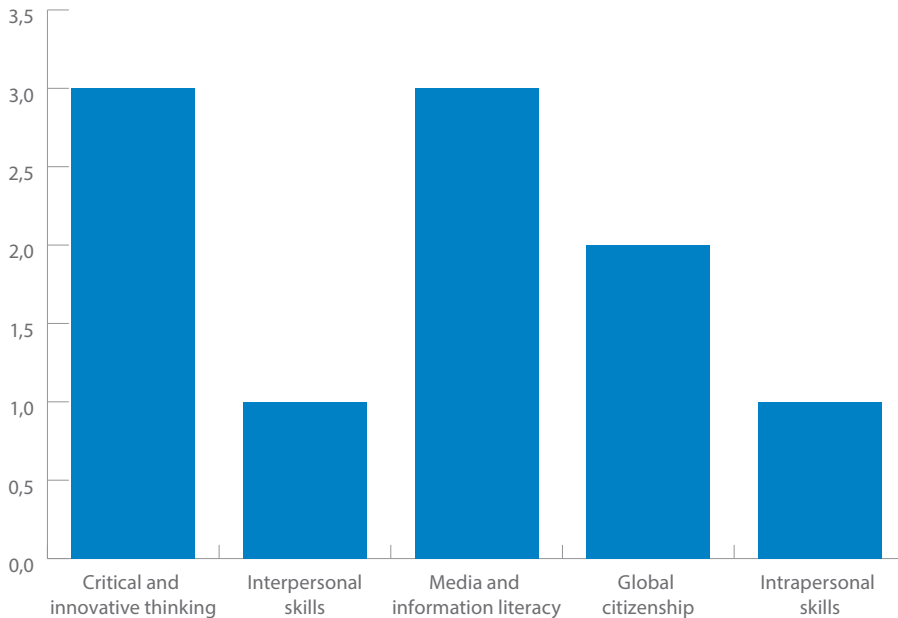
Based on the verification process, five of the ten items were excluded for various reasons. In one case, a grid of numbers was provided where classmates had to choose a number to represent the “level of appreciation by classmates”; in another case, a pre-departure note for a field trip to Guangzhou was provided as a tool; and finally, three of the tools provided descriptions of the lesson. In each of these cases, it is clear why the resources were identified as associated with TVC – they touched on non-cognitive aspects of education. This makes explicit the over-inclusive nature of some understandings of TVC. In some cases, anything that is not seen as traditional academic competence is interpreted as TVC.

The included items were embedded within general studies or liberal studies and were identified as capturing a range of TVC, including critical thinking, interpersonal skills, media and information literacy, global citizenship, and intrapersonal skills (Figure 8). Subskills identified as being captured by the items, included creativity, resourcefulness, reflective thinking, teamwork, collaboration, ability to obtain and analyse information through ICTs, sense of belonging, and self-motivation.





Figure 8: TVC captured in Hong Kong (SAR China) tools



## Malaysia

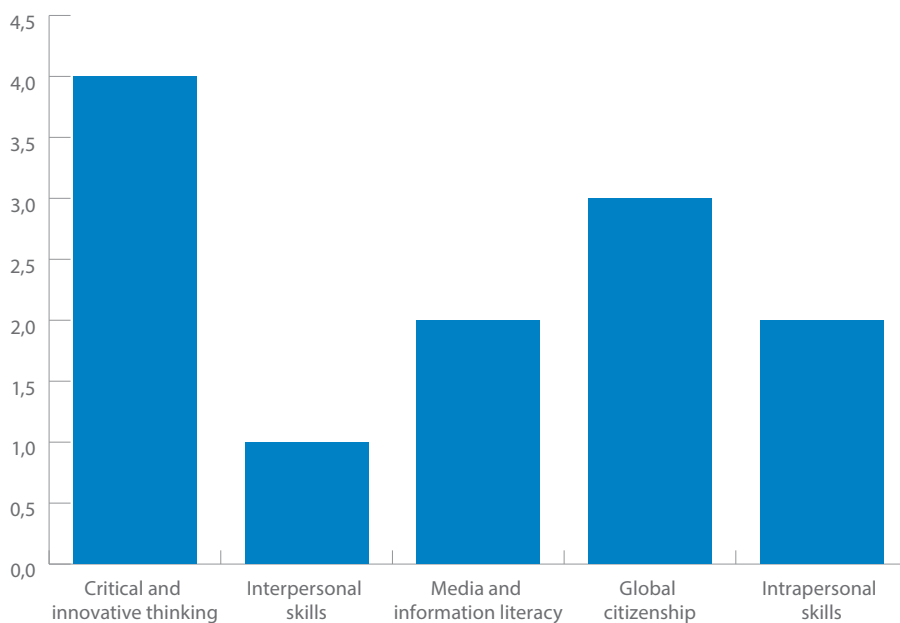
Malaysia provided a total of eight tools (one of the tools contains two separate items, for a total of nine items). Of the eight tools, two were national level tools, mainly used for summative and accountability purposes, and six were school level tools used for summative purposes. All items at both national and school levels were a mix of closed and open constructed responses, from which percentages and criterion scaled scores were obtained. None of the items were designed to capture TVC directly or report a score for the target TVC.

After examining the items and tools provided to see whether they directly or indirectly capture TVC, one tool was excluded due to lack of substantive information, and two items were determined to not reflect TVC. The two items reflected conventional subject or topic area test approaches. For example, one item asked students to compare the volume of three shapes, cylinder, cone, and sphere, to determine which shape holds more water.

Most of the items were embedded in either science or English and were identified as capturing a variety of TVC, including critical and innovative thinking, interpersonal skills, media and information literacy, global citizenship, and intrapersonal skills (Figure 9). Critical and innovative thinking and global citizenship were the two most frequently mentioned TVC,

and reasoned decision-making, application skills, and respect for the environment were the most frequently mentioned subskills. One example of an item targeting critical and innovative thinking asks students to modify a tool shown in a diagram “so that it can be used to harvest oil palm fruits from trees with different heights. Sketch your modification...and explain.” This clearly represents the skills both in terms of the need to ascertain the salient aspects of the diagram as well as to think in a different or “innovative” way.

Figure 9: TVC captured in Malaysian tools



In some instances, interpretations of tools were not so clear-cut. This was the case for two items that were identified as having the potential to capture critical and innovative thinking and global citizenship. For example, in one item, a student reads a flyer about “Volunteering Activities of Sekolah Menengah Sri Kuala Lumpur” and answer questions. The flyer has information about volunteering one’s time at a retirement home, animal shelter, or orphanage. The questions based on the flyer include stating TRUE or FALSE for statements such as “the school is looking for 20 volunteers at the pet shelter” or “we can donate canned goods to the orphanage” and open-ended questions, such as “name two things that Dickson can do to help out at the old folks’ home.” In other words, the topic area of the flyer is on global citizenship; however, the skills that are being targeted are comprehension skills.



## Mongolia

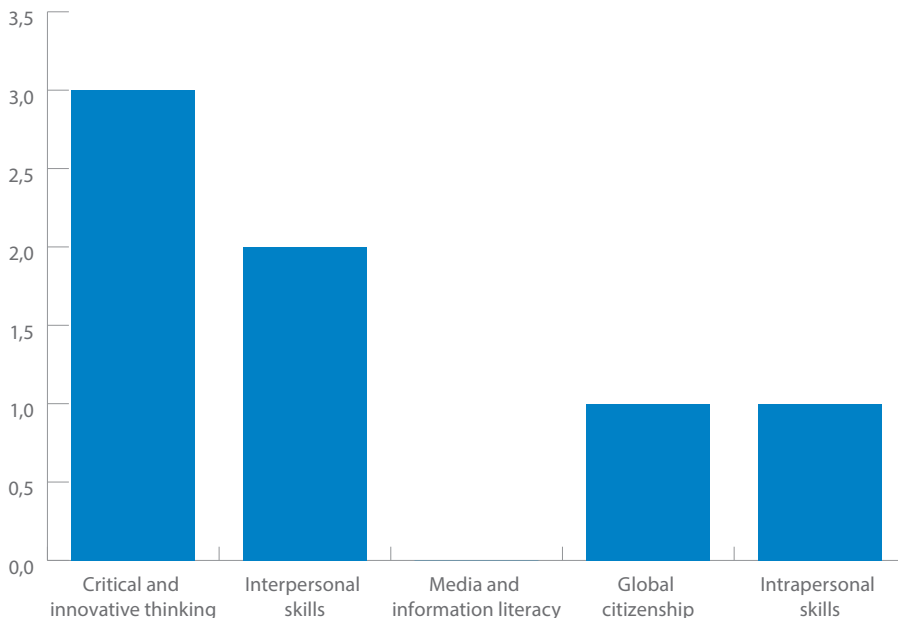
Mongolia provided ten sample tools, three of which were used at the national level and seven were school-based. The national level tools were embedded in tests for conventional subject areas (Information Technology, English, and Environment Studies) but three of the school-based tools were designed to capture TVC directly.

Communication skills and creativity are the most common TVC that are captured by these three specifically-targeted tools. Overall, the most common TVC captured across the provided tools were critical and innovative thinking, and interpersonal skills (mainly through the communication subskill) (Figure 10).

The national tools do not report TVC-specific scores from the embedded items, but four of the school-based tools both score and report TVC scores specifically.

The most common item formats are rating type items (including self-rating) and essays or open constructed response. There were samples of tasks that involve creativity (create a brainstorming picture) and composition (compose a story based on a given set of pictures) activities, but rubrics were not provided so the scoring mechanisms are unclear. It is likely that these were scored holistically and subjectively by the teacher.

Figure 10: TVC Captured in Mongolian tools



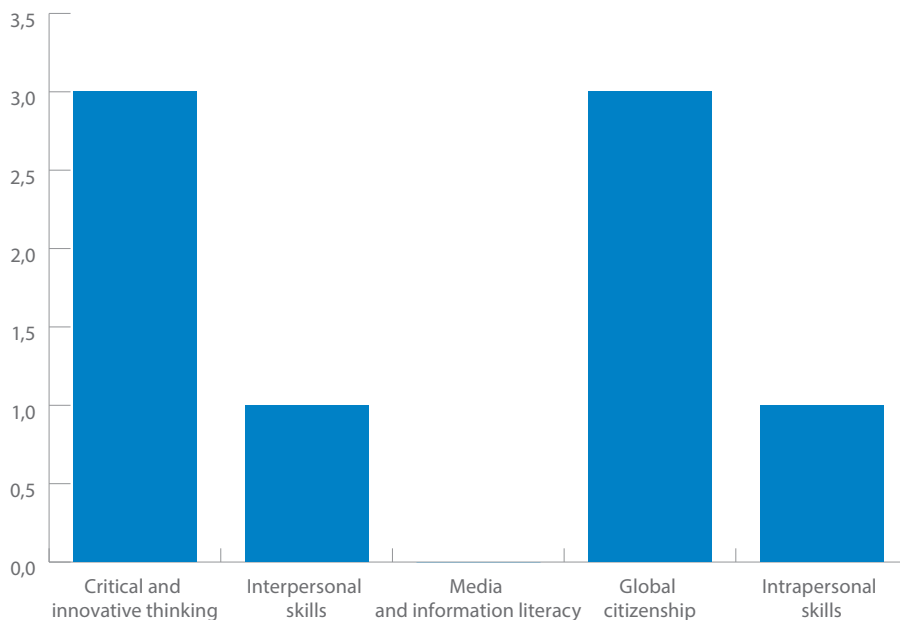


## Nepal

Nepal provided one national-level tool and three school-level tools. All four tools that were provided by the Nepal researchers consist of six items that were embedded in conventional tests for subject areas such as social studies and environment science, and therefore captured TVC indirectly. The majority of these items focus on critical thinking and global citizenship (Figure 11). A few items were also explicitly identified by the country researchers as reflecting interpersonal and intrapersonal skills. In some cases, these were over-interpretations. For example, a task that involved writing a long essay was perceived as tapping into the perseverance skill. Although this might be a reasonable assumption for some students, for others who enjoy the activity such an interpretation would be misleading. Some of the tools contained items that capture environmental awareness (a component of global citizenship).

The provided tools include a range of item formats, including dichotomously-scored items, multiple choice, and constructed response. TVC-specific scores were not reported, and all item scores, regardless of specific subject or skill target, contribute to the overall score for the tests.

Figure 11: TVC captured in Nepali tools



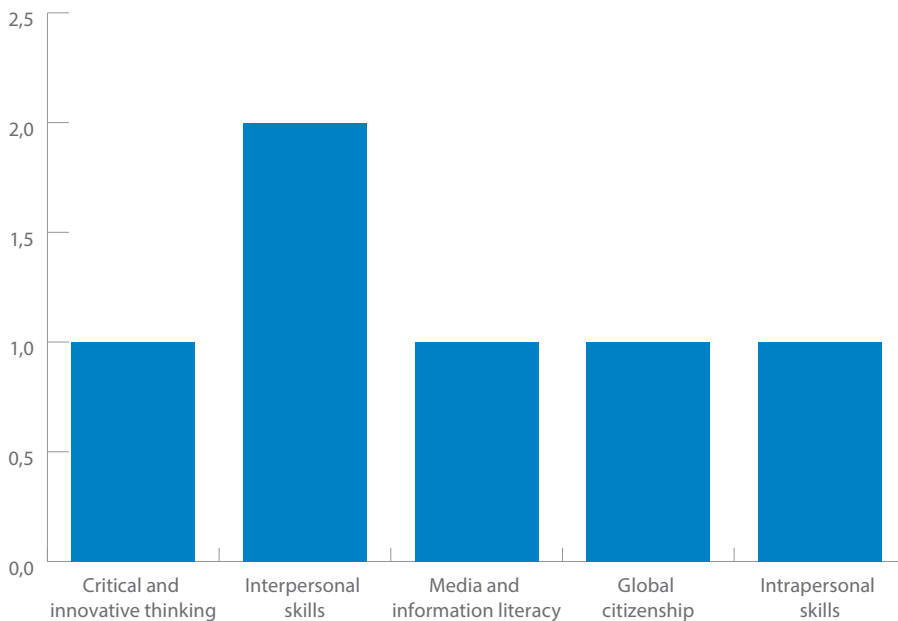


## Pakistan

Pakistan provided school-level tools. Of the seven tools in total, two were of particular interest. One was identified as targeting TVC directly while the other captured TVC as part of a broader set of classroom activities that were not specifically designed to target particular 21st century skills. The set of component skills that were identified were spread over a range of TVC (Figure 12) and included reasoned decision making, communication skills, collaboration, organizational skills, teamwork and adaptability.

Further review of the items broadly supports the country researcher interpretations regarding the targeting of the skills. As common for many school-based assessments, the tasks and subtasks were either assessed informally or based on a teacher-developed social skill rating system. Notwithstanding that no rubrics were available to understand the scoring mechanisms applied, all provided tasks were on a specific TVC. Such explicit scoring denotes a clear intention for the tasks to provide information on the TVC.

Figure 12: TVC captured in Pakistani tools

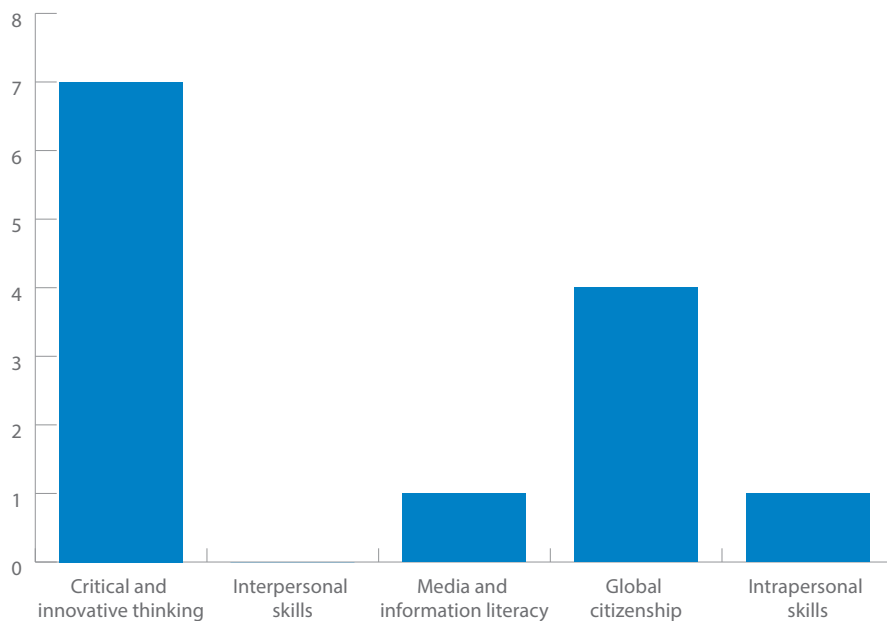


## Viet Nam

The researchers from Viet Nam provided eight samples of school level tools and one national assessment. None of the tools provided were specifically designed to target TVC but were instead embedded in a range of conventional subject areas, including chemistry, literature, physics, technology, and language. Separate scores for TVC were not calculated, but the raw scores for these items counted towards the subject area global score for the tools in which they were embedded.

The majority of the items were mapped across the TVC domains and subskills. They either captured application skills and reasoned decision making (components of critical and innovative thinking) or several components of global citizenship skill (Figure 13).

Figure 13: TVC captured in Vietnamese tools





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