

*Improving Learning*

# Analysis of 21st Century Skills Integration as applied in the Philippines K to 12 program



## Final Report

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Commissioned by UNICEF and the Department of Education Philippines

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Analysis of 21st Century Skills Integration as applied in the Philippines K to 12 program. Final report  
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## GLOSSARY OF TERMS

Research Team	Researchers from ACER, ACTRC, and The Brookings Institution
Core Technical Team	16 Philippines Department of Education representatives from different bureaus (Bureau of Education Assessment (BEA), Bureau of Learning Delivery (BLD), Bureau of Curriculum Development (BCD), Bureau of Learning Resources (BLR), and Planning Service) with specific project facilitation duties. Tasked with scaling up the approach on completion of the project
Field Technical Team	Participants who were actively involved in the project throughout each stage. This collectively includes the 16 CTT members and 12 teachers and division/regional supervisors from each region (51 people total)
Teachers	78 teachers in the regions who were observed in their classrooms and interviewed afterwards

## Background

The need to focus on supporting students to develop a broad set of competencies has been acknowledged globally and refers to the knowledge, skills, values and attitudes that are integral to life in the 21st century (Care & Luo, 2016). The Philippines has placed an educational emphasis on the “holistically developed Filipino” that encompasses such competencies.

An analysis of 21st Century Skills integration in the Philippines was designed to support the Philippines identify a strategy for assessment, teaching, and learning of 21st century skills (21CS). This project identified and built on a number of recent studies and country initiatives that have highlighted the need for different approaches to the integration of 21CS.

This project had three overarching aims:

1. To identify best practices on the use of classroom-level teaching strategies of 21CS to support learning
2. To build in-country capacity to understand, identify, and observe the skills at classroom level
3. To develop a Strategic Road Map describing how to build capacity, and how the Department of Education (DepEd) and key stakeholders can effectively engage with 21CS initiatives.

This project particularly focused on the skills of problem solving, critical thinking, and collaboration in English and Science subjects across Grades 4, 6, 8 and 10 but it is based upon a model designed for scaling horizontally and vertically.

## Summary of the Research Approach

### Model

The research approach was based upon ACER’s Alignment Model for 21CS Integration (see Figure 1). The model presents three prerequisites and 10 key steps in integrating 21<sup>st</sup> century skills into an education system. An aligned approach to skills integration requires considerations of assessment, curriculum, and pedagogy. In an aligned system, educators with expertise in curriculum development, assessment design, and pedagogical strategies formulate the support structures and substance required to form a coherent approach. Many factors impact on such an outcome, including actual infrastructure, governance mechanisms, and funding, as well as cultural and philosophical perspectives held in a country.

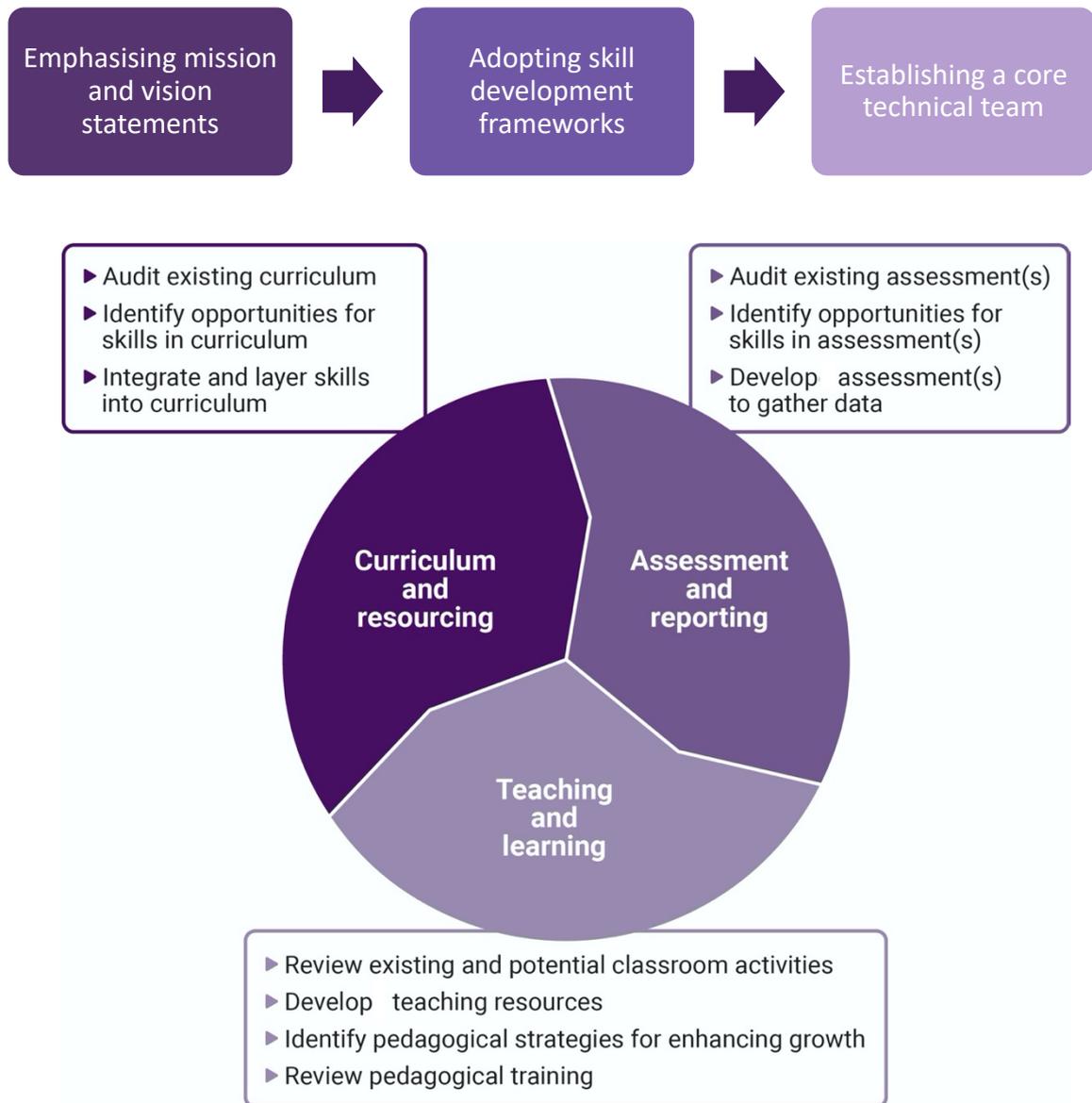


Figure 1: ACER's Alignment Model for 21CS integration

## Purpose

The model is designed to be used in three stages:

Stage 1: Evaluation of existing practices

Stage 2: Prioritisation of steps

Stage 3: Implementation of steps

The ten steps contained within the model need not be implemented in a set order, and steps across components can occur simultaneously.

This report is structured to reflect these stages and steps respective to the project objectives.

## Prerequisites

There are three prerequisites needed before implementation of the model: 1) Emphasising mission and vision statements; 2) Adopting skill development frameworks; 3) Establishing a core technical team.

### *Prerequisite 1: Emphasising mission and vision statements*

A vision and mission statement in reference to a 21CS skills agenda is the first step in a strategic plan. This firmly places 21CS as a priority, identifies which skills are of most importance nationally, and should be clearly communicated and widely disseminated to stakeholders.

The major reform implemented by the Republic of the Philippines' Department of Education (DepEd) in 2013 included structural reforms, curriculum revision, formulation of an assessment framework, and focus on 21CS. However, the main visibility of "K to 12" has been the curricular changes (mother tongue-based multi-lingual education delivery in the elementary years, the 'spiral' science approach in the junior secondary), and extension of the basic education system to Years 11 and 12. Although 21CS are explicit in the vision statement of DepEd (<http://www.deped.gov.ph/about-deped/vision-mission-core-values-and-mandate/>), implementation of this set of new learning goals is not yet fully developed. "Nurturing the holistically developed Filipino (for college and livelihood readiness, 21st century skills)" is a key conceptual feature of the system.

The Philippines has made explicit their agenda for integration of 21CS into the education system. The recent DepEd Order No 21s (2019) specifies that the Enhanced Basic Education Program must equip students with information media and technology skills, learning and innovation skills, communication skills, and life and career skills, while simultaneously requiring that the curriculum must use "pedagogical approaches that are constructivist, inquiry-based, reflective, collaborative, differentiated, and integrative" (pp. 4-5). Further, DepEd Order No. 42, Series of 2017 National Adoption and Implementation of the Philippine Professional Standards for Teachers ([https://www.deped.gov.ph/wp-content/uploads/2017/08/DO\\_s2017\\_042-1.pdf](https://www.deped.gov.ph/wp-content/uploads/2017/08/DO_s2017_042-1.pdf)) focuses on Content Knowledge and Pedagogy, and specifically mentions strategies for developing critical and creative thinking, as well as other higher-order thinking skills.

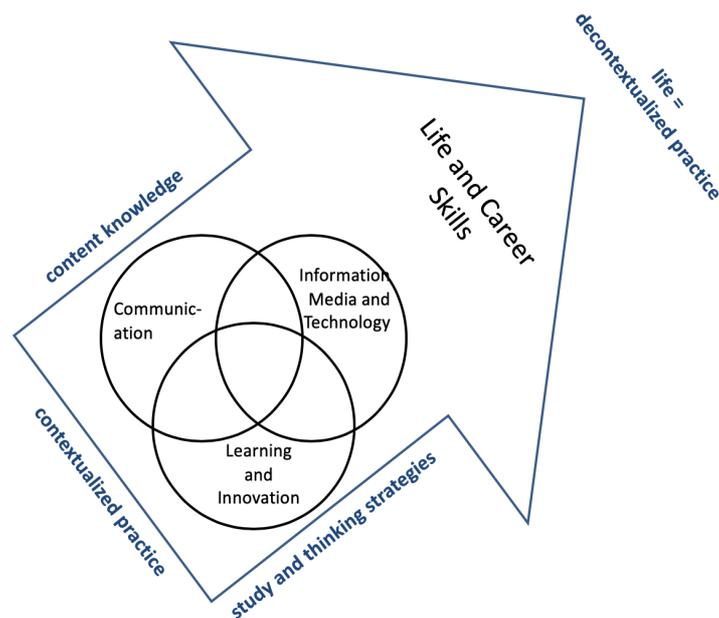


Figure 2. Holistic Filipino Framework

The Philippines drew on the framework synthesised by Partnerships 21. Figure 2 illustrates the converging power of the sets of skills contained within the categories of Information, Media and Technical Skills; Learning and Innovation Skills, and Communication Skills. These three sets of learnable and teachable skills combine to equip the individual not only with the specific skills but with socialised personal values, ethics, and attitudes, for life after basic education, and learning within the workforce – Life and Career.

One finding from this project is that teachers are not generally familiar with the framework and the mission statements. Recommendations have been made to suggest further unpacking and elaboration of the framework before strategic dissemination more broadly to all relevant stakeholders. The recommendation was that materials should be released via new visually appealing graphics with clearly written text.

### *Prerequisite 2: Adopting skill development frameworks*

While frameworks and umbrella terms for skills are common place, these often lack detail in respect to what the skills actually look like from evidence-based research. This lack of detailed description about the skills leaves teachers uncertain of what they look like, how they grow, and how they should be implemented in the classroom. With different perspectives on terminology and little concrete evidence, educators are understandably uncertain about which perspective to adopt, or how to move forward in their practice (Scoular & Care, 2017). Teachers are expected to teach and assess these skills without any formal training to do so, and without any evidence presented as to how they are demonstrated in the classroom.

It is evident from this project that teachers in the Philippines also need support in understanding what these skills look like in a detailed way. The skills identified as of importance in the Philippines are the seven outlined in Figure 3. The skills selected for this project (critical thinking, problem solving, and collaboration) were selected collectively by the Research Team and DepEd as these were identified as most in demand, and believed to be facilitated already in the classroom. These skills also overlap with the skills embedded in the Philippines National Achievement Tests which are critical thinking, problem solving, and information literacy.

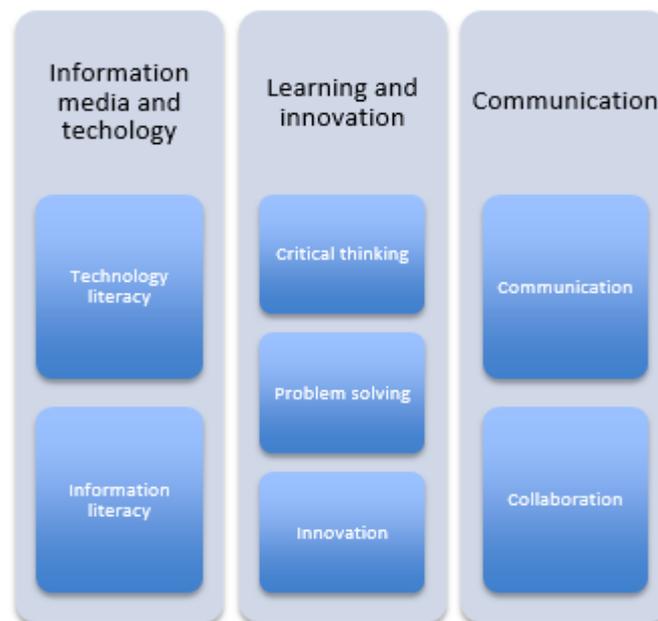


Figure 3. Skills identified as of importance in the Philippines

ACER has evidence-based skill development frameworks providing detailed definitions of several 21CS (e.g. Scoular et al. 2020). The approach taken in the frameworks is to break down the skills to ensure better comprehension of their nature and structure. Each skill is structured into strands and sub-strands with associated demonstrable student behaviours. In this conceptualisation, teachers are able to make links between the student behaviours they observe in their classroom and how these are associated with a particular skill. Assessment items can be written specifically to the sub-strands. Similarly, the sub-strands can be used to audit the curriculum and identify teaching strategies.

The approach taken in this project was to take the same approach as taken in the ACER skill development frameworks – to break down the skills to ensure better comprehension of their nature and structure. Each skill was structured into strands and sub-strands with associated demonstrable student behaviours. In this conceptualisation, teachers are able to make links between the student behaviours they observe in their classroom and how these fit under a particular skill. Previously, the Bureau of Educational Assessment - in the Philippines - has written assessment items specifically to the sub-strands. Similarly, the sub-strands were used to audit the curriculum in this project, and identify teaching actions for the observation tool. In short, the breakdown is necessary in order to provide a framework for reference in teaching and assessing the skills.

As an outcome of this project, a recommendation was made to develop frameworks for all seven skills deemed of importance in the Philippines and conduct training with teachers to ensure that they understand the descriptions and how they are applicable in the classroom.

### *Prerequisite 3: Establishing a core technical team*

In an aligned system, educators with expertise in curriculum development, assessment design, and pedagogical strategies are brought together in a Core Technical Team to formulate the support structures and substance required to form a coherent approach. The successful alignment of 21CS integration is contingent upon the collaboration and communication of the Core Technical Team.

The Core Technical Team (CTT) was central to the capacity building agenda of this project. Given the timeline and budget it was not feasible to cover all subject areas, grades, and skills. Therefore, a subset was selected for each. The CTT attended all activities in the project and had responsibilities additional to those of the other Field Technical Team (FTT) members. The CTT was responsible for facilitating group discussions during workshops, running debriefing sessions during field observations, conducting teacher interviews, and completing written and face to face focus groups.

The Research Team also conducted side meetings with the CTT during each of the workshops to enable a deeper understanding of the process. Due to these extended activities, the expectation of the CTT beyond this project is to scale up the work to other subjects, grades, and skills as deemed necessary in the Strategic Road Map. The Strategic Road Map will be driven by this team, and it is necessary that all activities under the Strategic Road Map are discussed and reflected upon at regular meetings.

## Stage 1: Evaluation of existing practices

This stage involved a scoping review of current progress and initiatives in several countries, followed by an inward review of Philippines activity. The scoping review led to two dissemination outcomes: 1) A descriptive and interpretive report describing country approaches and contextualising the Philippines approach; 2) Two Knowledge Sharing workshops delivered to key stakeholders in the Philippines.

### Review of global approaches

The scoping review focused on country-based experiences of 21<sup>st</sup> century skills in formal basic education (K-12) and practices implemented across a variety of countries taking different paths. The review included six countries (Australia, Finland, Kenya, Chile, Singapore, and the Philippines) to highlight issues relevant to implementation of a skills integration agenda – these included how they are integrated in the curriculum, teacher support mechanisms, approaches to assessment, and education governance and regulation factors. The countries were selected for a variety of reasons, not all of which apply to all selected. These reasons include:

- Explicit statements of 21st century skills learning aspirations
- Development of resources to support the aspirations
- Identification as economically developing within their region
- Educational performance in the top 20 countries in the world as indicated by international large-scale assessments.

Table 1 summarises some characteristics of interest. Those countries described as “regulated” have systems in which there are clear national education guidelines and curricula, and where schools are reasonably strongly regulated by the national or state authorities. Those that are described as “devolved” operate in contexts where regulatory control is devolved to local authorities or schools themselves. Despite some countries being highly regulated, some of these provide very high degrees of autonomy to schools (and teachers) in how they offer curricula and in their pedagogical approaches. This suggests that models of education governance clearly have implications for implementation of reforms such as the integration of 21CS in education delivery.

Table 1. Thematic characteristics across countries

Country	Curricular approach	National Assessment	Teacher support	Governance/ Autonomy
<b>Australia</b>	Integrated	Not aligned	Online resources	Regulated/ Autonomous
<b>Chile</b>	Integrated	Not aligned	-	Devolved
<b>Finland</b>	Integrated	Not aligned	-	Devolved
<b>Kenya</b>	Early years integrated Grade 4+ Life Skills Community service	Not aligned	Limited professional development	Regulated
<b>Philippines</b>	Integrated	Aligned for some cognitive skills only	-	Regulated
<b>Singapore</b>	Integrated	Aligned for some cognitive skills only	Professional development time allocation	Regulated/ Autonomous

The review showed that the predominant approach by countries has been at curricular level, and the main conceptual approach has been to integrate skills into curriculum, rather than as stand-alone areas of learning. The integration is within subjects, but in some cases also is planned within cross-disciplinary subjects. In the case of Kenya, integrated teaching and learning of the skills is designed only into the first half of primary school, while afterward a separate subject is implemented. In the case of Singapore, some skills are integrated in key learning areas, while also integrated into new programmes and co-curricular activities. Similarly, in Finland, there are learning opportunities outside of traditional key learning areas.

Currently few countries have integrated skills into their national assessments. There are reports of several countries, including Australia, currently working on development of online assessments of skills. Singapore has included understanding and application type items in their assessments for several years, while the Philippines has also recently integrated such items into their national assessments.

A notable area for future focus is teacher support. Singapore has the most explicit statements and descriptions of approaches to teacher development, while Australia and Finland take a more hands-off approach designed to ensure autonomy for schools and teachers to implement skills in their teaching activities. Regulation of teacher education in Chile was introduced only in 2016 and is still in early stages of implementation. Kenya's pilot of skills in the early years has included some one- and two-day training programs for teachers, but early feedback from the pilot indicates that more intensive work is required.

These examples provided the clear evidence that most countries have engaged with this education shift through curriculum reform rather than attending to associated education delivery mechanisms of assessment or teaching. It was noted that the Philippines is a notable example of a country which has addressed the issue of assessment of 21CS.

### *Impact*

The findings of the review were presented and discussed at a three-day seminar which brought together external and internal stakeholders. The workshop provided an opportunity for stakeholders to become aware of how the introduction of new learning goals can impact beyond mere curricular reform, and how it is linked with matters of educational philosophy. Knowledge of these focal areas and practices provided Philippines' stakeholders with a status quo of where the sector is in establishment of these new learning goals in systems.

The information about the experiences of other countries provided a validation to the Philippines stakeholders of the direction that DepEd has taken through the adoption of competencies aligned with the notion of the 'holistically developed Filipino'. However, the discussion that emanated from the basic questions listed above led participants to look at education provision more holistically. Although the generic issues that face the Philippines' education system are of course critical, there are issues specific to delivery on 21CS learning goals within the context of the overall system.

- The question of whether particular pedagogies needed to be applied to the teaching of 21st century learning competencies was raised. This issue of course raised questions about the diversity and utility of pedagogical strategies currently in use in the Philippines
- The use of formative assessment as a dynamic pedagogical technique was discussed, and its relevance to learning in all subject areas as well as 21CS was raised
- The applicability of particular 21CS such as critical thinking and communication to multiple subject areas was questioned - for example, would problem solving be seen more frequently in mathematics study, or would communication be seen more frequently in language subjects?

## Awareness

Participants queried the extent to which:

- Teachers are aware of the nature of the skills that they are meant to be teaching
- The relevance of the skills for job-readiness is understood
- assessments of 21CS, particularly in the National Achievement Test, might be counter-Productive, based on the presumption that students would not score high
- There is understanding that 21CS are about growing proficiencies rather than mastery.

## Reflections

The insights gained by participants led to reflections that set the stage for much of the analytical work for the rest of the project. Reflections on actions required included those listed below.

- Revisit the existing curriculum and check that there is alignment with classroom practice – "do teachers in the field know what we mean by 21CS?"
- Improve teacher education at the universities and the colleges - "We have good graduates, but as they become experienced teachers, they become less committed."
- Need to create a policy that is informed by this project's data, specifically on where to put the resources to improve the learning outcomes
- More funding should be devoted to teacher professional development
- Need to have a standard system for assessing the learners across each grade level in these competencies
- Focus less on top-rankings; focus on the skills needed by the learners, not the rank of the schools, the teachers or the school leaders
- Identify the appropriate support materials and resources to implement the curriculum.

## Summary

The review established that 21CS were firmly on many countries' policy agenda. Each country is at a different stage in its education development, and implementation of its education system varies according to national values as well as socio-economic status. Planning and implementation around 21CS are in early days, there was lack of detailed information reaching school and teacher level, and the nature of the skills was not well understood. However, clear efforts have been made towards integration of 21CS at system level in a number of countries.

Early reflections on actions required from the Philippines were later reflected in the Strategic Road Map. Those early reflections were very much confirmed by the evidence collected through the subsequent stages of the project.

## Stage 2: Prioritisation of steps

The outcomes and reflections from Stage 1 guided the prioritisation of steps for the remainder of the project. The reflections and comments of participants in the first stage of the project indicated the need to ensure focus on 21CS, notwithstanding the overall systemic needs understood to be confronting DepEd. The needs within the education system are great, and it is difficult to differentiate between competing imperatives. Needs related to teacher development and practice, and to resourcing, are indeed major logistic challenges to the integration of a 21CS teaching and learning model, but in order for these needs to be well addressed, distinctions between general needs and those specific to the 21CS learning agenda, need to be made.

### Curriculum

The main priority for the curriculum component of the Alignment Model was a skills audit of the curriculum with the end goal to complete a 'heat map' highlighting the existing presence of 21CS in the present curriculum documentation. DepEd were supported in tailoring curriculum audit materials to specific contexts (learning areas and skills) so that auditing activities can continue beyond the life of the project. The 'heat map' allows identification of where current 21CS are present in the curriculum, and to identify where additional skill integration might be most useful.

The steps from the alignment model that were prioritised for curriculum were:

- Step A: Audit existing curriculum
- Step B: Identify opportunities for skills in curriculum

Step C - Integrate and layer skills into curriculum - was not a priority as part of this project but recommendations were made and are presented in a subsequent section of this report.

### Pedagogy

The main priority for the pedagogical component of the Alignment Model was to review existing and potential classroom activities. A secondary outcome of this would be to guide future discussions on the skills, resources, and training educators need to teach and assess the skills and to inform the development of teacher training.

The steps from the alignment model that were prioritised for pedagogy were:

- Step D: Review existing and potential classroom activities

The other steps of the pedagogical component of the Alignment Model (Step E: Develop teaching resources; Step F: Identify pedagogical strategies; Step G: Review pedagogical training) were not a priority as part of this project but recommendations were made and are presented in a subsequent section of this report.

### Assessment

Given the Philippines have already conducted extensive work in developing assessment items measuring 21CS and embedding these into national assessments, the focus in this project was guided towards evaluating existing practices in the other two areas of alignment: curriculum and pedagogy. However, given the importance of following an alignment model, recommendations and considerations were still given to the components of assessment (Steps H-J) and are presented in a subsequent section of this report.

## Stage 3: Implementation of steps

The implementation of steps was completed over a period of 10 months from February-November 2019. The continuity of stakeholder participation was an intrinsic and essential characteristic of the project design. Without this continuity, and the commitment of participants as supported by DepEd Bureaus through the CTT, the potential of the project for long term impact and for scaling, could not be realised.

### Curriculum

DepEd Order (DO) 21 (2019), Policy Guidelines on the K to 12 Basic Education Program, makes explicit the goal of the holistically developed Filipino (p. 6). This approach is reflected in the mainstream education curricula, notwithstanding use of traditional subject labels (<http://www.deped.gov.ph/wp-content/uploads/2019/01/English-CG.pdf>). Both skills and learning areas are highlighted in DepEd's model of the Curriculum Support System (DO 21 (2019), p. 10). Of interest is how the Alternate Learning System of the Philippines has re-conceptualised studies such as Filipino or English as Communication (<http://www.deped.gov.ph/wp-content/uploads/2019/01/LS-1-Comm-Skills-English.pdf>), and more specifically across the five macro skills of listening, speaking, reading, writing, and viewing. Within these skills are cognitive components such as critical thinking, and social components such as active participation in community.

#### *Step A: Audit existing curriculum*

A process was developed for identifying the presence of skills in the curriculum. This step required a process of auditing the 'intended curriculum' – that is, what was expected to be provided to students. Taking just three skills as examples from the Philippines' Holistic Filipino Framework, the project developed, applied, and described a process to audit the curriculum for presence of those skills. The process undertaken for the skills audit is outlined in the project's Skills Audit Report<sup>1</sup>.

The skills audit conducted demonstrated that fewer skills were explicitly outlined in the curriculum than would be anticipated based on the primary policy documents of the country. Feedback from the FTT was that use of the detailed skill development frameworks helped to identify what occurrences do exist. Using the audit resources developed in this project, and utilising the CTT, the skills audit is readily scalable to additional skills, grades, and subjects. The inclusion of additional skills will require adoption or prior development of frameworks for those skills.

The images below are members of the CTT and FTT completing the audit process.

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<sup>1</sup> Available on request, contact author



### Representation of Skills

The results of the audit of the English and Science curricula at Grades 4, 6, 8 and 10 suggest a greater prominence within the Philippines national curriculum of subskills of critical thinking as opposed to those of collaboration and problem solving, in both subject areas. Given that many critical thinking subskills (particularly analysing, synthesizing and applying logic to information) are also intrinsic to learning generally, it is not surprising that critical thinking should appear so strongly in the curriculum.

Grade 10 English presents something of an outlier in both critical thinking and problem solving: the Grade 10 English audit team identified almost as many instances of critical thinking as the other three English grade-level teams combined, and identified all six of the only problem solving subskills in the English curriculum. To what extent this is the effect of a curriculum which 'grows' towards higher order thinking in the later years, or is an effect of the interpretation of the team who audited the curriculum, could be answered by a second audit process conducted by another team to achieve a moderated outcome.

The audit also suggests that the subskills of critical thinking have higher frequency in the English curriculum than in the Science curriculum. However, problem solving subskills – whilst much less prominent than critical thinking – were nonetheless found to be more present within the Science curriculum than in English. This is likely a function of the fact that English often explicitly requires students to critically analyse texts to interpret meaning, understand intended effect and identify authorial purpose, whereas Science – with its adherence to experimentation and the inquiry process – is more likely to require students to exercise skills that underpin problem solving.

With almost no instances of collaboration identified in the audit process, the lack of explicit reference to collaboration subskills was a surprise to those involved in the audit. At times, the audit participants noted that some Performance Standards described what appeared to be intended opportunities for students to engage in collaboration through groupwork. However, the specific subskills of collaboration were not explicitly described.

These findings indicate that 21CS cannot be treated as a homogeneous group of learning objects - they vary across subject and across grade differentially. Although one purpose of this curricular audit was to inform the later audit of classroom practice, the findings signal a need to consider more deeply the degree to which 21CS should be represented explicitly through the curriculum.

### *Ensuring Quality Control*

Based on the learnings from stage one of the project, participants were introduced to a process for auditing select subjects and grade levels of the curriculum for presence of the exemplar three skills<sup>2</sup>. An early teething issue detected in the process was the tendency to be over-inclusive, for example, identifying some Performance Standards and Learning Competencies as critical thinking or problem solving that were not – in-and-of-themselves – true to the nature of these competencies. Learning Competencies related to obtaining information, the capacity to understand information, or the communication of information, may be the enactment of aspects of 21CS, but do not in themselves denote a focus on development or learning of these competencies. Performance Standards and Learning Competencies were selected by participants often simply due to the fact that they contained words like ‘analyse’, ‘infer’ or ‘determine’ - words that are also associated with definitional aspects of critical thinking and problem solving. However, in the context of the curriculum, these activities are intended merely to foster clear thinking, and not to be in the service of the sort of careful evaluative intent that characterises the more complex 21CS.

These issues foreshadowed later problems with discriminating between familiar concepts such as teamwork, or working in groups, from the 21CS of collaboration, and make clear the formidable challenge of familiarising teachers with the nuanced concepts of 21CS. Identification of the issue at this stage in the project however was very constructive - first it prompted the introduction of an additional quality control mechanism in the curricular audit step of the process, and second it alerted participants to the potential for over-inclusive noting of practices - that is, falsely identifying presence ('false positives'). The quality control mechanism lay in having audit teams present examples of which they were both confident and not confident for plenary review, followed by a second audit process. In all cases this mechanism resulted in vastly reduced skills in resulting frequency tables. It is suggested that some opportunity to review the audit in future applications be included in the process.

### *Step B: Identify Opportunities for Skills in Curriculum*

One approach to identifying skills coverage across the curriculum and working out which gaps to fill is to create a heat map. Figure 4 presents the work conducted by this project for three skills across two subjects. The colouring in the table makes clear the variation in the patterns of skills across learning areas. For all cells coloured in the green shades, more than 50 per cent of the content descriptions include the skill. For all cells coloured in the red shades, less than 50 per cent of the content descriptions include the skill. Currently, there is clearly more red than green confirming that there many empty cells where subjects and skills explicitly cross. Scaling up of the skills audit could

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<sup>2</sup> These audit processes were informed by earlier work completed by the technical leads of this project together with the then NETRC team of DepEd in 2014-2015, when developing assessment frameworks for 21CS

complete the heat map and identify the patterns of coverage. Analysis of the patterns would then enable identification of where particular skills are, or are not, appropriate to include. There is no a priori perspective that all cells need to be populated, or that populations need be equal, since particular learning areas will lend themselves variously to the development of particular skills.

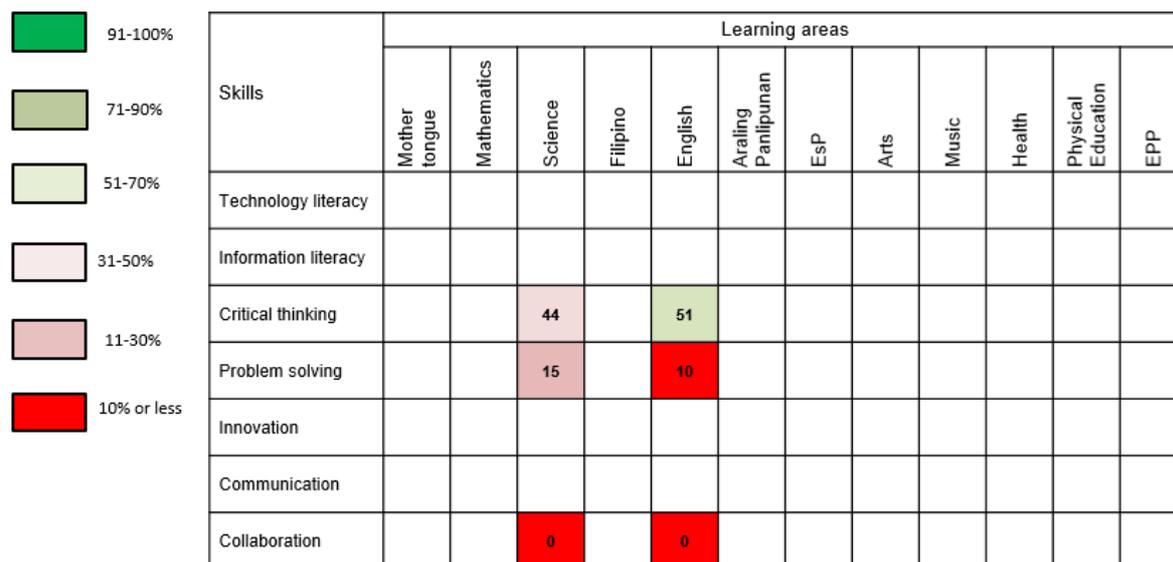


Figure 4. Percentage of content descriptions mapped to each skill

*Step C: Integrate and layer skills into the curriculum*

The Philippines has seven skills and 12 Key Learning Areas. There may also be some contextual cross-curriculum priorities in the Philippines. The skills, learning areas, and grade levels would provide three perspectives through which to examine the integration of skills through the curriculum, as represented in Figure 5.

A further question is whether all content that is needed for skills development and cross-curriculum priorities is covered by the content descriptions created within the learning areas. Future audit activities were recommended as these would usefully cover an extended range of skills, subjects and grade levels. The auditing tools developed during this process can be adapted for this purpose.

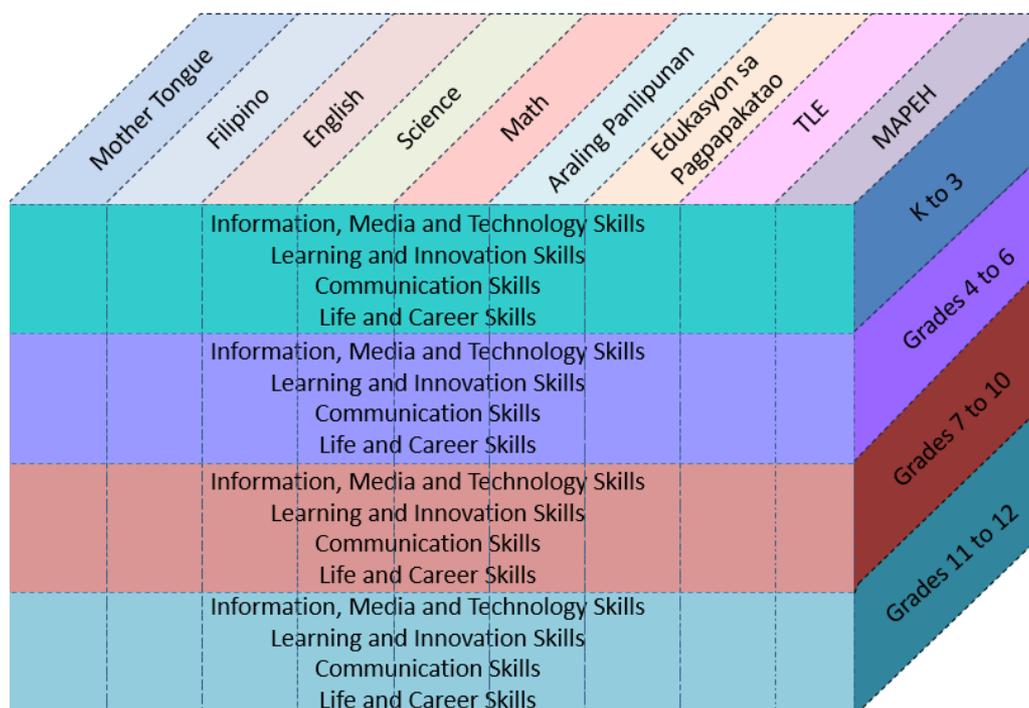


Figure 5. Curriculum design cube (Ocampo, 2014)

## Pedagogy

Not only is the goal of the holistically developed Filipino made explicit by the DepEd in terms of the curriculum and assessment, but also in terms of pedagogical approaches (DO 21 (2019), pp. 4-5). The perspective is echoed in DO 42 (2017) (Philippine Professional Standards for Teachers). Notwithstanding, there is little evidence that 21CS are currently prioritised in classroom practice in the Philippines. The nature of some of the competencies is such that pedagogical methods other than direct instruction and paper and pencil tasks are necessary to develop proficiency. Although a great deal of high standard technical work has been committed to assessment of 21CS within content domains by DepEd’s Bureau of Educational Assessment, it is not clear that this commitment has been paralleled by teacher training in appropriate pedagogical methods aligned with the competencies included in K-12. It is essential that teachers are familiarised not only with the nature of these skills, but how they can be nurtured through different pedagogical strategies.

### *Step D: Review existing and potential classroom activities*

A major output of this project was the development of a classroom observation tool to review existing and potential classroom activities in relation to problem solving, critical thinking, and collaboration. Teaching actions were identified in order to develop the classroom observation tool. These teaching actions are what we would expect teachers to enact in order to elicit problem solving, critical thinking, or collaborative behaviours from students. Figure 6 presents an example of some teaching actions for critical thinking generated by the FTT.

5 things we would expect to observe in a classroom:

- Teacher asking a learner to:
  - a) justify his/her stand on a certain issues
  - b) give his/her own judgment/evaluation on a certain action or decision
  - c) make predictions or draw conclusions based on give information
  - d) state the relevance of a given information/story ready
  - e) discriminate facts from opinion

Figure 6. Example of teaching actions generated by the FTT for critical thinking

Identification of the teaching actions was made possible by the skill development frameworks' breakdown of the three skills into their constituent parts. This made it viable for the FTT to see links to classroom strategies. This approach could be scaled up to include other skills so that observation tools can be developed for skills other than the three covered in this project. The classroom observation tool developed by this project could be used as a template for these remaining skills. Note that the tool was developed to be easy to use, and to focus on teacher actions related specifically to the skills, rather than being developed as a comprehensive observation tool that would require major human resources and extensive training to use.

A second tool, a teacher interview tool, was also developed for this project which identified teacher understanding and perspectives on integrating 21CS into their classroom.

This phase of the project involved observation tool development and training activities with the FTT on classroom observations, followed by the fieldwork of observations in schools across the three participating regions. The classroom observation and teacher interview tools are presented in Appendices A and B respectively.

### Scaffolded Approach

The observation tool was built upon the three skills with their contributing strands, and the participants' knowledge of pedagogical strategies. The skills audit of the curriculum provided the baseline against which these skills and strategies could be configured. Essential to the finalisation of the tools was checking its usability and the validity of the data that could be collected through its use. To implement these checks, a series of scaffolded steps was undertaken. The steps included a guided review of videos of classroom practice, then participants trialling the tool against additional segments of videos and comparisons of data. This was followed by practice in pilot classrooms, with subsequent comparison, by pairs and then in groups, of the data collected. This approach provided time for observers to reflect on the observation process and to familiarise themselves with the observation tool. Further, the staged approach enabled the refinement of the tool, particularly to ensure it was contextualised to the Filipino classroom.

### Observations

Observations took place over a two-week period and observers were in fixed pairs. This design was taken to strengthen the reliability of ratings and to minimise the impact of idiosyncratic perspectives on classroom practice influencing the data. It was essential, for example, that observations be confined to focus on 21CS, and not be subverted by perspectives on what comprises good teaching. For this reason, the FTT and Research Team were very clear that they were only to use the observation tools and not comply with requests that they provide any other feedback to schools.

For similar processes in the future, observations might be considered in non-traditional classrooms or interdisciplinary lessons where the skills may be more embedded or explicitly presented. In addition, extended training, opportunity to practice administering the teacher observation tool, and review discussions would benefit the quality of the overall process.



Image excerpt from practice video

### Findings

The detailed findings are described in the Analysis Report<sup>3</sup>. A brief summary here will contribute to understanding of the outcomes of the Strategic Road Map discussions and outcomes. 309 classes across Grades 4, 6, 8, and 10 for Science and English were observed. Of these, 95 were undertaken in Region IV, 102 in Region VIII, and 112 in Region XI.

Beyond noting frequencies of occurrences of teaching actions that could be interpreted as facilitating 21CS, the CTT noted that where it occurred, most teaching of the skills was implicit or opportunistic, not strategically planned for in lessons. In the main, teachers' efforts to emphasize teaching of the three skills were generally not apparent (either implicitly or explicitly). Observers noted that in most classes, critical thinking and problem solving were not evident in the design of the activities performed by the students. The focus was on acquisition of content-knowledge about the subject matter. In terms of collaborative activities, many observations noted the use of group or team work, but the degree to which this structural strategy was implemented to nurture and develop collaborative subskills was minimal. Where collaborative activities were noted, these tended to occur more in Science than in English.

Overall, problem solving was slightly more apparent than critical thinking, but with collaboration noted more frequently than both. Note, however, that this took the form of the structural strategy of groupwork rather than collaboration as a 21CS.

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<sup>3</sup> Available on request, contact author



Image taken of one team during the field observations

### *Comparisons Across Skills Audit, Classroom Observations and Teacher Knowledge*

There were few skills identified explicitly in the curriculum, as found by the skills audit. This mirrors what was observed in the classroom. It was apparent that teachers observed do not deliberately teach students collaboration, critical thinking, or problem solving skills. These skills are not included in lesson plans or explicit as learning outcomes.

Interestingly, critical thinking was the most identified in the skills audit, but it was the least identified in the classroom observations. This could be due to the overlap in descriptions of critical thinking and problem solving, leading to some of the teaching actions being associated with the alternative skill.

The teachers observed directly interpret “collaboration” as group work. They have the notion that group activities (regardless of how such activities are processed and facilitated) manifest collaboration skills as students begin to work on the task and talk with one another. This means that despite not seeing any instances of collaboration in the curriculum, over 66% of lessons observed noted it. It was suggested by the FTT in hindsight that much of what was observed was actually group work, rather than collaborative activities. Working in groups, rather than collaboration, is actually a pedagogical approach as practiced in Philippines classrooms, but not a specific learning outcome.

### *Teacher Perspectives*

The teachers observed were interviewed, using the teacher interview tool, by members of the FTT in order to support the teachers after the observations, to provide an opportunity for teachers to explain their understandings and perspectives of 21CS, and to interpret some of the practices seen in the classes.

Most teachers were unfamiliar with the Holistic Filipino Framework and the term “Holistically Developed Filipino”, and were not aware of the seven 21CS identified by DepEd. Some teachers reported that they attended Learning Action Cell Sessions on the topic of 21CS. However, they stated that the sessions did not contain detailed information about skills or strategies on how to integrate them. Although the majority displayed little familiarity with the skills, upon being apprised of them, they reported that they try to integrate the skills spontaneously in their lessons every day. A common theme was the need for professional development, and concerns about class size and facilities impacting on their capacity to teach the skills.

It was clear from the classroom observations, responses from the teacher interviews, and feedback from the CTT, that there is a lack of in depth understanding of the skills, how they develop, and associated teacher strategies that can support growth.

### *Step E: Develop teaching resources*

It was evident during this project that teachers require more support to integrate 21CS in their classroom. Although physical classroom space comprises one aspect of support, particularly for skills such as collaboration, other levels of support are equally needed. Development of digital and information literacy, for example, requires material and electronic support mechanisms. A few teachers commented that fewer students in classes was necessary to integrate the skills successfully. The primary resource required however, is guidance for teachers.

This project made recommendations to develop teacher resources based on the identified actions, reflecting a progressive nature of teacher development from those actions that are easiest to implement through to those more sophisticated.

### *Step F: Identify pedagogical strategies for enhancing growth*

ACER's perspective of skills is centred on and emphasises the notion of growth. Skills can be defined from a growth aspect, can be improved through teaching and intervention, and can be measured. Levels of skill development can be used to describe how growth in a particular area can be demonstrated, and how learners move from early, to more advanced application and understandings. These levels of skill development are focused on assessing and monitoring learner growth over time, and are underpinned by an understanding that learners of the same age and in the same year of school can be at very different points in their learning and development. Therefore, they are not linked to specific years of schooling. When assessments provide information about where learners are in their understanding at the time of assessment, they also provide a basis for monitoring individual progress over time. Assessments of progress are an alternative to judging success only in terms of year-level standards.

It was recommended to DepEd that they consider the notion of growth in relation to the skills and adopt or develop tools to monitor growth. The ACER skills development levels for critical thinking are provided below in Table 2 for one strand to provide an example of a tool that can be used to assess and monitor growth in critical thinking (See Heard et al., 2020). Levels of skill development are intended to support understanding of the skills and how they develop. They can also support teachers to identify gaps in a learning area, where some learners may require further assistance. To ensure an evidence-based approach, these levels have been, and continue to be validated and corroborated through comparison of assessment data.

### *Step G: Review pedagogical training*

It was evident during this project that the biggest demand from teachers is for professional development. Teachers were asked what additional resources they would need to further integrate the skills into their classroom. The general answer was more professional development focusing on this topic. They requested training that provides a deeper understanding of the skills and how to apply that knowledge to their teaching. Teachers also requested that training involve specific teaching strategies and how to integrate these into lessons. Some teachers specified that teacher guides would also help with strategies and integration. A few teachers suggested that provision of evidence-based research and readings would be beneficial. One teacher commented that a mentoring program between teachers would help with comparing between subjects and developing a common definitional language aligned with the skills.

Table 2. Example of proficiency levels for the Knowledge Construction strand of Critical Thinking taken from Heard et al. (2020).

Knowledge Construction Strand			
	Aspect 1.1. Identifies gaps in knowledge	Aspect 1.2. Discriminates information	Aspect 1.3. Identifies patterns and makes connections
High	Learners identify the knowledge requirements necessary to solve a problem, understand an issue or answer a question, and accurately evaluate the limits of their existing knowledge in relation to it. They can formulate and articulate their information needs as precise statements or questions for investigation. Learners can consider possible misconceptions in their understanding and can recognise possible benefits of considering information from a diverse range of sources and perspectives.	Learners selectively apply the most pertinent criteria to evaluate sources of information depending on the information needed. They accurately compare the relative strength of different information as evidence for a given claim, and can identify multiple valid reasons to accept or reject information. Learners can distinguish factual information from opinions and assertions, whilst recognising the potential value of each. They can accurately describe how elements of texts and information can have a persuasive effect.	Learners identify logical patterns and subtle connections within and across data and information from a range of sources. They find rational and useful ways of conceptually organising information from different sources. Learners associate and integrate new and potentially conflicting information with their previous understanding. They form reasonable generalisations or hypotheses based on patterns in information. Learners recognise and consider the significance of data or information that does not conform to identified patterns or conceptual categories.
Medium	Learners are able to identify some of the limits of their existing knowledge relating to a problem, issue or question, with topics both familiar and unfamiliar to them. Within a constrained or familiar context, they can identify and distinguish pertinent from less-pertinent questions or information needs for a given inquiry purpose. In less constrained or familiar problems or contexts, they can articulate deficiencies in knowledge only in broad terms when undertaking investigation. Learners can recognise the benefit of investigating information from within the most salient fields, or range of perspectives, related to the problem, issue or question.	In familiar, constrained contexts, learners can distinguish more reliable from less reliable information using objective criteria that are about evaluating quality. In less familiar contexts, learners rely on established reliable sources. They are aware of and apply – perhaps indiscriminately or rigidly – general criteria for judging the reliability or usefulness of sources. They can distinguish statements of fact from statements of opinion, and favour facts. Learners have an awareness that information may be biased, hyperbolic or misrepresent opinion as fact.	Learners identify plausible patterns and connections in data and information that are not obvious, and can do this using information from different sources. They can identify when new information confirms or accords with prior knowledge. Learners can form simplistic generalisations based on recognised patterns in information. They can recognise data or information that does not conform to identified patterns or conceptual categories.
Low	Learners are able to identify their existing knowledge relating to a problem, issue or question. With topics unfamiliar to them they acknowledge their existing understanding is insufficient. They can ask questions to gain information that will be useful within a simple, constrained problem.	Learners discriminate between information sources using subjective criteria such as familiarity, accessibility or alignment with their own views. In simple, familiar contexts, they can identify information inconsistent with other information and question its veracity and reliability. Learners can distinguish obvious or common knowledge facts from obvious statements of opinion.	Learners make simple connections or recognise obvious patterns within data and information from a single source. They can derive inferences in the context of scaffolded tasks or content with obvious and explicit connections. Learners can organise explicitly stated information or data into simple categories.

## Assessment

The Philippines has been explicit about the need to assess 21CS. DO 8 (2015) states that the purposes of classroom assessment are:

- a. "To keep track of learners' progress in relation to learning standards and in the development of 21st century skills;
- b. To promote self-reflection and personal accountability among students about their own learning;
- c. To provide bases for the profiling of student performance on the learning competencies and standards of the curriculum."

Similarly, the first statement of purpose for the national assessments (DepEd, 2016) is: "Assessment is the process of measuring learners' progress in the attainment of learning standards and 21st century skills" (DO 55, 2016). For the country's National Achievement Test, 21CS are again identified for administration at the end of Grade 6, 10, and 12: "This assessment covers core 21st century skills and the core...learning areas of Languages, Humanities, Communication, Mathematics, Science, Social Science, and Philosophy" (p. 16).

The Bureau of Educational Assessment developed assessment tasks in 2014. Following this, the unit finalised a set of items in which the same indicators of skills were elicited across three subjects, in order to build a robust multi-disciplinary assessment approach. These items were piloted and trialled and are now included in the National Achievement Tests.

Traditionally in the Philippines, reporting of student learning has focused on achievement levels through assignment of letter grades and scores. However, one of the goals of the revised education system is to produce holistically developed Filipinos who have 21CS, who are prepared for further education, employment or entrepreneurship (DepEd, 2017). To achieve this, the education system needs to shift from teaching and assessment focussed only on content knowledge and reporting grades, to focus on developing students' skills and competencies. Appropriate assessment strategies and activities need to be implemented to support the teaching and development of skills and competencies in students. DepEd explicitly identifies a Vygotskian (1978) approach to the use of assessment data, providing a strong theoretical base for the mandated use of classroom assessment. This approach prioritises assessments that are targeted for students' current learning capacities. The degree to which letter grades and scores are aligned with this base is questionable.

### *STEP H: Audit existing assessments*

The National Achievement Tests currently include assessment items measuring problem solving, information literacy, and critical thinking in Science, Maths, English, and Social Studies at Grade 6 and 8. Further coverage could be included to other grades and other skills. Further, existing assessment data could give greater insight into the functionality of the skills, particularly in relation to how they develop over time (differ from grade to grade), and how generalizable they are (differ from subject to subject).

### *STEP I: Identify opportunities for skills in assessments*

The National Achievement Test is a large-scale national assessment involving multiple choice questions. While the Philippines is hugely advantaged at having this in place, there are other methods of assessment that support understanding of the skills for researchers, teachers and students alike. For example, the addition of formative and classroom-based assessments would allow for social skills such as communication and collaboration to be observed.

There are different purposes for assessment. Formative assessment produce evidence to inform how to improve learning and teaching. Summative assessments are used to certify or recognise

candidate achievement or potential. Evaluative assessments are designed to provide information to evaluate institutions and curriculum/standards such that the primary purpose is accountability. Diagnostic assessments produce information about the student's learning. Each of these styles has a specific purpose and provide different information for different stakeholders. All or multiples of these can provide a comprehensive picture.

As a step to complement the work of DepEd at the national assessment level, approaches to classroom assessment of 21<sup>st</sup> century skills need to be adopted in Philippines classrooms. Such adoption is a necessary step in aligning the teaching of the skills with classroom practice, and with national, and international assessment.

### *STEP J: Develop assessments to gather data*

A clear approach needs to be adopted for developing the assessment tasks. Figure 7 presents one such approach. The first step in task development is deciding the focus of the measure, in this case which skill is to be assessed. Assessments of the skills should be embedded in a domain context (for example, a learning area) for both relevance and sustainability but the primary focus of the measure should be the skill itself. The learning area in which the skill will be situated will need to be identified. The next step is identifying the criteria that will be used to identify whether a student is demonstrating the skill or not, and importantly, what different levels of that skill look like. Next, the outcome of the assessment needs to be decided. What is it you want students to do? Typically, in more innovative assessments, the outcome will be to produce something, solve a problem, meet a goal, or complete a task. Finally, a scoring mechanism needs to be developed such as rubrics or optimal response examples.

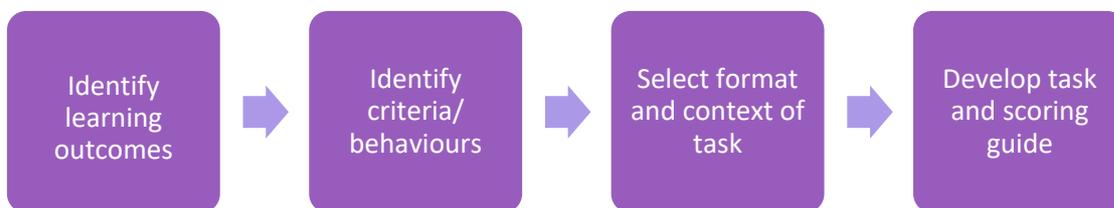


Figure 7. An approach to developing classroom assessment items for 21CS

There are two main qualitative changes in assessment approach to be considered in this alignment. First, the replacement of grades and scores with descriptive information is necessary to re-focus the attention of teachers and students on learning, as opposed to mastery. Second, the nature of the assessments themselves needs to be varied in order to capture the nature and application of the skills. Such assessments tend to be more dynamic, interactive, and open-ended in style.

In addition, the use of such assessments for immediate application in the classroom, the assessments could produce more information about the nature and growth of the skills, in particular in the context of their alignment with targeted learning areas.

## Project outcomes

### Findings

Outcomes of the skills audit suggests:

- Tendency within the Philippines national curriculum towards the teaching of the sub-skills of critical thinking as opposed to those of collaboration and problem solving, in both subject areas
- Many critical thinking sub-skills identified (particularly analysing, synthesizing and applying logic to information) are intrinsic to learning, perhaps not surprising
- There are no instances of collaboration identified in any grades in Science or English
- Grade 10 English is an outlier in both critical thinking and problem solving: the Grade 10 English audit team identified almost as many instances of critical thinking as the other three English grade-level teams combined, and identified all six of the only problem solving sub-skills in the English curriculum.
- The sub-skills of critical thinking are more readily identifiable in the English curriculum than in the Science curriculum. However, problem solving sub-skills – whilst much less prominent than critical thinking – were nonetheless found to be more present within the Science curriculum than in English.
- Audit participants noted that some Performance Standards described what appeared to be intended opportunities for students to engage in collaboration. However, it was felt that the specific sub-skills of collaboration were not explicitly described.

CTT observations from the classroom observations suggests:

- Lack of explicitness in teaching the skills
- Implicit and opportunistic teaching the skills
- Classrooms weren't appropriate for collaboration
- Collaborative activities are often just group work
- Main focus of lesson was subject content
- No discussion about application of skill, reflection on skills, skills relative to learning outcomes, or checking of understanding of skills through formative assessment

Data from the classroom observations suggests:

- Less than a quarter of observations included the presence of wall displays or posters in relation to the skills. Very few classrooms had posters or wall displays that highlighted the three skills
- Less than a quarter of observations teachers were explicit about any of the skills as part of the lesson learning goal
- 69% of classes involved asking students questions about their responses, or probing students for more information
- 61% of classes involved tasks and activities that were designed to require collaboration
- 15% of classes reviewed the skills at the end of the lesson
- 14% of classes involved teachers making a statement about learning skills at the end of the lesson
- There was a higher percentage of collaborative activity observed in Science compared to English classes
- An analysis of all of the teaching actions across regions and subjects indicated that 27% of observations contained collaboration, 21% of observations contained problem solving, and 13% of observations contained critical thinking.

Comparison of skills audit and classroom observations suggests:

- Critical thinking was the most identified in the skills audit, but least identified in the classroom observations. Could be due to the overlap in descriptions of critical thinking and problem solving, leading to some of the teaching actions to be associated with the alternative skill.
- The teachers observed directly equate “collaboration” with group work. That group activities (regardless of how such activities are processed and facilitated) manifest collaboration skills as students begin to work on the task and talk with one another.
- Despite not seeing any instances of collaboration in the curriculum, over 66% of lessons observed included it. Suggests that some of what was observed was actually basic group work. It could also suggest that collaboration is actually a pedagogical approach, rather than learning outcomes in the curriculum.

These findings were used to develop the recommendations and to drive the Strategic Road Map.

## Recommendations

Aligned with the mandate of this project, a Strategic Road Map is required to put policy into practice and drive the 21CS integration agenda in the Philippines. The recommendations for developing the Strategic Road Map can be grouped into the four main components of the Alignment Model:

In relation to prerequisites:

### **Emphasis on the mission and vision statement**

Recommendation 1: The definition of the skills framework and mission statement of a “holistically developed Filipino” needs to be unpacked. Then it needs to be widely disseminated. The materials should be released via new visually appealing graphics and clearly written text.

### **Definition of skills framework and skills definitions**

Recommendation 2: Develop frameworks for all seven skills and conduct training with teachers to ensure that they understand the descriptions and how they are applicable in the classroom.

### **Utilisation of Core Technical Team members**

Recommendation 3: Enable the CTT to undertake extension work to scale the approach.

In relation to implementation of the Alignment Model

### **Curriculum**

Recommendation 4: Undertake a curriculum audit for the remaining four skills identified by DO21 (2019), across grades and subjects.

Recommendation 5: Complete a full audit of the curriculum in order to describe patterns of skills integration.

Recommendation 6: Decide where additional consideration of skills integration might be most useful.

### **Teaching**

Recommendation 7: Identify teaching actions associated with the remaining skills – based on their developed frameworks and descriptions.

Recommendation 8: Develop observation tools to capture the teaching actions.

Recommendation 9: Develop teacher resources based on the identified actions, reflecting a progressive nature of teacher development from those actions that are easiest to implement through to more sophisticated.

Recommendation 10: Work with the higher education institutions (HEIs), and in particular teacher education institutions (TEIs) and teacher training institutions, to incorporate skills into teaching methods.

#### **Assessment**

Recommendation 11: Increase the scope of skills assessment in the National Achievement Tests to include additional skills.

Recommendation 12: Develop classroom assessment prototypes for the seven skills to apply across grades and learning areas.

### **Strategic Road Map**

As a final output of this project, a three day meeting was held to discuss the project outcomes and recommendations with relevant stakeholders. A primary outcome of the meeting was transforming the project outcomes into a Strategic Road Map to be implemented by DepEd over the next three years. The final 21CS Strategic Road Map involves the following phases and actions (see Figure 8):

**Phase 1: Working group.** Establish an ongoing CTT as a working group to oversee all activities and ensure alignment. Initiate dialogue across Bureaus to identify collaboration pathways. Develop partnerships with local government units, TEIs, HEIs, non-government organizations, industry, private schools.

**Phase 2: Review and refine.** Revisit policy of holistically developed Filipino. Develop a more relevant 21st Century Skills Framework for the Basic Education System.

**Phase 3: Apply and advocate.** Establish or refine policy guidelines for BLR (resources), BCD (curriculum), and BEA (assessment) divisions in relation to 21CS. Conduct nationwide advocacy campaign to raise awareness and orientate on policy and guidelines of 21CS skills integration.

**Phase 4: Audit and mapping.** Audit remaining K-12 curriculum and conduct classroom observations for all priority skills across all grades. Map available resources that support development of 21CS. Audit existing classroom-based assessments.

**Phase 5: Development.** Develop learning resources, pedagogical strategies guides, revise curriculum for further inclusion of 21CS, formulate learning competencies and performance standards for 21CS, and develop resource guides for agencies and teachers.

**Phase 6: Capacity building.** Conduct professional development for teachers to build capacity in: developing or using classroom based 21CS assessments; using, developing and accessing learning resources; integrating skills development into teaching practices. Build school capacity to conduct alignment checks and provide training.

### Establishing a strategic roadmap for the Analysis of 21<sup>st</sup> Century Skill Integration Philippines K to 12 Program

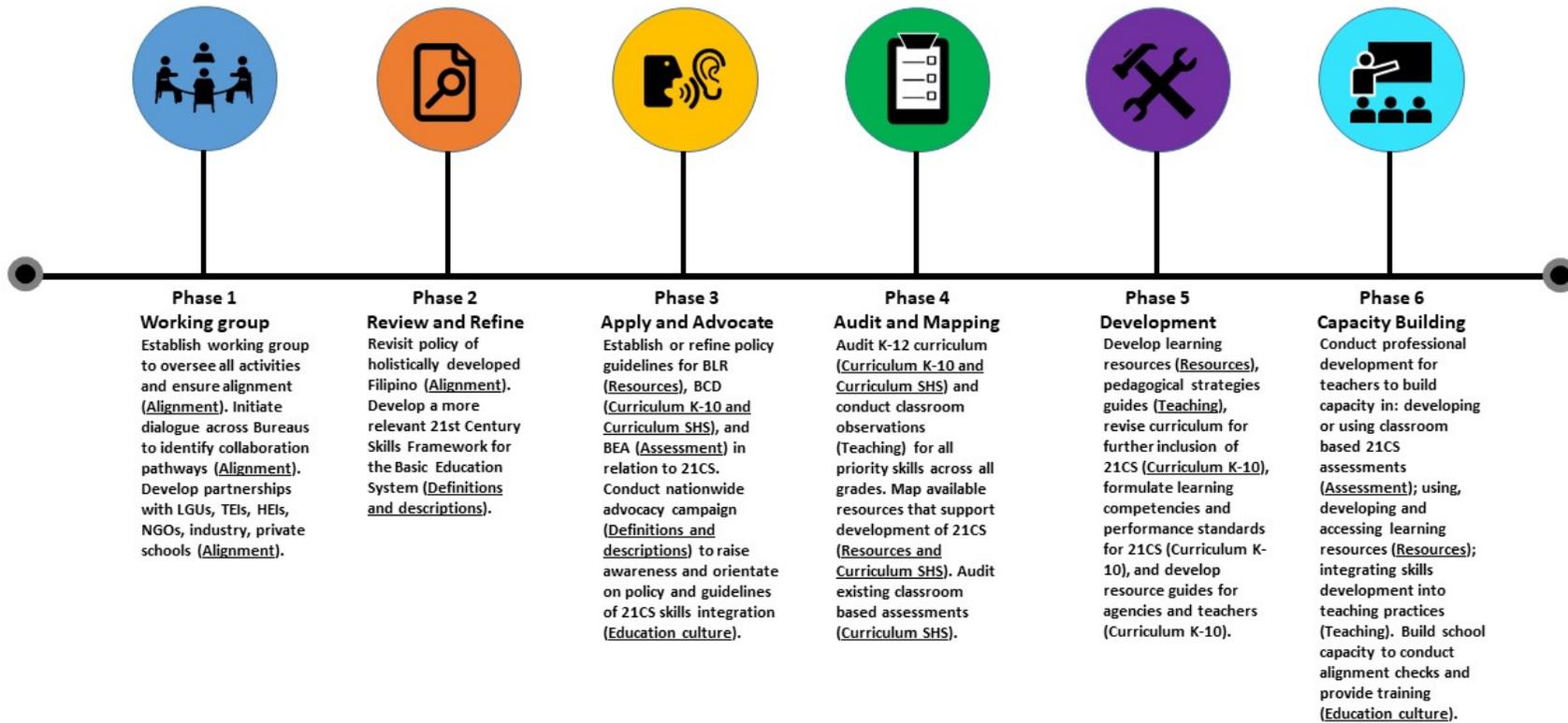


Figure 8. Strategic Road Map<sup>4</sup>

<sup>4</sup> The text in brackets reflects the focus of allocated working groups during the final three day workshop

## Conclusion

Through the implementation of components of the Alignment Model, this project has taken a strategic approach to identify the next steps for the Philippines in order to ensure effective integration of 21CS within the teaching and learning system. The above recommendations have been taken into consideration and integrated into the Strategic Road Map.

This approach has drawn on:

1. Acknowledging the national status of the Philippines in its progress within a global context - through Stage 1: Evaluation of existing practices
2. Identifying a set of steps to investigate existing alignment – through Stage 2: Prioritisation of steps
3. Acting on an initial set of steps – through Stage 3: Implementation of steps including:
  - a. Checking that 21CS are included in the national learning goals - through the skills audit of the curriculum
  - b. Hypothesising the nature of teacher actions designed to develop 21CS - through development of a classroom observation tool
  - c. Identifying the degree to which teachers in selected classrooms are engaging in these actions - through use of the classroom observation tool in three regions
4. Establishing consensus about the implications of the findings and recommendations and setting a clear agenda for future implementation with a large team of DepEd professionals - through development of the Strategic Road Map

As identified at project inception, an aligned approach to 21CS skills integration requires considerations of assessment, curriculum, and pedagogy. In efforts to establish an aligned system, this project has facilitated a working group of educators with expertise in curriculum development, assessment design, and pedagogical strategies to formulate the support structures and substance required to form a coherent approach. Many factors are still to be considered for implementation of the Strategic Road Map including actual infrastructure, governance mechanisms, and funding, as well as perspectives held in country but the foundations have been laid for a very promising pathway to 21CS integration.

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## Appendix A. Classroom Observation Tool



Analysis of 21st Century Skills Integration in the Philippines K to 12 Program

Region: \_\_\_\_\_ School: \_\_\_\_\_ Teacher: \_\_\_\_\_ Grade/Section: \_\_\_\_\_  
 Subject:  English  Science Observer: \_\_\_\_\_ Date: \_\_\_\_\_

<b>Section A: Tick if these items are observed; leave blank if not observed</b>	
Wall displays/posters: Are there displays to remind students about the three skills?	A1
Arrangement of furniture, floor spaces: Was the classroom setup suitable for collaborative work?	A2
Are materials available for students to document group work (e.g. large sheets of paper, marker pens)?	A3
Teacher is explicit about any of the three skills as part of the learning goal	A4

### Teacher Observation Tool: Key Indicators of Skills

<b>Section B: Tick if these items are observed; blank if not observed; 'O' for opportunity</b>			
<b>Teacher strategies:</b>		<b>(Problem Solving and Critical Thinking)</b>	
		<b>Teacher guides students to:</b>	
questions/probes students to get more information	B1	PS: take responsibility for problem identification	PS1
designs tasks and activities to require collaboration	B2	PS: identify relevant factors in a problem	PS2
		PS: hypothesise, as may be indicated by "what...if"	PS3
		PS: develop solutions	PS4
<b>(Collaboration)</b>		PS: gather information/materials relevant to the problem	PS5
<b>Teacher guides students to:</b>		PS: evaluate outcomes	PS6
Coll: take responsibility for role and task allocation	Co1	PS: implement solution strategies	PS7
Coll: acknowledge or respond to communication from peers	Co2	PS/CT: analyse information	PS8
Coll: share information or material resources among peers in group	Co3	PS/CT: identify associations, and cause and effect	PS9
Coll: negotiate	Co4	CT: test strengths and practicability of alternative solutions	CT1
Coll: be flexible to incorporate the views of others	Co5	CT: identify opposing arguments	CT2
Coll: consider suggestions from others in group	Co6	CT: identify bias in information	CT3
Coll: discuss differences of opinion in group	Co7	CT: justify statements, answers or claims	CT4
Coll: act as observers of group processes within the team	Co8	CT: evaluate different sources of information	CT5

<b>Section C: Tick if these items are observed; blank if not observed</b>				
<b>End</b>	The end of lesson check includes review of the skill of ...	C1	C2	C3
	Teacher statement about learning from the lesson refers to the skill of ...	C4	C5	C6

## Appendix B. Post-Observation Interview Tool

Region: \_\_\_\_\_ School: \_\_\_\_\_  
 Teacher: \_\_\_\_\_  
 Grade/Section: \_\_\_\_\_ Subject: English Science  
 Interviewer: \_\_\_\_\_ Date: \_\_\_\_\_

### Post Observation Interview

**General principle:** The approach should be *non-judgmental, positive and appreciative*. Set the teacher at ease.

**Script (read verbatim)**

*“Thank you very much for giving us the opportunity to observe your lesson(s).  
 The purpose of our research work is to learn about the teaching of collaboration, problem solving and critical thinking skills in classrooms.  
 We have some questions to help us gain greater understanding of the lesson(s). Our observations and your comments are strictly confidential and will not be associated with you by name.”*

Item	Comment
[Present skills framework] Are you familiar with this framework - "holistically developed Filipino"?	<input type="checkbox"/> Yes <input type="checkbox"/> No
What is your understanding of	collaboration?
	critical thinking?
	problem solving?

In this project we are focusing on three skills: <b>collaboration, problem solving or critical thinking</b> [point to skills in the framework]. Have you undertaken professional development about the teaching or integrating of any of these three skills?		<input type="checkbox"/> Yes <input type="checkbox"/> No If yes, which of the following have you undertaken? <input type="checkbox"/> LAC <input type="checkbox"/> In-service training <input type="checkbox"/> Pre-service training <input type="checkbox"/> Others _____
Before today's lesson, have you intentionally taught your students how to	collaborate with others?	<input type="checkbox"/> Yes <input type="checkbox"/> No If yes, how often? _____
	solve problems?	<input type="checkbox"/> Yes <input type="checkbox"/> No
	think critically?	<input type="checkbox"/> Yes <input type="checkbox"/> No

Item	Comment
Did you plan to integrate <b>collaboration</b> into today's lesson? If yes, what did you plan? (e.g. arranging furniture, reminding students of the skills, requiring a group response (not individual responses), providing materials, providing specific feedback, etc.)	
Did you plan to integrate <b>critical thinking</b> into today's lesson? If yes, what did you plan? (e.g. providing an appropriate task, reminding students of the skills, providing specific feedback, etc.)	
Did you plan to integrate <b>problem solving</b> into today's lesson? If yes, what did you plan? (e.g. providing a problem to be solved, reminding students of the skills, providing specific feedback, etc.)	
What do you think would help you to teach and build on your student's <b>collaboration, problem solving and critical thinking</b> skills? (e.g. resources, classroom space, professional development, etc.)	
Is there anything else you would like to tell us about <b>collaboration, problem solving or critical thinking</b> in your classroom, or about the lesson today?	

