INTRODUCTION

Establishing a case for sharing research-based instructional strategies

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Preamble

As its title indicates, this book is about promoting deeper learning, dialogic learning, and critical thinking. Very briefly, “deeper learning” refers to profound (rather than superficial) understanding of knowledge, “dialogic learning” means learning through dialogue, and “critical thinking” pertains to careful and reflective thinking about what to believe or do. More detailed explanations of each of these will be provided later in this Introduction.

Deeper learning, dialogic learning, and critical thinking can all be considered as being both *processes* (i.e., ways of achieving a particular goal or purpose) and *outcomes* (i.e., results or consequences of actions taken). For example, where critical thinking is concerned, we can approach a task by taking the necessary steps to think critically about it (i.e., this is the process we follow), and the result of our effort can be described as critical thinking (i.e., the outcome we get, which in this case is the quality of our thinking). All three are also *capabilities* in that they refer to abilities to carry out certain processes and/or achieve certain outcomes (e.g., the ability to think critically). For the sake of simplicity, and to avoid potential confusion as a consequence of using multiple descriptors, from here onward in this Introduction they will simply be referred to as *capabilities*.

This Introduction will first describe the pressing challenge that is addressed in this book: that of providing education to meet some of the essential requirements of the 21st century. It will then explain these three capabilities, and why equipping teachers with the ability to promote them in their classrooms is particularly crucial in addressing that challenge. Finally, an outline of the structure of this book and the 19 chapters it contains will be provided.

The challenge addressed in this book

We are now well into the 21st century, and by all accounts the provision of education should now be different compared to how it was provided in the previous century, during which it was usual for the teacher to stand in front of the class and tell students what they needed to learn, for the students to listen quietly and diligently learn from the teacher, and for the teacher to test students on their retention of what had been taught. Education should by now have evolved so that it is addressing the requirements of learners in the current century's fast-changing environments, where information is ubiquitous (we no longer need to keep everything in our heads), and the many facets of technology have advanced and continue to advance in leaps and bounds. In those environments, the emphasis is no longer on how much people know but on how well they can acquire knowledge and use the knowledge they possess – especially in new and novel situations (e.g., Ananiadou & Claro, 2009; Griffin, McGaw, & Care, 2012).

But has education really changed adequately to meet the current century's requirements? The short answer to this question is “no.” Of course, there will be some exceptions, and most of us can probably think of at least a few examples of classrooms we have observed that would be “near enough” matches to how we might imagine education provision in the 21st century ought to be. (We might even conduct our own classrooms in such a manner.) However, for the vast majority of classrooms around the world, not a lot has changed. The blackboard might have been replaced by a whiteboard or even an electronic board/screen. A lecture management system might be used so that records are now stored electronically, and teachers and students can distribute/submit information (e.g., reading materials, lecture notes, assignments, opinions) online. But in most classrooms around the world, the teacher still stands in front of the class to impart knowledge to students, who still by and large listen quietly so that they can learn what they need to know from the teacher, and the teacher tests the students' ability to retain what they have been taught. The teacher may now emphasize to students the importance of understanding what they learn (something which had always been important, even prior to the 21st century, but which had previously been largely overlooked in favor of retention). But what teachers require students to do, and how they assess students, remains heavily focused on retention of information – whether it be to define and explain concepts (according to the teacher and/or the textbook), or to execute problem solving or some other procedure (again, according to the teacher and/or the textbook). As the US National Research Council's *Committee on Defining Deeper Learning and 21st Century Skills* noted, “current educational policies and associated accountability systems rely on assessments that focus primarily on recall of facts and procedures, posing a challenge to wider teaching and learning of transferable 21st century competencies” (National Research Council, 2012, p. 11). “Understanding” in such assessment more or less equates to whether you can remember what you have been told or shown to learn (facts, procedures, etc.). The problem is that

such “understanding” is far from adequate in terms of the knowledge, skills, and competencies that most people would need to successfully operate in the real world outside of school (i.e., at work, in personal life, in family and social situations, and so on). In fact, it is very unlikely that recall of much of those facts, definitions, explanations, and procedures that students have memorized at school would ever be required once they leave school – and yet, that is how most of our education systems continue to evaluate the achievement and merit of students.

The question of why most systems of education delivery have changed little compared to how they were in much of the previous century is a pressing and important one. However, answering it is not easy – and it is outside of the scope of this book to consider this question in any extensive manner. Suffice it to say, there are many factors that conspire against change. It has been known for a long time that change generally causes people a lot of stress (e.g., Holmes & Rahe, 1967; Rabkin & Struening, 1976). So, irrespective of what the change is, it is bound to encounter some resistance in society, especially when the change required is of this magnitude. Andreas Schleicher, the OECD’s (Organisation for Economic Co-operation and Development) Director of Education and Skills, expressed the view that it is difficult to implement the educational reforms required in the 21st century because there are many interests, beliefs, motivations, and fears of people involved in educational decision-making that act against them. This happens because the vast structure of established education providers entails extensive vested interests. If changes are made to the current systems, there would be many stakeholders who would lose some power or influence, and so they feel it necessary to protect the status quo (Schleicher, 2018).

One crucial point that Schleicher (2018) made when considering the question of “what successful reform requires” is that capacity development is indispensable. This means that we need to ensure that those who will be responsible for implementing the reforms – most importantly, the educational administrators and teachers – will actually have the required knowledge, skills, and resources for doing so. We cannot, for instance, expect teachers to modify their current approaches to teaching or to cultivate new sets of student capabilities if they lack the corresponding know-how and instructional resources.

How teachers are provided with training and professional development is an area that requires attention. At present, much of pre-service and in-service training tends to focus almost exclusively on subject instruction (i.e., how to teach particular subjects like math, science, English, history, and so on). While cultivation of subject/disciplinary knowledge remains an important component of 21st-century education (OECD, 2018), there are many other forms of knowledge, skills, capabilities, attitudes, and values that teachers need also to be able to cultivate and guide students toward development. For instance, we know that students need to develop effective learning strategies that will serve them not only while they are in school but also afterward, at work, as well as generally in their everyday life as self-regulated, lifelong learners. However, as Dunlosky (2013) observed, many students are not learning about such strategies, and one of the reasons he attributed

this to was inadequacy in teacher knowledge about how to teach or cultivate such strategies in their students. While most pre-service teachers are introduced to the notion of effective learning strategies through their training and in educational psychology textbooks, the coverage of those strategies is usually minimal and insufficient. As Dunlosky noted, textbooks for example tend to leave out discussion of the most effective strategies, and they do not deal with the practicalities of how to actually teach students to use those strategies.

The same problem concerning the instruction of effective learning strategies that Dunlosky (2013) identified applies to the development of the broad aims/objectives of 21st-century education, including the capabilities that the present book deals with. Pre-service teachers get introduced to concepts such as deeper learning, effective communication¹, and critical thinking in their training and textbooks, but they receive limited instruction or guidance on how to actually teach to promote their achievement. Like the educational psychology textbooks that Dunlosky referred to, most academic books dealing with 21st-century education *contain* the relevant theories and research about what such education needs to provide, but they rarely address the question of *how* we can actually teach to meet those requirements. Thus, most teachers for example would be well informed about critical thinking and its importance in modern societies, but would be limited in their ability to describe specific strategies they use – or could use – for cultivating critical thinking in their students. Part of the problem is that there is a widespread but erroneous belief that teachers already know how to teach to promote 21st-century skills and capabilities (Rotherham & Willingham, 2010), so insufficient effort is being placed on ensuring that they would have the necessary professional development and instructional materials for such purposes.

It should be noted here that “strategies” for promoting 21st-century skills and capabilities are actually not hard to find. There are many how-to books and other publications for teachers and students – both in print and online (e.g., on Internet websites) – focusing on the improvement of teaching and learning, and dealing with various aspects of 21st-century education. However, more often than not, such publications are written *not* by education experts but by professional education writers, and the strategies they describe are usually based only on common sense and intuition, the authors’ personal experiences, and/or their personal views and opinions about what teachers and/or students should do. Often, the strategies described have not been evaluated by research, and there is usually little or no evidence provided to demonstrate their effectiveness.²

At the same time, there are many educational researchers who are undertaking studies relating to the promotion of skills and capabilities considered important in 21st-century environments. However, they usually publish their findings in academic books and journals, using language and reporting formats that are largely inaccessible to the majority of classroom teachers. Hence, their valuable findings about effective strategies often fail to make their way into the reading lists of teachers and consequently the conduct of teaching in real classroom settings.

Addressing the above problem is essentially the purpose of this book. In other words, this book is intended to contribute to bridging the gap or disconnection between what educational researchers are finding in their studies and the guidance/materials being provided to teachers about the cultivation of crucial student capabilities. Although, as Schleicher (2018) pointed out, there are many hurdles that need to be overcome in order to achieve all the educational reforms necessary, one aspect that educational researchers can directly address is making research-based strategies for promoting 21st-century skills and capabilities available to teachers. If research reveals that a particular form of instruction or intervention is effective, then teachers should know about it. Information needs to be shared with teachers in such a way that they would be able to understand the applicability (or otherwise) of the strategy to classrooms such as their own, and how they might be able to find out more should they wish to try using that strategy.

Another important objective of this book is to convey the value of sharing strategies – so that we are learning from each other for the purposes of developing and enhancing classroom practices (i.e., educational researchers learning from each other, teachers learning from researchers, and researchers learning from teachers). We need to acknowledge that many researchers are working on developing effective learning and instructional strategies, and that there is not going to be one “right” approach that would suit all teachers and students in all situations: there are far too many factors that would influence what could be deemed suitable. Hence, instead of promoting only the strategies we favor, we should be alerting teachers to the range of potentially useful strategies that are available and educating them about how they can appropriately decide which strategy to use (e.g., based on the learning objectives and requirements of their classroom, availability of resources, evidence for effectiveness, etc.). Furthermore, as education increasingly becomes global, it would likely be beneficial to consider not only strategies originating from places near us, but also from further afield, so that we are sharing with and learning from international – rather than just local – experts and practitioners in education.

Deeper learning, dialogic learning, and critical thinking

Deeper learning, dialogic learning, and critical thinking are by no means the only capabilities that are important in 21st-century environments, but they are being focused on here because they also play crucial roles in facilitating or enabling the acquisition of various other important capabilities (e.g., problem solving, collaborative learning, information and media literacy). Hence, they are not only important in themselves, but are also important for the sake of other processes and outcomes – as will be explained. The 19 chapters in this book describe research-based strategies that can be used to promote one or more of deeper learning, dialogic learning, and critical thinking, along with the other capabilities that are consequently also facilitated.

Deeper learning

Deeper learning, as noted earlier, refers to *profound understanding of knowledge* (including knowledge in particular domains) so that the person who is learning is able to grasp not only what that knowledge is (including its meanings and significance), but also how, why, and when that knowledge can be used. It incorporates what Marton and Säljö (1976, p. 9) referred to as “deep-level processing,” during which the person manages to apprehend “what is signified (i.e., what the discourse is about).” It can be considered as the opposite of superficial learning, where the person can only recite, recall, or reproduce knowledge, but is not able to understand much more about it or how it can be used.

Take the arithmetic operation of multiplication, for example. A person could memorize and recite multiplication tables without understanding much more about the process of multiplication itself: that would be learning about multiplication superficially. To more deeply learn about multiplication, the person needs to understand how multiplication is similar to addition, and how it is the inverse of division. He or she would be able to use the knowledge about multiplication not only to answer test questions in arithmetic at school, but also to solve problems in other knowledge domains (e.g., statistics, science, geography) and in his or her everyday life – such as at home (e.g., when cooking) and at work (e.g., when planning and budgeting). Another example would be learning vocabulary in a foreign language. A person could just superficially learn by memorizing definitions and model sentences to pass school exams. But deeper learning would entail greater understanding about the words being learned, including how those words can be used to access knowledge and to communicate, with materials and in contexts that have never been encountered before.

Important features of deeper learning include not only the abstraction of general principles, patterns, and rules, but also the apprehension of interconnections or relationships between various strands of knowledge, ideas, and information. Hence, the US National Research Council defined deeper learning as “the process through which an individual becomes capable of taking what has been learned in one situation and applying it to new situations (i.e., transfer)” (National Research Council, 2012, p. 5). This is an important definition as it provides us with one means for determining when deeper learning has occurred.

Transfer is of course essential for most if not all of the skills and competencies that are generally deemed important in 21st-century education, including problem solving, creativity and innovation, and all the intrapersonal (e.g., decision making, initiative and self-direction) and interpersonal (e.g., communication, collaboration) competencies (see, e.g., Ananiadou & Claro, 2009). In fact, the National Research Council (2012, p. 8) concluded that “the process of deeper learning is essential for the development of transferable 21st Century competencies ... and the application of 21st Century competencies in turn supports the process of deeper learning, in a recursive, mutually reinforcing cycle.” What this suggests is that to develop competencies like effective collaboration, deeper

learning of knowledge and skills about, say, “questioning” is necessary (i.e., to the extent that the person understands not only the facts about questioning, but also why, how, and when it might be useful in collaborative situations; see, e.g., McTighe & Wiggins, 2013; Oyama, 2017). In turn, the application of questioning in collaborative contexts would contribute to the person’s deeper learning about questioning (e.g., the experience would give the person greater understanding of how various factors like individual differences, culture, and purpose could affect the way questioning is used in collaboration).

Dialogic learning

Dialogic learning, again as noted earlier, essentially means *learning through dialogue* – ideally where the dialogue between participants is egalitarian (i.e., conducted between equals rather than in a hierarchical manner). Dialogic learning is used in this book to represent communication, in acknowledgment of the fact that dialogue comprises much of the communication in teaching and learning contexts. Furthermore, where 21st-century skills and capabilities are concerned, many can be facilitated most effectively in the egalitarian manner by which dialogic learning is meant to proceed.

But when can we consider learning to be “dialogic” instead of, say, “monologic”? According to Wegerif (2017), monologic conveys the idea that “everything has one correct meaning in one true perspective on the world.” Thus, in monologic learning the aim for the learner would be to acquire that one correct meaning of whatever is being learned, and there would be little or no room for considering alternative perspectives (except perhaps to eliminate or demote them in the process of arriving at the “correct one”) or to negotiate variations to that one correct meaning. The learner is *not* an active participant in the construction of knowledge: he or she is only a recipient or consumer of predetermined, more-or-less fixed knowledge. In contrast, an essential characteristic of dialogic learning is that the learner is an active participant in the construction of knowledge, as he or she engages in dialogue. That dialogue can be in the form of interactions with teachers and other students – as well as of course other people – in one-to-one or group situations. It need not be face-to-face, as it can occur via text or other forms of messaging, in virtual space or online. In fact, when we consider the broad meaning of dialogue, as Wegerif (2007) noted, even texts (i.e., written works like essays, reports, and books) can be considered as being *in dialogue* with other texts as they contain references to each other, thereby contributing to that process of knowledge construction.

In dialogic learning, the meaning of something – such as what a person says to us (e.g., a teacher saying, “Well done”) – can only be understood in context. That context may include what that person had said previously (e.g., the instruction that the teacher provided for the task), what you have previously talked about with that person (e.g., about how to undertake the task in a particular way), as well as other things you know that may bear on what was said (e.g., that

the teacher wants you and other students to do this task quickly, so you can move on to some other task). Thus, you as the recipient of the utterance, contribute to constructing what it might mean (e.g., “the teacher is happy I have finished this task quickly”). For another student – or even the teacher – the meaning may somewhat be different (e.g., “the teacher is trying to hurry us up by praising those who have already finished” – for another student, and “good to see she has been able to follow the method I showed earlier” – for the teacher). By saying something yourself and contributing to the dialogue (e.g., “Thank you. What should I do now?”), you add to the construction of the meaning that is evolving (e.g., that a student should take initiative *in consultation with the teacher*).

A key point is that knowledge never exists in its final form – it is all the time being constructed and developed as a consequence of the dialogues taking place. As Wegerif (2017) pointed out, in dialogic learning we do not conceptualize knowledge as something to be grasped or understood of a world that is external to ourselves, but rather as something that emerges in dialogue as part of the dialogue itself. As he explained, “knowledge has to take the form of an answer to a question, and questions arise in the context of dialogue ... since the dialogue is never closed the questions we ask will change and so what counts as knowledge is never final.”

When we consider the requirements of 21st-century education, including all the skills and competencies that ought to be cultivated (see, e.g., Ananiadou & Claro, 2009), the importance of dialogue – and the effective communication it enables – as a means not only to apprehending knowledge, but also to becoming an *active contributor* to the construction of that knowledge, becomes apparent. It would be very difficult to cultivate students’ capacities for flexible and adaptive thinking, creativity and innovation, and learning to learn, if all we require them to do is learn and be able to reproduce what the teacher tells them. But with dialogic learning, the mere concept of knowledge not being fixed or final opens up possibilities for flexibility and adaptation (e.g., what I know will change, and I will need to change), as well as of course creativity and innovation (e.g., I can modify or adapt this, or use it to make something else new). Students’ essential role in the construction of meaning necessitates communication with others – which in turn requires taking of responsibility for sharing and finding out – and hence, for learning to learn.

Critical thinking

Critical thinking is consistently included in lists of skills and capabilities that 21st-century education is meant to promote. Although numerous ways of defining it exist, the essence of it being *careful and reflective thinking that is deliberate and goal-directed* is contained in most definitions. For example, Ennis (1985, p. 45) defined it as “reflective and reasonable thinking that is focused on deciding what to believe or do,” while Fisher and Scriven (1997, p. 21) described it as “skilled and active interpretation and evaluation of observations and communications, information and argumentation.” There are broad and narrow conceptions of critical thinking, and the broader ones often incorporate other thinking skills,

such as problem solving and decision making, and even creative thinking (e.g., Bailin, 1987). The focus of this book is on critical thinking, but many of the chapters also deal with other thinking skills, highlighting the interconnectivity of these skills. For instance, engagement in appropriately designed problem solving tasks can help learners develop capabilities for both critical and creative thinking, which in turn can enable them to make better decisions, innovate, and generate higher quality solutions to the tasks.

Critical thinking has both a predisposition aspect (i.e., it can be a habit of mind, or tendency to think in a particular way) and an ability aspect (i.e., a competence to think in a particular way when required) (e.g., Halpern, 1998; Paul & Elder, 2006). And it is not one skill but a set of skills and sub-skills. For example, Facione (1990), using the Delphi method with a panel of experts, produced the following consensus list of cognitive skills at the core of critical thinking: interpretation, analysis, evaluation, inference, explanation, and self-regulation.

The particular value of critical thinking in 21st-century education perhaps becomes most apparent when we consider that, in modern societies, there is a largely uncontrolled proliferation of unvetted information through the Internet and other forms of social and mass media (e.g., Glassner, Weinstock, & Neuman, 2005; Thomm & Bromme, 2011). We are constantly required to distinguish between what might be true and what might be misinformation, and to decide what and how to think – and behave – in response to all the information we get exposed to. But it is not only in responding to our environment that critical thinking is of value: it is also indispensable in thinking ahead about what may be needed in the future and how our actions today could impact that future (e.g., OECD, 2018; Schleicher, 2018).

Apart from being valuable in itself, critical thinking is also important in facilitating the development of other 21st-century skills and capabilities, including innovation, decision making, and problem solving – as previously noted; but also of communication, information literacy, and media literacy. For instance, through critical thinking we may be able to construct better argumentation and thus communicate in a more persuasive and convincing manner. Likewise, both information literacy and media literacy require competence in making decisions about choice and use of information – which relies to a large extent on the application of critical thinking skills. Furthermore, as evident in many of the chapters of this book, critical thinking has a co-facilitative role with the other two capabilities of deeper learning and dialogic learning. Thus, for example, the application of critical thinking skills (e.g., interpretation, analysis, evaluation) would facilitate deeper learning, but deeper learning would also bring about the capacity to think – and perhaps behave – more critically.

Structure of the book

The 19 chapters of this book have been organized into six sections according to the kinds of strategies that are described in each chapter for promoting deeper learning, dialogic learning/communication, and/or critical thinking. Those strategies

are by no means the only ones that are pertinent in considering the promotion of these capabilities. There are likely to be many others: the ones included here are only those that emerged from the chapter manuscripts that have been included in this particular volume.

Part 1: Structuring dialogue

The strategies described in the three chapters included in this section promote the target capabilities primarily by providing a means for *structuring* the language used in classroom interactions and learning. In [Chapter 1](#), Laura Kerslake describes the “Playground of Ideas” approach, which provides a structure or framework, based on play equipment commonly found in children’s playgrounds, to support the development of children’s critical thinking skills and predispositions through collaborative dialogue. In [Chapter 2](#), Neil Phillipson and Rupert Wegerif explain the value of dialogic teaching approaches in promoting deeper learning, and they demonstrate this through their description of one particular approach – the “Thinking Together” approach – including its use of ground rules, focus on reflection, structuring and grouping of lessons, and techniques for dialogue facilitation to ensure quality of talk in the classroom. [Chapter 3](#), by Bethany Rittle-Johnson, Jon R. Star, Kelley Durkin, and Abbey Loehr, deals with math learning and the use of the “Compare and Discuss” method which provides a structure for developing deeper learning of math strategies and communicative competence in students.

Part 2: Facilitating meaning construction

There are also three chapters in [Section 2](#), all of which describe strategies that promote the target capabilities by guiding learners to find meaning. In [Chapter 4](#), Hillary Swanson explains how getting students to engage in scientific theory building in the classroom (which mimics what scientists do in real life) can help them develop deeper scientific understanding by refining everyday concepts and ideas they possess. [Chapter 5](#) is about a classroom practice developed by Beth V. Yeager, Maria Lucia Castanheira, and Judith Green, in which students and teachers become co-ethnographers³ in the process of developing a culture of inquiry to support deeper learning, critical thinking, and communicative capabilities in the students. In the final chapter in this section, [Chapter 6](#), W. Douglas Baker describes another ethnographic approach in which two university instructors and their graduate students (who were also teachers of literature) examined selections of their classroom discourse to cultivate deeper learning and understanding about how to interpret and teach literature.

Part 3: Cultivating questioning

The three chapters that comprise [Section 3](#) focus on the cultivation of effective questioning to promote the target capabilities. [Chapter 7](#) by Yoshinori Oyama and Tomoko Yagihashi, introduces “Question Based Instruction,” a method in

which classroom instruction revolves around student-generated questions, with the aim of promoting deeper understanding and better engagement in students. In [Chapter 8](#), Shadi Asakle and Miri Barak provide details of *AugmentedWorld*, a web-based platform that teachers and students can use to generate location-based, multimedia-rich questions, for the purposes of promoting contextualization, creativity, critical thinking, and ICT (information and communications technology) literacy. Finally, in [Chapter 9](#), Keita Shinogaya explains how deeper learning in the subject of history can be achieved by assigning students preparatory learning tasks for upcoming classroom lessons: at the center of such preparation is the generation and answering of pertinent questions.

Part 4: Promoting engagement and reflection

The three chapters under [Section 4](#) describe the use of various techniques that promote student engagement and reflection, which lead to deeper learning, better communication, and critical thinking. In [Chapter 10](#), Jean J. Ryoo describes how teachers can use humor in the classroom to more effectively get students to engage in critical thinking and communication practices. Pedro Rosário, José Carlos Núñez, Paula Magalhães, Sonia Fuentes, Cleidilene Magalhães, and Kyle Busing describe in [Chapter 11](#) the use of a story tool, “Letters from Gervase,” for promoting both self-regulated learning and critical thinking in students. And in [Chapter 12](#), David DeLiema, Maggie Dahn, Virginia J. Flood, Ana Asuncion, Dor Abrahamson, Noel Enyedy, and Francis Steen explain how various activities for facilitating debugging (i.e., the process of finding and fixing problems or errors in computer programming) – student journaling and art making, and teacher modeling and prompting – promote reflection and critical thinking in students.

Part 5: Training specific competencies

There are four chapters in [Section 5](#), all of which describe methods for training specific competencies that in turn lead to the promotion of the target capabilities. In [Chapter 13](#), Emmanuel Manalo, Yuri Uesaka, Ouhao Chen, and Hiroaki Ayabe describe methods they have developed for teaching and encouraging diagram use for the purposes of problem solving, communication, and thinking. Etsuko Tanaka and Emmanuel Manalo then describe in [Chapter 14](#) the research-based design, implementation, and evaluation of a workshop for developing graduate research students’ presentation skills. In [Chapter 15](#), Naomi Rosedale, Stuart McNaughton, Rebecca Jesson, Tong Zhu, and Jacinta Oldehaver provide details of an online tool they designed and used to support students’ development of argumentation skills considered important for reasoning, critical thinking, and perspective taking. Then, in [Chapter 16](#), Tatsushi Fukaya and Yuri Uesaka describe training programs they have developed to cultivate pre-service and in-service teachers’ competencies in promoting their students’ understanding and use of effective learning strategies.

Part 6: Program/course teaching

The three chapters included in [Section 6](#) provide details of whole courses or programs that directly address the promotion of deeper learning, dialogic learning/communication, and/or critical thinking. In [Chapter 17](#), Takashi Kusumi describes a school-based program that incorporates critical thinking instruction and project-based inquiry learning into high school science courses to cultivate students' critical thinking dispositions, inquiry learning skills, learning competencies, and self-efficacy. [Chapter 18](#) by Chris Sheppard introduces the use of task-based language teaching for the development of English-as-a-second-language skills beyond grammatical knowledge, and explains how the use of appropriately designed language tasks can promote the accuracy, complexity, and fluency of students' language production. Finally, in [Chapter 19](#), Christine M. Cunningham and Gregory J. Kelly describe important design and implementation aspects of elementary engineering school curricula that foster creativity, problem solving, and communicative competence in students.

Conclusion

Most of the chapters in each of the six sections deal with multiple facets of deeper learning, dialogic learning, and critical thinking. They provide not only descriptions of the strategies for promoting these capabilities, but also brief theoretical accounts of the issues or problems addressed by the strategies, and research evidence that indicates the efficacy and usefulness of those strategies. The intention is for this volume to be genuinely useful for teachers and researchers: for it to provide useful, practical ideas for taking the necessary steps toward implementing some of the changes necessary for the education we are providing to match the requirements of the current century. The focus here is on the classroom (in the broad sense of it) because, to implement the necessary changes, teachers need to be equipped with the “know-how” – in other words, they need to know what new or alternative methods they can use, what techniques they can incorporate into their current teaching practices, and what modifications they can make to improve those practices.

Notes

- 1 Dialogic learning is a key element (and one could argue, *requirement*) of effective communication, but the term itself is not very well known or understood (see, e.g., Koschmann, 1999). The majority of teachers would be better acquainted with the concept and importance of “effective communication.”
- 2 Such evidence – either or both quantitative and qualitative – is important: especially when investing considerable amounts of time, effort, and resources into enhancing classroom practices, some indication of what outcomes can realistically be expected – based on qualified evidence – would be reassuring.
- 3 The ethnographic approach, in very simple terms, is one in which the researcher becomes a participant in the research he or she is conducting, being immersed in the culture and practices that he or she is investigating.

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