New Indicator Proposal for SDG Target 4.7: Conceptual Framework

May 2020

Acronyms and abbreviation

ATC21S	Assessment & Teaching of 21st Century Skills
ESD	Education for Sustainable Development
EC	European Commission
GAML	Global Alliance to Monitor Learning
GCED	Global Citizenship Education
GEFI-YAG	Youth Advocacy Group of the U.N. Secretary General's Global Education First Initiative
IBE	International Bureau of Education
ICCS	International Civic and Citizenship Education Study
IEA	International Association for the Evaluation of Educational Achievement
KSAVE	Knowledge, Skill and Attitude, Values and Ethics
LMTF	Learning Metrics Task Force
OECD	Organisation for Economic Co-operation and Development
PISA	Programme for International Student Assessment
SDG	Sustainable Development Goals
TIMSS	Trends in International Mathematics and Science Study
UNGA	United Nation General Assembly

Table of Contents

List of Tables

1. Introduction

The 21st century demands a broad set of skills that range from respect to diversity, emotional skills to creativity, ingenuity, and 'thinking outside the box' - all important skills and determinants of how future generations will interact with each other and their environment. These skills have been conceptualised as ways of knowing, doing, being, and living in our world (Delors, et al., 1996). The need for these skills has been explained due to changes in technologies, shifts in workforce needs, and most recently "unprecedented levels of mobility and migration, civil and political unrest and environmental degradation" (GPE, 2020).

In this ever-changing world, young adults are expected to be able to determine the relevance of information, distinguish between fact and opinion, identify unstated assumptions, detect bias, suggest reasonable and plausible solutions, predict possible consequences, and make relatively quick and informed decisions. These competencies will not be acquired and mastered without the development of a broad set of cognitive skills, such as critical and creative thinking, problem solving, and social skills, such as communication and collaboration. Although these competencies are part of human functioning, explicit attention to their development has not been prominent in many formal education systems. Therefore, there is an urgent need to encourage education systems across the world to create more enabling environments to ensure an adequate breadth of skills, so that all learners will be equipped to navigate their lives successfully through a complex and uncertain world.

SDG Target 4.7 emphasizes all learners' acquisition of knowledge and skills needed to promote sustainable development. It reads as follows:

By 2030, ensure all learners acquire knowledge and skills needed to promote sustainable development, including among others through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship, and appreciation of cultural diversity and of culture's contribution to sustainable development

In order to ensure enabling environments and provide the opportunity for the development of this broad set of skills, nations need to commit to the attainment of Target 4.7 by embedding skills development through education policies and education sector planning.

Therefore, an additional indicator is proposed as follows:

"Extent to which national education policies and education sector plans recognize a breadth of skills that needs to be enhanced in national education systems".

Since the last decades of the 20th century, there has been an increasing recognition that the generic human learning targets espoused by the Delors et al. (1996) report - to know, to do, to be, to live together - will be met only via structured initiatives to facilitate them. The

generality of these targets confirms their value across learning, working and living environments. Subsequent reports included the Organisation for Economic Co-operation and Development (OECD)'s DeSeCo Report (Rychen & Salganik, 2003) which took into account 21st century contexts explicitly, and more detail in the identification of competencies emerged. With the European Commission (EC), we saw a move toward analysis within the educational environment (Gordon et al., 2009), followed by a North American focus on educational implications through Partnerships21[1] and the US National Research Council (Pellegrino & Hilton, 2012). The Assessment & Teaching of 21st Century Skills (ATC21S) KSAVE[2] Framework (Binkley et al., 2012) then explicitly acknowledged competencies beyond skills, by identifying knowledge, and a cluster set of attitudes, values and ethics. UNESCO's (2014) interest in global citizenship, and the OECD's (2016) interest in global competency, has confirmed the broad-reaching concerns about how to plan for a sustainable future for the world and its people through skills development. Differences across these frameworks reflect the varied philosophies and goals of the institutions concerned, with policies that target economic growth at times at odds with concepts of sustainable development.

The first two decades of the 21st century has seen an increased explicit commitment from nations to prepare their youth for a changing world. Of course, nations have historically been concerned by ensuring that their system of education prepares their citizens to functioning effectively within their societies. However, the current commitments appear to have more commonality across nations and regions than it may have been the case in the past. The commitments have been seen through:

- education policy statements (Care, Anderson & Kim, 2016);
- participation by schools in global initiatives such as UNESCO's Associated Schools Network and UNESCO clubs;
- curricula such as that those provided by the International Baccalaureate of Education;
- regional research initiatives into the policy-to-practice implications of a 21st century skills agenda (e.g. UNESCO 2015, 2016; UNESCO, 2016a (Care & Luo);
- Learning Metrics Task Force (LMTF)[3],
- recent large scale assessment programs of specific skills (e.g. collaborative problem solving) and complex competencies (e.g. global citizenship); and
- of course in multitudes of individual non-government organization sponsored programs and individual schools.

As an increasing numbers of countries engage in aspirations to prepare their citizens for the 21st century, the breadth of these aspirations demonstrates a strong core of shared perspectives about the development of an individual or the society, a more generic commitment to educate youth to serve the religious, community, and economic needs and

---

[1] (http://www.battelleforkids.org/networks/p21)

[2] KSAVE: **K**nowledge, **S**kill and **A**ttitude, **V**alues and **E**thics

[3] https://www.brookings.edu/product/learning-metrics-task-force/)

values of nations, and an acceptance of the dynamic nature of the world which requires change and transformation.

How are opportunities to learn provided by national education systems? And within these, what are those key opportunities that might indicate valuation of breadth of skills? It is by implementing systems that are guided by their goals, through their curricula as well as their pedagogical philosophies, and their resources. Curricula may be explicit about breadth of skills or silent. Silence cannot be assumed to imply absence however, since the theories of learning or pedagogical philosophies that are adopted by a system might be sufficient for a breadth of skills approach to teaching and learning to be made provided to learners. Accordingly, evidence of a breadth of learning opportunities (Anderson, Hegarty, Henry, Kim & Care, 2018) needs to be captured across multiple data sources. Is explicit mention of a wide range of skills in the curriculum actually a learning opportunity? Does a constructivist pedagogical approach constitute such an opportunity? Are opportunities provided or unavailable due to physical affordances of classrooms? In order for there to exist opportunities to develop breadth of skills, do all facilitating features need to be aligned?

To provide evidence to inform the proposed indicator, it is suggested to collect data from curricula, teachers, and classroom level. These data are most likely to signal the presence or the absence of elements rather than to show a rich qualitative information, given logistic and funding considerations for countries. Analyses of the data will be designed to identify the degree to which combinations of these data sources might predict the likelihood of an opportunity to learn, such that data collection for country-level monitoring purposes be both viable and efficient. The identification of the elements will be discussed in a separate paper, based on the conceptual framework outlined in this paper.

2. SDG 4.7

Target 4.7 expands through the following indicators:

4.7.1: Extent to which (i) global citizenship education and (ii) education for sustainable development, including gender equality and human rights, are mainstreamed at all levels in: (a) national education policies, (b) curricula, (c) teacher education and (d) student assessment

4.7.2: Percentage of schools that provide life skills-based HIV and sexuality education

4.7.3: Extent to which the framework on the World Programme on Human Rights Education is implemented nationally (as per the United Nation General Assembly (UNGA) Resolution 59/113)

4.7.4: Percentage of students by age group (or education level) showing adequate understanding of issues relating to global citizenship and sustainability

4.7.5: Percentage of 15-year-old students showing proficiency in knowledge of environmental science and geoscience

3. Background

The Global Alliance to Monitor Learning (GAML) Task Force 4.7 (GAML 2017) made its focus on thematic indicators 4.7.4 and 4.7.5 clear. Furthermore, the finalisation of measurement for the global indicator 4.7.1 would rely on the 2016 round of data collection of UNESCO 1974 Recommendation on Education for International Understanding, Co-operation and Peace and Education relating to Human Rights and Fundamental Freedoms. The Task Force also noted that both indicators 4.7.4 and 4.7.5 were originally inspired by existing data sources and international large-scale assessments, namely International Association for the Evaluation of Educational Achievement (IEA)'s International Civic and Citizenship Education Study (ICCS) in the case of indicator 4.7.4, and the OECD's Programme for International Student Assessment (PISA), in particular the aspect of environmental science of the 2006 data collection round, for indicator 4.7.5 -. GAML (2017) identified as a key challenge the need to reach an agreement on definitions and dimensions of Global Citizenship Education (GCED) and Education for Sustainable Development (ESD). There is however an acknowledgement of three dimensions for GCED, cognitive, socio-emotional, and behavioural, and for ESD, knowledge, skills, values, engagement, attitudes and experiences.

The three dimensions for GCED are defined as:

- Cognitive: To acquire knowledge, understanding and critical thinking about global, regional, national and local issues, the interconnectedness and interdependency of different countries and populations, as well as social, economic and environmental aspects of sustainable development;
- Social and emotional: To have a sense of belonging to a common humanity, sharing values and responsibilities, empathy, solidarity and respect for differences and diversity, as well as feel and assume a sense of responsibility for the future;
- Behavioural: To act effectively and responsibly at local, national and global levels for a more peaceful and sustainable world.

UNESCO (2019).

In 2018, the Task Force argued the case for the inclusion of the Trends in International Mathematics and Science Study (TIMSS) Science for thematic indicator 4.7.5, and in 2019 consolidated the argument to use it for both indicators 4.7.4 and 4.7.5.

UNESCO's (2017) statement on learning objectives for achieving the SDGs included a set of cross-cutting key competencies. Given their centrality to this conceptual framework, they are presented in Table 1 in their entirety. The debate concerning the comparative merits of different frameworks and nomenclature continues. For this work however, the goal is to identify the contributing competencies (or skills) to concepts of global citizenship and sustainable development in order to determine the facilitating environmental elements that would nurture these skills.

Table 1 Key Competencies

Competency	Description
Systems thinking competency:	The abilities to recognize and understand relationships; to analyse complex systems; to think of how systems are embedded within different domains and different scales; and to deal with uncertainty.
Anticipatory competency	The abilities to understand and evaluate multiple futures – possible, probable and desirable; to create one's own visions for the future; to apply the precautionary principle; to assess the consequences of actions; and to deal with risks and changes.
Normative competency	**T**he abilities to understand and reflect on the norms and values that underlie one's actions; and to negotiate sustainability values, principles, goals, and targets, in a context of conflicts of interests and trade-offs, uncertain knowledge and contradictions.
Strategic competency	The abilities to collectively develop and implement innovative actions that further sustainability at the local level and further afield.
Collaboration competency	The abilities to learn from others; to understand and respect the needs, perspectives and actions of others (empathy); to understand, relate to and be sensitive to others (empathic leadership); to deal with conflicts in a group; and to facilitate collaborative and participatory problem solving.
Critical thinking competency	The ability to question norms, practices and opinions; to reflect on own one's values, perceptions and actions; and to take a position in the sustainability discourse.
Self-awareness competency	The ability to reflect on one's own role in the local community and (global) society; to continually evaluate and further motivate one's actions; and to deal with one's feelings and desires.
Integrated problem-solving competency	The overarching ability to apply different problem-solving frameworks to complex sustainability problems and develop viable, inclusive and equitable solution options that promote sustainable development, integrating the above- mentioned competences.

Source: UNESCO, 2017, p. 10

The UNESCO paper recommends that learning objectives and key competencies should be pursued together. In the paper, 'Learning objectives' refers to specific statements associated with knowledge domains. For example, the goal of 'no poverty' would populate a learning objective through statements such as 'The learner understands the concepts of extreme and relative poverty…' (cognitive learning dimension), 'The learner is able to raise awareness about extremes of poverty and wealth and encourage dialogue about solutions' (socio-emotional learning dimension), and 'The learner is able to propose solutions to address systemic problems related to poverty' (behavioural learning dimension) (UNESCO, 2017, p. 10). It is clear that the 'raising of awareness' and 'proposing of solutions' could only be achieved through development of the key competencies.

The significance of this recommendation is recognised in this proposal for a new indicator for 4.7.1. It is important to acknowledge that the competencies are themselves learning

goals. Without these being explicitly addressed, it is difficult to see how exposure of students to knowledge about sustainable development issues, or awareness of differences within the context of global citizenship, can have applied outcomes.

Therefore, the extent to which education systems explicitly articulate how students can be exposed to multiple learning opportunities for them to develop these competencies could be regarded as indicative of progress toward achievement of 4.7.1.

4. What is Education for Sustainable Development and Global Citizenship Education?

Both notions of sustainable development and global citizenship permeate SDG Target 4.7. Rather than re-argue the nature of these, this paper draws on the key components identified in some dominant publications:

- The International Bureau of Educations (2016) paper on Global Monitoring of GCED and ESD: Themes in School Curricula
- A paper on measuring global citizenship education synthesised by the Brookings Institution with the Youth Advocacy Group of the U.N. Secretary General's Education First Initiative, following a UNESCO-supported consultation process (Anderson & Bhattacharya, 2017)
- The study of ESC and GCED elements in curricula presented at UNESCO's Hanoi convening on ESD and GCED Up Close in July 2019 (Benavot et al., 2019)
- GAML Meeting 4 discussion papers presented on 4.7.

UNESCO (2014) states: "Education for Sustainable Development allows every human being to acquire the *knowledge, skills, attitudes and values* necessary to shape a sustainable future. Education for Sustainable Development means including key *sustainable development issues* into teaching and learning; for example, climate change, disaster risk reduction, biodiversity, poverty reduction, and sustainable consumption. It also requires *participatory teaching and learning methods* that motivate and empower learners to change their behaviour and take action for sustainable development. Education for Sustainable Development consequently promotes competencies like critical thinking, imagining future scenarios and making decisions in a collaborative way." [author's emphases]

Beyond the notion of global citizenship, UNESCO (2015) sees global citizenship education (GCED) as comprising three dimensions around which learning goals and competencies can be organised; these are the cognitive, social-emotional and behavioural dimensions. GCED is seen as a means to empower learners of all ages to act and build more tolerant, peaceful, inclusive and secure societies. As noted by Benavot et al. (2019), these three dimensions have been informed by UNESCO 2015, Battiste 2000, BI 2017, UNESCO-APCEIU 2015; and are well aligned with Delors et al. (1996).

GAML (2017) agreed on definitions and dimensions of the constructs of Global Citizenship (GCED) and ESD as the main issue confronting measurement, presenting tentative definitions as follows.

"GCED is tentatively defined as any educational effort that aims to encourage the acquisition of skills, values, attitudes and behaviors to empower learners to assume active roles to face and resolve global challenges and to become proactive contributors to a more peaceful, tolerant, inclusive and secure world. GCED nurtures the following three core dimensions of learning:

- The cognitive – to acquire knowledge, understanding and critical thinking about global issues and the interconnectedness/interdependency of countries and different populations.
- The socio-emotional – to have a sense of belonging to a common humanity, sharing values and responsibilities, sharing empathy, solidarity and respect for differences and for diversity.
- The behavioural – to act responsibly at local, national and global levels for a more peaceful and sustainable world." (GAML, 2017)

"ESD is tentatively defined as any educational efforts that equip learners with the key learning components of: knowledge (on ESD topics of sustainable lifestyles/sustainable ways of life, climate change, biodiversity, and the greening of the economy); skills; values; engagement; attitudes; and experiences - to address social, environmental and economic challenges of the 21st century through integrating critical issues such as climate change, biodiversity, disaster risk reduction…, and sustainable consumption and production" (GAML 2017, p. 3).

5. Differential focus on parts of the definitions

Although the definitions presented in the previous section draw attention both to knowledge domains and to skills, values and attitudes, the current SDG 4.7 indicators predominantly address knowledge. Notwithstanding, there are several studies which have explored both knowledge domains and the competencies. Some have been underpinned primarily by the 'sustainable development' and 'global citizenship' search terms, while others have addressed the competencies more specifically.

Amadio (2013) analysed curricular documents to evaluate the focus on skills and competencies, as well as on sustainability and environment knowledge domains across subjects. The UNESCO International Bureau of Education (IBE) (IBE-UNESCO,2016) similarly developed a coding scheme to establish how GCED and ESD content are incorporated into formal education and addressed skills and pedagogies across 78 countries.

Co-convened by the Brookings Institution, UNESCO, and the Youth Advocacy Group of the U.N. Secretary General's Global Education First Initiative (GEFI-YAG), a GCED working group

came together in 2014. Drawing on perspectives from experts worldwide, the working group studied the definitional issues around the GCED, and noted eight competencies believed to underpin GCED: empathy, critical thinking or problem solving, communication and collaboration, conflict resolution, identity, universal values, respect for diversity, and recognition of global issues (Anderson & Bhattacharya, 2017).

A UNESCO commissioned (2019) study on cognitive, social and emotional, and behavioural learning in Education for Sustainable Development and Global Citizenship from pre-primary to secondary education summarized findings on the extent to which these three dimensions of learning were reflected in pre-primary through secondary education in ten countries, mainly via policy and curricular documents. Their key research question was "What is the relative emphasis on the three learning domains in relation to GCED/ESD learning, across education levels and subject areas, within and across the study countries?" (p. 5). The study took the initial approach of coding data for learning content related to "cultural diversity and tolerance, peace and non-violence, human rights and gender equality, environmental sustainability, sustainable consumption and production, human survival and well-being, three pillars approach to ESD, and other GCED/ESD intended learning" (p. 16). At the next coding stage, the study came closer to a competencies focus, as indicated by this coded example from Mexico:

"Ensure that all students acquire the theoretical and practical knowledge necessary to promote...the appreciation of cultural diversity and the contribution of culture to sustainable development, among other means."

Coded for cognitive (e.g., 'theoretical knowledge'), behavioural (e.g., 'practical knowledge') and social and emotional (e.g., 'appreciation of').[4]

This example illustrates how the coding of the cognitive learning dimension in particular prioritizes knowledge rather than skill. This prioritization is demonstrated in the majority of studies.

It is clear that ESD and GCED must focus on the development of competencies if individuals are to contribute to sustainable development processes. As pointed out by Hoffman and Siege (2018), basic competencies, such as literacy and numeracy, are required as well as what they term higher level competencies "creativity, solution oriented thinking and actionability are fundamental for ESD, since without them it would not be possible to find ways, concepts, techniques, which make us succeed to reach the space of sustainability." (p. 5) These competencies, in association with knowledge about sustainability ranging "from economic via social to ecological aspects" (p. 6) are needed in order to promote sustainable development.

---

[4] Source: Mexico. Agenda 2030. (2017). Objetivo de Desarrollo Sostenible 4: Educación de Calidad." (Benavot et al., 2019, p. 24)

That ESD and GCED comprise the need for both knowledge and skills is well accepted in principle. The challenge is to ensure that both are reflected in SDG monitoring. That the current indicators have not captured these to date is reasonable in the light of the findings of Benavot et al. (2019). Their study demonstrated that the socio-emotional and behavioural learning dimensions were less prominent in education documentation across the 10 countries studied. Formal education has traditionally prioritized the cognitive dimension over others: this finding is not surprising. Application of cognitive skills such as problem solving and critical thinking in school subjects has been ubiquitous for many decades (at least insofar as these are mentioned in curricular documents), while socio-emotional and behavioural competencies have not been similarly visible or valued.

6. Argument

A comprehensive exploration of SDG 4.7 has been on-going in order to identify ways to monitor progress against its goals. A move from the broad aspiration of Target 4.7 to the subsidiary indicators has enabled specific aspects to be targeted, primarily through a focus on student outcomes, aligned with thematic indicators 4.7.4 and 4.7.5. Both of these address the knowledge component of GCED and SD.

Recent studies however have re-focussed on Target 4.7 itself and its closest indicator, 4.7.1, in terms of substance. Examples of such studies and proposals include Benavot et al.'s Transition Study (2019), and the proposal by Sandoval-Hernández, Isac and Miranda (2019) for a 'Measurement Strategy for SDG Global Indicator 4.7.1 and Thematic Indicators 4.7.4 and 4.7.5 using International Large- Scale Assessments in Education.'

Notwithstanding that these studies and proposals focus on how education might provide for learning opportunities related to ESD and GCED, they tend to stay with the ESD and GCED specific terms rather than analysing the components that might contribute to their intended purpose.

This raises two points issues. First, do a majority of education systems describe ESD and GCED using the terms typically adopted in these papers? Given the recency of these notions, it is plausible that the terminology has not penetrated into systems, although these systems might in fact be addressing the component skills that inform the notions but through traditional studies. Second, it seems that most of the emphasis remains on the knowledge component of ESD and GCED rather than on the eight UNESCO (2017) competencies, or the socio-emotional or behavioural dimensions of ESD or GCED. To what extent might the focus on these provides opportunities for systems to demonstrate that they are in fact supporting learning, which is aligned with Target 4.7?

Rather than targeting the notions of ESD and GCED, it may be more useful to note the education's focus on breadth of skills development, that is, on the enhancement and teaching of these skills which are hypothesised as contributing to the achievement of ESD and GCED goals. For example, UNESCO (2015) states that "Global citizenship education aims

to enable learners to: ...develop and apply critical skills for civic literacy, e.g. critical inquiry, information technology, media literacy, critical thinking, decision-making, problem solving, negotiation, peace building and personal and social responsibility." (p. 16) Targeting the degree to which education prioritizes the development of these skills might ensure a more holistic profile of learning opportunities than those which look specifically at the knowledge components of the ESD and GCED notions.

Although several curriculum audits on notions of ESD and GCED's presence include both content and competencies in their search strategies, they typically look for verbs such as "knowing, understanding", etc, for competencies rather than to look for evidence of explicit focus on the development of the skills themselves as processes. Amadio's (2013) study noted that many countries refer to a variety of competencies, including communication (in mother tongue and in foreign languages); literacy; numeracy; learning to learn; problem solving; critical thinking; creativity; collaboration; basic competences in science and technology; digital competence (including Information and Communication Technologies –ICT); information processing and enquiry skills; entrepreneurship; environmental awareness/responsibility; social competence; and civic competence (including citizenship) (pp. 5-6). The author's search was therefore more specific to the competencies then found in most similar studies.

UNESCO (2015) also describes GCED key learning outcomes, key learner attributes and topics, but does not address the nature of the competencies. For example, "Enact appropriate skills, values, beliefs and attitudes" does not provide the educator with information about what these capabilities actually are. Similarly, "Develop and apply values, attitudes and skills to manage and engage with diverse groups and perspectives" and "Develop and apply skills for effective civic engagement" (p. 31) need to be specified as learning objectives in order to make clear exactly what these skills are. If GCED and ESD are to be based on individuals' development of relevant knowledge, skills, and attitudes, then it is important to delineate not only the knowledge (as it has been focussed on), but also the social-emotional and behavioural components.

UNESCO-IBE (2016) analysed curricula across 78 countries using nine categories: Human Rights; Gender Equality; Peace, Non-violence and Human Security; Health and Well-being; Sustainable Development; Interconnectedness and Global Citizenship; Competencies; Pedagogical Approaches and Methods; and Assessment. They found that 91% of the countries referenced critical thinking, and 87% referenced problem solving. Although this study went further than most in the identification of specific competencies, it is not clear that these competencies were considered as learning objectives in their own right. Given the finding that cognitive competencies were the most frequently found, it seems likely that these were used in describing learning objectives for content domains (e.g. solve a maths problem, analyse the text critically) as opposed to a focus on the competency per se. There is no doubt that the purpose for deliberate teaching and enhancement of these

competencies would be for application, both in study and in work, but there is an interim step which is the deliberate and conscious attention to that development. Deliberate teaching and enhancement would require an explicit focus on the social and cognitive processes that underlie what we see as skills. For example, a focus on problem solving would make explicit that an individual is exploring the problem space and is supported in understanding how to identify the factors or objects relevant to the problem being presented, as a starting point.

Similarly, APCEIU (2017) discussed pedagogical practices and principles that highlight strategies for teaching without being directly linked to the skills that would enable the goals to be reached. The OECD has identified 21st century competencies across information, communication, and ethics. The Asia Society (2016) rather identifies these competencies as interpersonal, intrapersonal, and cognitive. All make the assumption that to reach the GCED and ESD goals, these skills must be drawn on. However, the OECD and the Asia Society (2016) do not address the skills specifically as learning objectives. This explication is essential if teachers are to understand how to integrate them into content learning aligned with subject-specific curricula.

From a review of education policies worldwide (e.g. Care, 2018), these competencies are mentioned aspirationally. The issue for many systems is that these are yet to be reflected in curricular and learning materials, teacher training content, and assessment frameworks.

7. Concept of the indicator

First, it is important to go back to the concept of an indicator in this context. We are not trying to assess a full construct exhaustively, but merely we are looking for indicative evidence that the competencies in question are given the opportunity to be develop. We therefore do not need to look for every way in which a competency might be demonstrated. Rather, we want to **look for the competencies that would enable the diverse aspirational goals of indicator 4.7.1 to be demonstrated. In order to do this, the first step is to agree on the contributing competencies to the two broad concepts of global citizenship (GCED) and education for sustainable development (ESD). This step will then give more background information on how to facilitate environmental elements**.

Where might we find the information for such indicators? As demonstrated by Amadio (2013), IBE-UNESCO (2016), and Benavot et al. (2019), one location is in curricula. However, if our concern is to identify the enabling environments which offer the opportunity to develop these competencies, other factors that come into play.

An exploration of how education systems can support their students to develop 21st century skills, or a breadth of skills, has resulted in a curricular reform, in the development of pedagogical approaches that are hypothesised to facilitate student development of the skills, and in development of assessment strategies designed to support learning.

Moving beyond the literature on pedagogical strategies attuned to 21st century skills, there has also been an exploration of the appropriateness of various pedagogical strategies for ESD. For example, Plymouth University[5] outlines this set of recommendations:

> *There is no 'correct' pedagogy for sustainability education, but there is a broad consensus that it requires a shift towards active, participative, and experiential learning methods that engage the learner and make a real difference to their understanding, thinking and ability to act.*

> *We have identified five pedagogic elements that cover a host of pedagogical approaches or methods that staff at Plymouth might use to bring these elements into the learning environment.*

> 1. ***Critical reflection*** *– including the more traditional lecture, but also newer approaches such as reflexive accounts, learning journals, and discussion groups.*
> 2. ***Systemic thinking and analysis*** *– the use of real-world case studies and critical incidents, project-based learning, stimulus activities, and the use of the campus as a learning resource.*
> 3. ***Participatory learning*** *– with emphasis on group or peer learning, developing dialogue, experiential learning, action research/learning to act, and developing case studies with local community groups and business*
> 4. ***Thinking creatively for future scenarios*** *– by using role play, real-world inquiry, futures visioning, problem-based learning, and providing space for emergence.*
> 5. ***Collaborative learning*** *– including contributions from guest speakers, work-based learning, interdisciplinary/ multidisciplinary working, and collaborative learning and co-inquiry*

The Plymouth University recommendations are designed for higher education context. Naturally, a selection of teaching strategies needs to take into consideration not only the learning goal, but the age and circumstance of the learner. We may therefore find sets of learning strategies that are quite different across education sectors.

For assessment attuned to the requirements of the GCEC, one example to draw on is that of OECD PISA 2019 round. Notwithstanding that OECD's targeted construct was global competence rather than global citizenship, the common variance of the two is strong. It must be kept in mind that both of these constructs include a knowledge component, as opposed to skills.

At national levels, our interest is less in the way which competencies are assessed and rather on whether the competencies are being assessed at all. When a competency is being

---

[5] https://www.plymouth.ac.uk/students-and-family/sustainability/sustainability-education/esd

assessed in the formal education system, this can be interpreted as a clear acknowledgement that the competencies are considered as learning objectives in their own right. So, they would presumably be accompanied by performance standards, and ideally by learning progressions.

So, if we look at curricula, do we find evidence that a broad set of skills are a part of the curriculum? If we look at pedagogical frameworks presented by countries, do they outline a variety of approaches, some of which might well facilitate such skills development? If we look at assessment frameworks, do we see an explicit acknowledgement of these 'competencies' learning goals?

In each of these cases, it is critical that the competencies have been sufficiently 'unpacked' or deconstructed for educators to understand their nature, and how these might be embedded as routinely instructed for classrooms. Without such deconstruction, specification of teaching and learning goals is not viable. This means that for monitoring within the context of SDG indicator 4.7.1, the process within countries needs to move beyond aspirational statements relevant to ESC or GCED topic area, and focus on the cognitive or social processes themselves. Of course, how to discriminate between the different contexts in which words are associated with the competencies may pose a serious challenge to the use of breadth of skills as a monitoring indicator. Similarly, socio-cultural differences across countries are critical factors to be considered when we take into account social-emotional and behavioural competencies in particular.

References

Amadio, M. (2013). A rapid assessment of curricula for general education focusing on cross-curricular themes and generic competences or skills. Paper commissioned for the EFA Global Monitoring Report 2013/4, Teaching and learning: Achieving quality for all. https://unesdoc.unesco.org/ark:/48223/pf0000225939

Anderson, K., Hegarty, S., Henry, M., Kim, H., & Care, E. (2018). *Breadth of Learning Opportunities: A fresh approach to evaluating education systems*. Washington D.C.: The Brookings Institution.

Anderson, K., & Bhattacharya, J. (2017). Measuring Global Citizenship Education: A Collection of Practices and Tools. Washington DC: Brookings Institution and GEFI-YAG.

APMED 2030 (2017). Regional Recommendation for Action on SDG4.7. 3rd Asia-Pacific Meeting on Education 2030 (4-7 July 2017, Bangkok, Thailand).

Battiste 2000, BI 2017,

Benavot, A., McKenzie, M., together with Chabbott, C., Smart, A., Sinclair, M., Bernard, J., Williams, J. H., & Chopin, N. (2019). The Transitions Project: Education for sustainable development and global citizenship, From pre-primary to secondary education. Revised Technical Report. August.

Binkley, M., Erstad, O., Herman, J., Raizen, S., & Ripley, M. (2012). Defining 21st century skills. In P. Griffin, B. McGaw and E. Care (Eds.). The Assessment and Teaching of 21st Century Skills. Dordrecht: Springer.

Care, E. (2018). Twenty-first century skills: From theory to action. In E. Care, P. Griffin & M. Wilson (Eds.). *Assessment and Teaching of 21st Century Skills: Research and Applications*. Cham: Springer.

Care, E., & Anderson, K. (2016). How education systems approach breadth of skills. *Skills for a Changing World*. Washington D.C.: The Brookings Institution.

Council of Europe (2016). Competences For Democratic Culture. https://rm.coe.int/CoERMPublicCommonSearchServices/DisplayDCTMContent?documentId=09000016806ccc07

Delors, J., Al Mufti, I., Amagai, I, A., Carneiro, R., Chung, F., Geremek, B., . . . Nanzhao, Z. (1996). *Learning: The Treasure Within*. Paris: UNESCO.

GAML (2017). Measurement strategy for SDG Target 4.7: Proposal by GAML Task Force 4.7. November GAML4/17.

GPE (2020). 21st-Century Skills: What potential role for the Global Partnership for Education? A Landscape Review. Washington DC: Global Partnership in Education. https://www.globalpartnership.org/content/21st-century-skills-what-potential-role-global-partnership-education

Hoffman, T., & Siege, H. (2018). What is education for sustainable development? ESD Expert Net, http://www.esd-expert.net/files/ESD-Expert/pdf/Was_wir_tun/Lehr-%20und%20Lernmaterialien/What_is_Education_for_Sustainable_Development.pdf

IBE-UNESCO (2016). Global Monitoring of Target 4.7: Themes in National Curriculum Frameworks. Paper commissioned for the 2016 Global Education Monitoring Report. International Bureau of Education.

Pellegrino, J. W., & Hilton, M. L. (Eds.). (2012). Education for life and work: Developing transferable knowledge and skills in the 21st century. Washington, D.C.: The National Academies Press.

Rychen, D. S., & Salganik, L. H. (Eds.) (2003). *Key competencies for a successful life and a well-functioning society*. Cambridge, MA: Hogrefe and Huber Publishers.

Sandoval-Hernández, Isac and Miranda (2019)

UNESCO-APCEIU (2017). Global Citizenship Education: A Guide for Policymakers. https://www.bridge47.org/sites/default/files/2018-12/global_citizenship_education_guide_for_policy_makers.pdf

UNESCO. (2015). Global Citizenship Education: Topics and learning objectives. Paris: UNESCO. Retrieved from: http://unesdoc.unesco.org/images/0023/002329/232993e.pdf.

UNESCO (2015). *Asia-Pacific Education Research Institutes Network (ERI-Net) Phase 1 Regional Synthesis Report*. Bangkok: UNESCO.

UNESCO (2016a). 2014 Asia-Pacific Education Research Institutes Network (ERI-Net) *Regional Study on Transversal Competencies in Education Policy & Practice (Phase II): School and Teaching Practices for Twenty-First Century Challenges: Lessons from the Asia-Pacific Region*. Bangkok: UNESCO.

UNESCO (2016b). *Assessment of Transversal Competencies: Policy and Practice in the Asia-Pacific Region.* [Person as author: Esther Care & Rebecca Luo] Bangkok and Paris: UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000246590.

UNESCO (2019). Educational content up close: Examing the learning dimension of Education for Sustainable Development and Global Citizenship Education. https://unesdoc.unesco.org/ark:/48223/pf0000372327.