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What are capabilities for learning?

The notion that complex capabilities for learning should be adopted as a formal part of the school curriculum for all students was first expressed in Australia and internationally, early this century.

These outcomes emerged in response to a range of contemporary and forecasted pressures that have sparked reconsideration of what students should know and be able to do as a result of their schooling. Some of these pressures include the explosive growth in the knowledge base of disciplines and professions, the increasingly competitive global economy, the fracturing of family and community structures, the increasing levels of structural economic inequality and the emerging threat of climate change.⁸

Capabilities for learning as curriculum components

The purpose of encouraging and supporting the attainment of complex capabilities in the curriculum is so that students can develop the knowledge, knowhow and capacity to keep learning in order to meet real-world challenges in a range of situations. This means, for instance, that accounting students need to learn the principles of accounting as well as the ability to perform as accountants who tackle community or business problems using the knowledge and knowhow of their discipline.

This involves communicating and working with others, managing intercultural differences and ethical challenges, appreciating perspectives other than their own and exercising critical thinking and imagination to generate novel solutions to new problems. They need also to learn how to direct and manage their own learning in the field and to not rely solely on mastery of material presented in lessons or texts. All of these add a new dimension to the kinds of teaching and assessment typical in schools and universities.

In response, curriculum statements have been expanded, with more generic learning outcomes supplementing more traditional, discipline-based or subject-specific outcomes. In the Australian Curriculum, for example, general capabilities have been included as a dimension of the curriculum. These are defined as the 'knowledge, skills, behaviours and dispositions that, together with curriculum content in each learning area and the cross-curriculum priorities will assist students to live and work successfully in the 21st-century'. Figure 2 shows the current representation of the general capabilities in the Australian Curriculum. Representations similar to this are common in countries around the world.

The inclusion of capabilities for learning, such as the general capabilities, as officially sanctioned components of curriculum has not gone uncriticised. Some critics are uncomfortable with the designation of these capabilities as 21st-century skills, as if they are new to the human condition, when, in fact, celebration of qualities such as critical thinking and collaboration have been evident for millennia; they are only 'new' as targets of core curriculum for all.¹¹

Also criticised is the lack of precision around common usage in the profession, which is replete with overlapping and competing terms. A myriad of classifications and lists of the various capabilities or their component parts exist, each preferred by some individuals and groups over others and each with its own set of definitions. This creates challenges for the profession in arriving at a precise curriculum understanding of complex capabilities. Other criticisms relate to doubts as to whether or not such capabilities can be taught, as distinct from being learned.¹²

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Complexity

As curriculum components, the capabilities are usually represented as comprising a constellation of skills (of different kinds), knowledge (cognitive and meta-cognitive), attitudes, values and beliefs.¹³ The component parts are usually teased out in curriculum statements and are often accompanied by descriptions of the pattern of behaviours that teachers can expect to see as students develop their competence. For example, the capability of 'collaborative problem-solving' has been defined as having five distinct strands, including participation, knowledge building, perspective taking, social regulation and task regulation.¹⁴

This definition is represented in progressions (see Appendix 2 for samples) of competency over six levels of attainment, highlighting the changes in behaviour manifest in learners as they learn how to collaborate to solve problems.

Similarly, 'intercultural understanding' is defined as a general capability in the Australian Curriculum. It has six levels with level descriptions for nine strands or sub-elements (investigate culture and cultural identity; explore and compare cultural knowledge, beliefs and practices; develop respect for cultural diversity; communicate across cultures; consider and develop multiple perspectives; empathise with others; reflect on intercultural experiences; challenge stereotypes and prejudices; mediate cultural difference).¹⁵

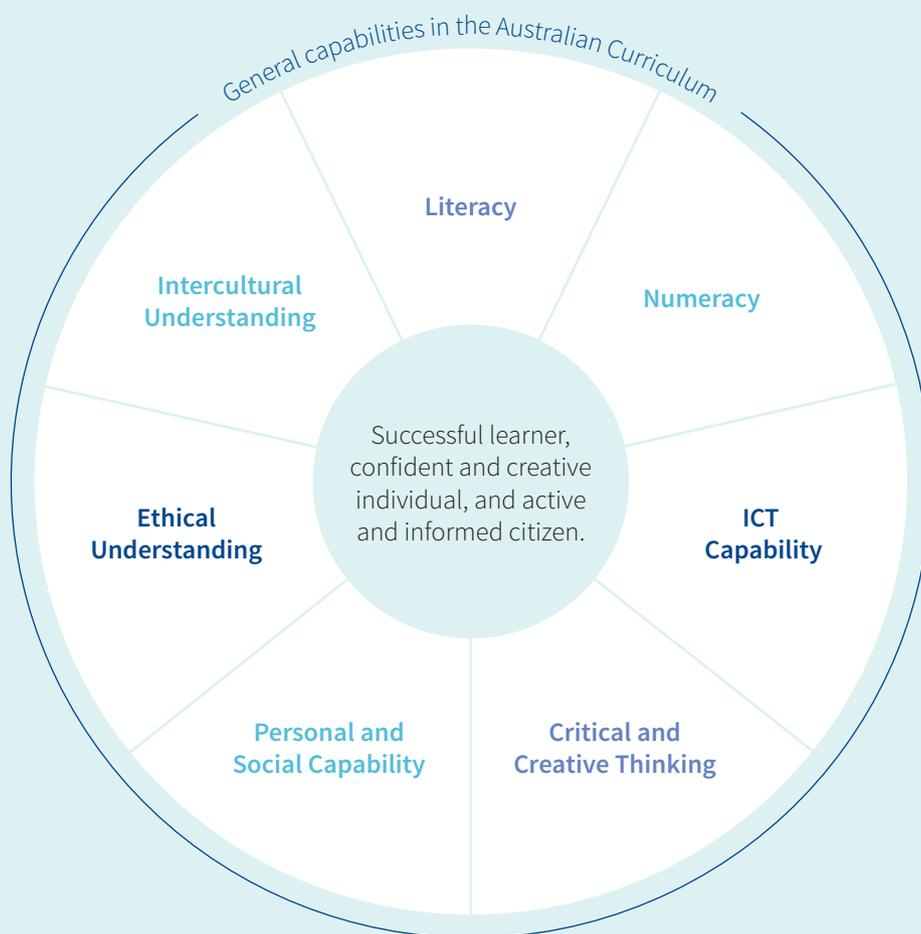
While the component parts of these complex capabilities are routinely teased out in curriculum statements, these parts manifest as a whole in reality. Expertise, or competence, is not as divisible as it is represented on paper. Ticking off a checklist of component parts is no guarantee that competence has been attained. Erpenbeck and Heyse highlighted this point when they theorised the nature of these capabilities, suggesting that they are 'grounded in knowledge, are constituted through values, are dispositioned through skills, are consolidated through experiences, and are realised on basis of will.'¹⁶

Interrelatedness

Capabilities for learning are not discrete curriculum objects. In practice, definitions overlap and specific components manifest in multiple capabilities. Communication, as a capability for learning, for instance, requires application of other capabilities, such as literacy, ICT skills (if communicating online), intercultural capability and ethical capability. A brief examination of learning continua for the Australian Curriculum general capabilities reveals that a sub-element dealing with capacity to recognise and handle diverse perspectives is key to three of the general capabilities (ethical understanding, intercultural understanding and personal and social capability).¹⁷

Development of the various strands, sub-elements and themes, as components of complex capabilities, is not separable in the same way that learning Chemistry as a subject, for instance, is separable from learning Geography.

Figure 2. General capabilities in the Australian Curriculum.¹⁰



Excerpt from the **Mparntwe Education Declaration 2019**:

... every student must develop literacy and numeracy skills and develop broad and deep knowledge across a range of curriculum areas ... Education plays a vital role in developing intellectual, physical, social, emotional, moral, spiritual and aesthetic development and wellbeing ... (students) need flexibility, creativity and the ability and drive to learn.

The simultaneous development of capabilities for learning and content

Deep learning is required to master any discipline or profession and expertise in any field cannot develop from purely cognitive activity obtained through diligent application to texts and tests. The development of capabilities for learning and deep learning in traditional forms of knowledge is intertwined.

In History, for instance, deep mastery requires both the memorisation of historical facts and the development of complex skills such as chronological thinking, critical thinking, examining and interpreting evidence and engaging with multiple perspectives.¹⁸

Without a focus on mastery of generic capabilities, assessment and teaching practices tend to privilege memorisation, essay writing, individual mastery of set content and solving of problems with formulaic solutions. The risk is that schools create students dependent on direct instruction, cramming, drilling and coaching, reliant on expert instruction by teachers who are expected to guide learners through a carefully prescribed body of knowledge, assessed in predictable ways.

These students can get an excellent mark mastering 'book learning', but they may not possess the learning skills to develop depth of understanding in a domain, or the personal and social skills and the habits of mind for self-directed, lifelong learning.

Transferability of general capabilities

It is tempting to argue that if people cannot learn to be critical thinkers until they have learned something to think about, for example, then there is no point assessing the capability separate from the content knowledge. This apprehension remains in education.

However, intrinsic to the idea that learning capabilities should be taught and assessed is the premise that while capabilities are *learned* in context, they are generic and are *transferable* by a learner from one context to another. For instance, if a person demonstrates communication skills in one field, then they should in theory be able to display these skills in another. It only makes sense to assess and credential the degree to which a person possesses a capability, in a general sense, if transferability is possible. Otherwise, capabilities can be regarded only as creatures of context, rather than having broad application.

Research literature on this topic is underdeveloped, however, as it is difficult to generate an empirical test of learning capabilities transfer in the real world. One strand of argument in the literature dismisses the idea of transferability, or contends that transferability is limited, as the *kind* of communication needed, for example, will differ from context to context. Perkins and Salomon note in their review of transfer in education that the capacity to take a set of content or skills from one context to another 'comes hard'.¹⁹ A study by the National Research Council on the transfer of 21st-century skills, such as collaboration, endorsed this view, concluding that the skills needed to be developed within each context.²⁰ Further, a significant body of literature exists on the difficulties associated with transfer of various skills, such as problem-solving, from one context to another.²¹

Other education experts see transferability as the premise, a view that is inherent in contemporary curriculum statements. Others suggest that development of complex meta-cognitive skills provide the *best* measure of learning transfer and that these skills may indeed provide the *means* of transfer.²²

Thus, in the case of communication, a person transferring from one domain to another may not yet have the vocabulary or understanding of a specific concept to immediately exhibit the full range of communication skills. However, their communicative competence is latent; it can be used in the service of learning in the new domain and is increasingly deployed as their domain knowledge develops. This latter view aligns with the views of employers, for instance, whose selection processes assume that if a candidate has been persistent, diligent, communicative and collaborative in previous employment, then they can be expected to transfer these to a new role.

Implicit in the work of the organisations featured in this paper is the view that capabilities are valuable *because* they are transferable; they provide the means for continuous learning and will serve people well across diverse roles over time. One implication of this view and one which informs the assessment and credentialing work reported in this paper, is that assessment and credentialing processes must focus on understanding how to develop and assess *transferable* skills, while at the same time recognising that all learning requires context.

This leads ultimately to an argument for ensuring that teaching and assessment practices focused on capabilities for learning are distributed across an educational organisation and reinforced across contexts. Development of these capabilities should not be left to just one teacher, located in one subject and/or limited to one project.

The importance of performance

The attainment of complex capabilities is designed to ensure that students develop the knowledge and knowhow to meet real-world challenges. This adds a new dimension to 'normal' teaching and assessment in schools and universities, one that requires learners to demonstrate knowhow as well as knowledge. Didactic pedagogies and cognitively oriented assessment methods are insufficient, as these do not provide opportunities for students to demonstrate their ability to perform in multifaceted, demanding situations more akin to real life.

Effective teaching and assessment of capabilities require students to practice and develop competence in response to challenge and to demonstrate it through performance. Performance in this sense refers to the situation in which students have to say, do, make or write something to generate evidence that they have attained a particular capability or a set of capabilities. For instance, if learners are being assessed on their capacity to work in an intercultural context, they should be required to perform tasks in a range of intercultural situations. Writing an essay about what they might do in hypothetical circumstances will not do.

The intricacies of how to provide meaningful and reliable assessments of complex performance is not new to teachers and are well rehearsed in the arts, in sport and in other traditionally performance-based areas of the curriculum. Now, the aspiration to integrate learning of capabilities with other disciplines has extended the ask of assessing performance to all teachers.

A particular problem for the assessment of individual competence occurs when performance has a social component. The ability to collaborate, for example, is developed and demonstrated only in relation to a practical requirement for collaboration within a particular context, such as in the classroom or at work. Similarly, ethical understanding only manifests in contexts of exploring the processes of ethical decision making and/or ethical issues in society that are meaningful and relatable. The skill of considering and negotiating multiple perspectives can be performed only when different points of view are at play.

Teachers understand well the difficulties associated with the assessment of performance, especially when it requires group or team efforts. Group work or project work is popular, but one student may dominate a group and it may be unclear who in the group contributed which aspect of the work. Sometimes the performance required is abstract or theoretical, without much meaning for assessing competence (e.g. 'imagine you are on a desert island ... what would you do if ...'). Cultural norms around group dynamics may be another factor.

After reviewing a decade of large-scale, psychometrically based work on the scalability of assessing collaborative problem-solving, the prestigious US group National Assessment of Educational Progress (NAEP) conceded that it is not yet possible to confidently measure the collaborative-problem-solving ability of students. Measurement error is associated with inability to disentangle an individual's capability from the action of others in the group.²³ Psychometric solutions to this problem continue to be pursued.^{24,25}

In the meantime, innovators are forging ahead with practical, scalable approaches to assessment – examples to follow – that rely on authentic performances by students. They are developing practical solutions to the challenges of assessing performance, to ensure that assessment and credentialing of capabilities are trusted and scalable. Some leading-edge work focuses on opportunities for using digital data generated by students using learning management systems, to produce digital learning artefacts with attendant intelligent analytics support.²⁶ Non-technical solutions are also promising, such as using a broad evidence base from a range of learning contexts to ensure that high-quality, on-balance judgments are made regarding the development of capabilities. For example, Bastow Institute's work on assessing the skills of aspiring principals, LVA's work on assessing enterprise skills and Beenleigh's initiatives to assess the work readiness of its graduates adopt this approach.

Disposition towards action

One response by educational leaders to uncertainties about how to teach and assess capabilities is to await developments. A recent review of school reporting to parents in Australia provided no evidence that schools are assessing and reporting on complex capabilities learning, intentionally and separately, despite the fact that these capabilities have been specified in the Australian Curriculum since 2012.²⁷ Criticisms of senior secondary school certificates and the ATAR in Australia point to their focus on cognitive outcomes, missing explicit representation of the complex learning

capabilities that are thought to predict success in further study or work.²⁸

Another response is to take practical, exploratory steps towards improving student outcomes. The organisations featured in this paper have adopted this course of action, seeking to define, teach, assess, report on and/or credential one or more capabilities, examples of which are listed in Table 2. More precise definitions for some of these capabilities are included in Appendix 1 as part of the case-study profiles.

In each case, the respective organisation is acting on the belief that complex capabilities are important; that every learner should develop these capabilities if they are to thrive in life; that it is possible, even essential, to teach these capabilities; that it is feasible to reliably assess and credential capabilities to the satisfaction of exacting external stakeholders, if these stakeholders are engaged at the right time; that most stakeholders accept and value that complex capabilities are transferable; that classroom and school-based assessments of capabilities can be valid, reliable and scalable, but only if non-didactic approaches to teaching and assessment are used with the appropriate resources and professional learning support.

Criticisms of senior secondary school certificates and the ATAR in Australia point to their focus on cognitive outcomes, missing explicit representation of the complex learning capabilities that are thought to predict success in further study or work.²⁸

Examples of valued complex capabilities by organisation

Project	Transferable complex capabilities of interest	
SWANs	<ul style="list-style-type: none"> » Literacy » Numeracy » Communication » Social processes » Learning skills 	<ul style="list-style-type: none"> » Emotional understanding » Digital literacy » Thinking skills » Movement
Big Picture Education Australia	<ul style="list-style-type: none"> » Quantitative reasoning » Social reasoning » Empirical reasoning 	<ul style="list-style-type: none"> » Communication » Personal qualities » Knowing how to learn
Beenleigh State High School	<p>Employability skills:</p> <ul style="list-style-type: none"> » Initiative and creativity » Problem-solving 	<ul style="list-style-type: none"> » Collaboration and teamwork » Self-management
Latrobe Valley Authority	<p>Enterprise skills:</p> <ul style="list-style-type: none"> » Enterprise communication » Enterprise collaboration 	<ul style="list-style-type: none"> » Enterprise problem-solving
ARCOTS	<ul style="list-style-type: none"> » Literacy » Reading 	<ul style="list-style-type: none"> » Numeracy
Other ARC projects for various clients	<ul style="list-style-type: none"> » Entrepreneurialism » Criticality 	<ul style="list-style-type: none"> » Student agency in learning

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