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Engaging Education: The Foundation for Wellbeing and Academic Achievement

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John Dewey (1947) famously wrote “if we teach today’s students as we taught yesterday’s, we rob them of tomorrow” (p. 167). His words remind us that we have long known the importance of preparing students for the future by ensuring that their academic, personal, and social skills will remain relevant and meaningful well beyond the context of everyday school life and the current political agenda.

The term “21st century skills” was first coined in the 1980s in various U.S. reports on education and labour market needs (Action for Excellence, 1983; High Schools and the Changing Workplace, 1984; What Work Requires of Schools: A SCANS Report for America 2000, 1991). These reports raised concern regarding the need for a new generation of students with the required knowledge, attitudes, and abilities for the twenty-first century. It was and still is a common belief that current educational practice in schools might not sufficiently equip students for contemporary life and work—and certainly not for the future. For children starting school in 2021, the chances that when they are an adult, they will get a job that does not exist today are high. Some current jobs will no longer exist, others will have morphed almost beyond recognition, and new jobs will emerge. What knowledge will these children

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need? What academic, personal, and social skills? And how do we equip them with those skills?

Educational researchers and professionals worldwide have sought to clarify the skills and competences necessary for the twenty-first century. For instance, the Organisation for Economic Co-operation and Development (OECD, 2018) offered a somewhat complicated learning framework to tackle the environmental, economic, and social challenges of a rapidly changing world, positioning those students who are best prepared for the future as change agents. Contemporary school curricula must evolve, or even radically change, to support students in embracing the challenges and changes the future will bring. Fadel, Bialik, and Trilling (2017) have developed a simpler model focusing on four key dimensions: knowledge, skills, character, and meta-learning. Fullan and Scott's (2014) model offers *six C's of deep learning*: character, citizenship, collaboration, communication, creativity, and critical thinking.

Each attempt to describe what is needed and/or to create a model of twenty-first-century skills differs in its foundation and content, but they all seem to agree on the following points:

- The current educational practices in schools do not sufficiently address twenty-first century learning needs.
- To develop twenty-first-century skills among students, education will need to focus not only on academic skills, but also on personal and social skills and on wellbeing.
- The students of today—and tomorrow—will need to keep on learning in order to face and adapt to a rapidly changing world.

A willingness and aptitude for lifelong learning will be necessary to meet the ever-changing demands for skills, knowledge, and competences. But as Fullan (2013, p. 5) argues, “education has reached a point where we have squeezed all that is good out of a school system which is by now outdated. The present system is too expensive, too inefficient and, as too many students will tell us, too boring”. How can we teach students to become lifelong learners? How can we motivate them and engage them in learning? This chapter offers a framework to meet the twenty-first-century demand for lifelong learning, which focuses on active, involved, and engaging learning combined with wellbeing.

From Boredom to Engaging Education

Research shows that engaging students in learning and education is a difficult task. Figure 18.1 illustrates how levels of American student enthusiasm drop dramatically while in school. The vast majority (95%) of students' express engagement and joy in learning when they start school, but this level of enthusiasm and engagement drops steadily to 45% of students by the final year of schooling—bottoming out at 37% just a few years before students leave school.

In a Danish study, 26% of students aged 10–16 reported they often or very often experienced boredom at school (Knoop, Holstein, Viskum, & Lindskov, 2016). Boredom was more prevalent among boys (29.6%) than girls (22.6%) and among older students (36% of those aged 13–16) than younger students (26% of those aged 10–12). The more bored the students were at school, the more likely they were to score poorly when measured in terms of parameters including academic attainment, social connections, and self-efficacy. In an international study, Larson and Richards (1991) found that on average, students experienced boredom 32% of the time, and in a study of students in German high schools, as many as 58% of students reported

Fig. 18.1 Loss of American student enthusiasm for school by grade level (Adapted from Jenkins [2019]. Original image published in Jenkins, L. [2019]. *How to create a perfect school: Maintain students' love of learning from kindergarten through 12th grade*, by LtoJ Press, Scottsdale, Arizona. This image is licensed under an All Rights Reserved License, and is not available under a Creative Commons license)

experiencing boredom—albeit specifically and exclusively in relation to maths lessons (Nett, Goetz, & Hall, 2011).

Boredom is a condition that entails unpleasant and unwanted emotions. It feels unpleasant because our bodies and our minds inform us—like an alarm going off—that what we are doing is uninteresting. We need to pay attention to the indicators of boredom; they tell us that what we are doing is meaningless and of no benefit to us (Holmgren, Ledertoug, Paarup, & Tidmand, 2019).

Although many teachers strive to minimise students' boredom in their teaching, these efforts cannot prevent boredom altogether. Nett et al. (2011) research suggest that dispositional factors are the cause of 26% of boredom, which is to say factors that depend on the student, such as attitude, interest, abilities, etc. Still, 74% of boredom may be ascribed to situational factors, such as teaching methods and content, and classroom interactions and relations. In other words, in the majority of cases, the causes of boredom are to be found in the educational context.

According to the OECD (2006), upper secondary qualifications are the baseline for successful entry into the labour market. Among OECD countries, an average of 39% of adults have upper secondary qualifications as their highest educational level (OECD, 2017). The reasons for leaving school and not continuing with tertiary-level education include personal reasons and socio-economic reasons. Given the decreases in enthusiasm and high rates of student boredom, we find it highly relevant to find ways to develop engaging education that supports improved learning outcomes and lifelong learning. It is not just a question of *minimising* boredom, but also a question of *creating* better learning and greater wellbeing.

Even though there might be differences in students' levels of engagement, levels of boredom in schools and educational attainment levels, all countries will need to improve students' engagement in learning to meet the demands of the twenty-first century. Each country has its own educational culture and traditions—ranging from traditional teacher-centred instruction to active and experiential student-centred learning. Dewey (1947) further argued in favour of “learning by doing”—entailing more active, student-centred teaching methods, which will be the focus of the remainder of this chapter. We urge our readers to link the theories and empirical findings we present to local educational contexts and thereby consider how current and future students can be engaged in learning in support of twenty-first-century skills.

Student Engagement

An important factor in creating twenty-first-century *learners* is engagement in learning and education as a whole. We begin by taking a closer look at student engagement, focusing on identifying teaching strategies that support greater involvement of students. To emphasise the focus on learning, “the learner” will be used synonymously with “the student” for the remainder of the chapter.

Student engagement is difficult to define due to its complex construction, influenced by multiple factors, including personal factors (e.g., attention, interest, vigour, abilities, motivation, experience of meaning) and factors in relation to the teaching (e.g., subject, content, method, interaction, relations). As such, engaging students is not just a matter of active participation in lessons. It also involves internalisation of learning, meaningful learning activities, and relevant content.

Fredericks, Blumenfeld, and Paris (2004), who identified three dimensions of educational engagement, developed a common model of engagement:

- **Behavioural engagement:** Students’ participation in education; e.g., involvement in the school’s academic, social, and extracurricular activities.
- **Emotional engagement:** Students’ emotional reactions in the classroom and at school; e.g., a sense of belonging or of being connected to the school.
- **Cognitive engagement:** Students’ investment in their learning; e.g., motivation and self-regulation.

Reviewing literature related to student engagement Trowler (2010) developed an extended model, combining the aforementioned three dimensions of engagement with different types of engagement: positive, negative, and non-engagement, as summarised in Table 18.1.

Table 18.1 Trowler’s extended model of engagement

	Positive engagement	Non engagement	Negative engagement
Behavioural	Attends lessons and participates with enthusiasm	Skips lessons without excuse	Disturbs or disrupts lessons
Emotional	Interest	Boredom	Rejection
Cognitive	Meets or exceeds assignment requirements	Assignments submitted late, rushed, or absent	Redefines parameters for assignments

Trowler's model suggests that engagement in education is much more than participating in class and being involved in a variety of activities. A deeper understanding of the teacher's intention (goal), assessment (learning outcome) and teaching and learning activities (content/method) is needed.

- The teacher's intention refers to what the learners should learn—the learning goal.
- Assessment focuses on measuring what students have learnt—the learning outcome.
- Teaching activities concern what the teacher does.
- Learning activities concern what the students do.

From this perspective, an important goal in engaging education is to promote students' learning and performance by striving to maximise intrinsic motivation and thereby reach learning goals.

Biggs' (2003) theory of constructive alignment connects the abstract idea of a learning outcome with the teachers' actions to help students learn and with what students actually do to learn, merging teaching and learning to promote all participants' achievement of deep learning, rather than mere surface learning. Biggs defines the learning outcome as a result or consequence of an action or process, and suggests that the key factors supporting learners' progress from surface learning to deep learning are their level of engagement, the learning activities, and their approach to learning. According to Biggs, students have a preference for either deep learning or surface learning. The deep learner finds learning exciting, while the surface learner cuts corners and only learns the bare minimum required to complete an assignment or pass a test. The students' approach in class affects their behavioural, emotional, and cognitive engagement. This learner perspective helps in understanding why some students learn easier and more deeply than others do.

Biggs (2003) further suggests that the teacher's perspective includes three levels. Level 1 focuses on what students are. The teacher assesses the students quite categorical as either good or bad, without looking more deeply into their motivations. Level 2 focuses on what the teacher does. Attention is on the teaching methods and tools that are used. What is being taught—and how? Level 3 focuses on what the student does before, during, and after teaching, and what the student learns. At this level, it is crucial to understand how students learn.

SOLO Taxonomy

To better understand students' learning, Biggs and Tang (2011) introduced the SOLO (Structure of the Observed Learning Outcome) taxonomy—a model of learning progression ranging from “no learning” to “surface learning” to “deep learning”. The SOLO taxonomy includes five different levels, as summarised in Table 18.2. At level 1, the student demonstrates no learning; at levels 2 and 3, the student demonstrates surface understanding; and at levels 4 and 5, the student demonstrates deep understanding. The recommendation from Biggs and Tang is for teachers to use constructive alignment: describe the learning objectives using the SOLO taxonomy and share them with students with a focus on strategies for moving towards the next level to train the necessary skills and competences.

Building upon the SOLO taxonomy, Gibson (2017) suggested rubrics as a framework for implementing the SOLO taxonomy, translating each subject or theme into categories drawn from the SOLO taxonomy. The rubric gives each student autonomy in choosing levels of ambition, visual support showing how to progress, and offering the opportunity to receive formative and summative feedback (see Table 18.3 for an example of a rubric). Rubrics can be created for academic content, wellbeing content as well as combining

Table 18.2 Biggs and Tang's (2011) Structure of the Observed Learning Outcome (SOLO) taxonomy of learning progression

No learning	Surface learning		Deep learning	
Level 1: Pre-structural	Level 2: Uni-structural	Level 3: Multi-structural	Level 4: Relational	Level 5: Extended abstract
The learner has no understanding, uses irrelevant information, and misses the point	The learner focuses on one relevant aspect only. He or she will be able to identify, do a procedure, recite	The learner focuses on several relevant aspects, considered independently. He or she will be able to classify, combine, and enumerate	The learner focuses on linking and integrating several parts into a coherent whole. Details are linked to the conclusion He or she will be able to relate, compare, and analyse	The learner focuses on linking beyond the information given. He or she will be able to generalise, hypothesise, and theorise

Table 18.3 Example of a rubric for teachers in a teacher-training program for a PhD project in strength-based learning (Ledertoug, 2016)

Level	Uni-structural	Multi-structural	Relational	Extended abstract
Strengths	You can identify strengths: You know the 24 VIA strengths. You can identify the strengths of a child using the Strength Compass by either the child's self-survey, or the teacher's survey. You can spot strengths in a child. You know to look for visual, auditory signs, and signals, e.g., body language, tone of voice. You know the list with strength questions and you know which strength questions to ask in order to spot strengths	You can explore strengths: You know the PhD project' strength-based learning's purpose and goals. You know of the intervention program from the PhD project. You have introduced pupils/classes for strengths, and you can tell about pros and cons in working with strengths. You have tested a few of the strength exercises or you have just started the intervention program	You can explore and inspire others on strengths: You have great knowledge about the PhD project's intervention program and you can explain to pupils, parents, and colleagues about it. You also have knowledge about other strength exercises, interventions, or programs. You have introduced pupils/classes and parents for strengths and you can tell and explain why and how you can work with strengths. You have tested a full intervention program in classes—either the intervention program from the PhD project or similarly	You can apply strengths and put them into perspective: You have a great knowledge of strengths in relation to pupils and to teachers and you are able to apply strengths both in the academic content and in the everyday life at school. You can apply strengths in plans for the pupil, action plans or developmental plans. You can apply the strengths in the yearly traditions of the school. You can inspire your colleagues work with strengths and find new methods and ways to develop strength-based learning

them. The pre-structural level is not included in the rubrics, because this level has no understanding of the learning content. Combining the SOLO taxonomy and rubrics with twenty-first-century skills helps in organising and facilitating subjects and lessons.

Learning Theories

Traditional learning theories can be divided into four overarching paradigms: behaviourism, cognitivism, humanism, and constructivism. However, new paradigms are emerging, including design/brain-based learning and twenty-first-century skills. Within these paradigms, there are many different theories and methods promoting engaging education, including action learning, experiential learning, progressive education, project-based learning, abductive learning, adaptive learning, brain-based learning, involvement in learning, and co-creation-based learning (Illeris, 2006, 2015; Masethe, Masethe, & Odunaike, 2017).

Various learning theories have established a correlation between experience and learning, claiming experiential learning leads to deeper learning and understanding (Illeris, 2015). Experiential learning is also referred to as learning through action, learning by doing, learning through experience, and learning through discovery and exploration. As early as 1960, the National Training Laboratories in Bethel, Maine, U.S. found that students who were taught using traditional teaching methods subsequently only remembered 5–10% of the new information they had encountered, while those employing methods such as learning by doing or peer learning remembered 75–90% (Sousa, 2015).

In 1984, Kolb introduced experiential learning theory, building on the work of Dewey, Levin, and Piaget on topics including experience, perception, cognition, and behaviour. According to Kolb, all learning is in fact experience-based, and the learner must demonstrate the following skills to succeed:

- Experiencing and exploring: Conduct concrete experiences by “doing”.
- Sharing and reflecting: Reflect on observations by asking: “What happened”?
- Processing, analysing, and generalising: Translating observations and experiences into abstract concepts by asking questions like: “What’s important”? “So what”?
- Applying, planning, experimenting with, and trying out new knowledge by asking: “Now what”?

Fig. 18.2 The learning circle of experiential learning (inspired by Kolb, 1984)

Students learn by experiencing, reflecting, concluding, and applying. As illustrated in Fig. 18.2, these four steps result in a new concrete experience and the learning circle continues. Building upon this experiential learning circle, the next section introduces the 5E Model as an example of an effective, research-based instructional model aimed at promoting engaging education.

The 5E Model

Bybee and his colleagues originally designed the 5E model for science education in the early 1980s (Bybee et al., 2006); however, the model has since been widely applied in educational settings in non-science subjects. Bybee (2009) argues that the 5E model has potential as a general model for effective teaching to develop twenty-first-century skills. The model is research-based, has strong evidence-based, and is grounded in the psychology of learning, stating that learning is an active process occurring within and influenced by the learner. The model assumes that learning is active, explorative, and fosters the transfer of knowledge and skills from one setting to another, making it possible for the student to apply the theoretical or practical understanding of a subject. Activities are structured so that students are able to engage, explore, explain, elaborate, and evaluate their progress. Subjects, content, and ideas

are best introduced when students see a need or a reason for their use, as this helps students understand the relevance and makes learning meaningful.

The 5E model includes five phases: engagement, exploration, explanation, elaboration, and evaluation. As summarised in Table 18.4, each phase has a specific function and contributes to student learning. These phases together

Table 18.4 The five phases of the 5E Model, based on Bybee (2009)

Phase	Summary
Engagement	Aims to capture the students' attention and interest by introducing a short activity to promote curiosity and elicit prior knowledge. The activity should connect between past and present learning experiences, expose prior conceptions, and direct students' thinking towards the learning outcomes of current activities
Exploration	Provides students with a common foundation of activities within which current concepts (misconceptions), processes, and skills are identified, and conceptual change is facilitated. The exploration lesson or lessons provide concrete, hands-on experiences and activities that help students use prior knowledge to generate new ideas, explore questions and possibilities, and design and conduct a preliminary investigation
Explanation	Focuses students' attention on a particular aspect of their experiences during the engagement and exploration phases and provides opportunities to demonstrate their conceptual understanding, process skills, or behaviours. The concepts, practices, and abilities with which students were originally engaged, and which they subsequently explored, are made clear and comprehensible. Academically relevant concepts are briefly and explicitly introduced and explained. A verbal explanation might be elicited from the teacher; however, other resources, such as video, the internet, or software, may also provide excellent explanations and may guide learners towards a deeper understanding
Elaboration	Teachers challenge and extend students' conceptual understandings and skills and encourage interactions with other students and with sources such as written material, databases, simulations, and web-based searches. Through new experiences and additional activities, the students develop deeper and broader understanding, gather more information, and gain relevant skills. The intention is to facilitate the transfer of concepts and abilities to new but related situations. Key to this phase is the use of activities that the students find challenging but achievable
Evaluation	Encourages students to assess their understanding and abilities and allows teachers to evaluate student progress towards achieving the intended learning outcomes. The evaluation could be formative, summative, or both

provide a framework for teachers to structure sequences of learning and to organise lessons, units, or programs.

In constructing the 5E model, Bybee and colleagues also considered the actions of the teacher (what the teacher does) and students (what the student does)—which correspond, respectively, with levels 2 and 3 in the theory of constructive alignment proposed by Biggs (2003), as highlighted in Table 18.5.

After introducing important elements of learning and the 5E model, it is essential for teachers to plan their teaching taking into consideration how to involve, engage, and activate students during the different learning phases. Together, the 5E model provides a structured approach for cultivating learning.

Wellbeing in Education

Models of learning have arisen in education, with a greater focus on academic development rather than social and emotional development. Recent years have brought a growing emphasis on the need to focus on student wellbeing. Drawing on theory and research arising from positive psychology, we consider how the five elements in Seligman's (2011) PERMA model and character including strengths can be combined with the 5E model as a framework for engaging education activating, involving students in learning activities, and supporting student wellbeing.

Positive Education and the PERMA Model of Wellbeing

The term *positive education* was first coined by Seligman, Ernst, Gillian, Reivich, and Linkins (2009), based on their work at Geelong Grammar School, defining positive education as education in traditional academic knowledge and skills as well as wellbeing and happiness. From this perspective, academic performance and wellbeing go hand in hand and coexist in an equal relationship. Similarly, Knoop (2016, p. 453) noted: "Education ideally is fully aligned with the Aristotelean eudemonic ideal of happiness being the joy we feel striving for our potential". Positive education is based partly on knowledge about effective and engaging teaching and learning and the best way to practice effective pedagogy, and partly on knowledge and methods derived from positive psychology and its branches, such as motivation theory, flow theory, broaden and build theory, etc.

Table 18.5 Intersections between the 5E model and the second and third levels of Biggs' (2003) theory of constructive alignment (based on Bybee et al., 2006)

	What the teacher does	What the student does
Engagement	Creates interest - Generates curiosity - Raises questions - Elicits responses that reveal what the students already know or think	Shows interest in the topic - Asks questions such as: - What do I already know about this? - What can I find out about this?
Exploration	Encourages the students to work together without direct instruction from the teacher - Observes and listens to the students as they interact - Asks probing questions to redirect the students' investigations when necessary - Provides time for the students to puzzle their way through problems - Acts as a consultant to the students	Thinks freely, within the limits of the activity - Tests predictions and hypotheses - Forms new predictions and hypotheses - Tries alternatives and discusses them with others - Records observations and ideas - Asks related questions - Suspends judgment
Explanation	Encourages the students to explain concepts and definitions in their own words - Asks for justification and clarification from students - Formally clarifies definitions and explanations when needed - Uses students' previous experiences as the basis for explaining concepts - Assesses students' growing understanding	Explains possible solutions or answers to others - Listens to others' explanations - Questions others' explanations - Listens to and tries to comprehend explanations that the teacher offers - Refers to previous activities - Assesses own understanding
Elaboration	Expects the students to use explanations provided previously - Encourages the students to apply or extend the concepts and skills in new situations - Reminds the students of alternate explanations - Refers the students to existing knowledge: What do you already know? Why do you think?	Applies acquired knowledge and skills in new but similar situations - Uses previous information to ask questions, propose solutions, make decisions, and design experiments - Draws reasonable conclusions - Checks for understanding, own and peers

(continued)

Table 18.5 (continued)

	What the teacher does	What the student does
Evaluation	Observes the students as they apply new concepts and skills - Assesses students' knowledge and skills, formative/summative - Looks for evidence that the students have changed their thinking or behaviour - Allows students to assess their own learning and group-process skills: What do you now know about x? How would you explain x?	Answers open-ended questions using observations, evidence, and previously accepted explanations - Demonstrates an understanding or knowledge of the concept or skill - Evaluates his or her own progress and knowledge

There are many subjects, curricula, and programs for students that apply positive education in schools, several of which are based on Seligman's PERMA model of wellbeing (e.g., Norrish, 2015; White & Waters, 2015). According to this model, wellbeing is comprised of five elements: **P**ositive emotions, **E**ngagement, **R**elationships, **M**eaning, and **A**ccomplishment. Character strengths are embedded in each element. This means that bringing our strengths to bear creates positive emotions and engagement, improves our relationships, provides us with meaning, and develops our accomplishments. As the British researcher, Alex Linley puts it: "Realising our strengths is the royal road to optimal development and performance" (Linley, 2008, p. 47). Even though the elements are conceived of as independent dimensions, theoretically, the more PERMA a person has, the higher their level of wellbeing is.

Using PERMA as a Framework for Engaging Education

While PERMA is only one of the many wellbeing models and frameworks that exist within positive education, the PERMA model provides a framework for engaging education as an implicit and explicit teaching method, which can facilitate optimal learning, engagement, and wellbeing, and reduce boredom (Holmgren et al., 2019). Across subjects and grade levels, PERMA can inform planning, conducting, and evaluating lessons. Table 18.6 highlights questions to consider for using PERMA while preparing for teaching.

When the PERMA model is used as a framework for teaching, teachers must consider which methods and tools are best suited to promoting each of

Table 18.6 Questions to ask for preparing to create PERMA through teaching

Domain	Aim	Questions to consider
Positive emotion	Create or support positive emotions in teaching—in the classroom	How can the fostering of positive emotions be directly incorporated in the given subject? How can the fostering of positive emotions be indirectly incorporated in the given subject—in-between activities?
Engagement	Motivate and engage the students	How to promote motivation and engagement directly in the given subject? How to reduce boredom in the given subject?
Relationships	Support relations in the class	How can teacher–student relations be enhanced directly in the given subject? How can student–student relations be enhanced directly in the given subject?
Meaning	Ensure that lessons are meaningful and relevant	How can meaningfulness be increased directly in the given subject? How can relevance be increased directly in the given subject?
Accomplishment	Support students' accomplishments	How to improve the individual student's accomplishments? How to improve the accomplishments of the entire class?

the five elements. The ideal is to combine methods and tools with the best available knowledge of learning and the best available knowledge of well-being. For example, positive emotions might be fostered using “brain breaks” during lessons (Andresen & Paarup, 2015). Engagement can be increased by giving students greater autonomy during lessons in terms of task, technique, team, and timeframe (Pink, 2009). Relationships can be built and maintained by using strategies drawn from cooperative learning approaches (Johnson & Johnson, 1991, 2016; Kagan & Stenlev, 2006). Lessons can be more meaningful and relevant to students by articulating the specific big and small

reasons for the tasks that are done (Holmgren et al., 2019). Accomplishment can be improved by employing strategies for optimising self-efficacy, such as cultivating experiences of mastery, role-modelling, using verbal persuasion, visualising, and creating a tranquil learning environment (Bandura, 1993, 2012).

Importantly, while these examples provide some possibilities for supporting wellbeing, there is no one single method or tool best suited to ensuring student wellbeing, whether at individual or class-level. When focusing on the different PERMA elements, it is important to evaluate whether or not the approaches tried fit with the students. You might consider:

- To what extent did you manage to foster PERMA? What worked and what did not work?
- What would you place greater emphasis on next time? Change? Adapt?

PERMA and Experiential Learning

Positive education purposes to combine the principles of positive psychology with best-practice educational paradigms (Norrish et al., 2013). We suggest there can be value in combining the 5E model (engaging learning) with the PERMA model (wellbeing). In this section, we highlight the relevance of the PERMA factors for learning, and illustrate how the 5Es can be integrated within each of the PERMA pillars to create engaging learning experiences.

P for positive emotions. Learning is affected by our emotions. They affect our motivation, concentration, and learning strategies, and they ultimately affect our learning outcomes and chances for success. As Seligman and colleagues (2009, pp. 294–295) noted: “Positive emotions produce increases in learning, the traditional goal of education”.

Pekrun and Stephens (2010) focus on achievement emotions, differentiating between outcome emotions, which are related to success and failure, and activity emotions, such as the enjoyment and boredom experienced in achievement settings. They state that emotions are central to all human achievement strivings and that these emotions can be divided into positive or negative activity emotions—with corresponding effects on learning. Even though research on positive activity emotions is scarce, initial findings suggest that performance is enhanced, while negative activity emotions inhibit performance by reducing cognitive resources and undermining motivation. There is one exception among negative activity emotions—shame. Research shows that shame can promote tenacity and perseverance, and thereby improve learning outcomes (Pekrun, 2006).

The research on positive and negative activity emotions aligns with the *broaden and build theory* and the *upward spiral theory*, both developed by Barbara Fredrickson (2009, 2013). According to Fredrickson, negative emotions result in a focused, narrow-minded, and intolerant mindset, comparable to *tunnel vision*, while positive emotions result in a broadening mindset, which can have an invigorating and lasting effect on our personal resources. Positive emotions are thought to further growth by changing the way our brain works and develop our thought and action repertoire, as well as generating and expanding our field of vision and attention, thereby affecting our working memory, verbal fluency, and openness to information (Kristjánsson, 2012). When positive emotions prevail over time, Fredrickson's theories suggest that we build helpful resources. To use an analogy, one might say that our positive emotions are deposited in a bank, where they accrue interest in the form of additional positive emotions with potential benefits such as more effective learning strategies and creative, holistic approaches that can be withdrawn at a later time as needed.

The value of positive emotions suggests that facilitating learning and engaging students in learning activities requires consistently positive emotional experiences (Meyer & Turner, 2006). Mastery within the classroom also appears to be linked to positive emotions (Linnenbrink & Pintrich, 2002). Table 18.7 illustrates how positive emotions can be integrated within the 5E model as an important aspect in the development of engaging education.

E for engagement. Illeris (2006, p. 106) noted: “The incentive for learning comprises conditions concerning the extent of—and the character of—the mental energy invested in learning; the motivation, the emotions and the willpower the individual learner mobilizes in a learning situation”. According to self-determination theory (SDT), human beings have three psychological needs that motivate them to initiate actions and provide the essential fuel for learning, mental health, and wellbeing (Ryan & Deci, 1980, 1985, 2000; Sheldon, 2012):

- *Competence* refers to the need to experience mastery and a sense of control over one's own achievements (Niemic & Ryan, 2009). Competence involves understanding how to achieve different goals and results and how to perform the necessary actions (Deci, Vallerand, Pelletier, & Ryan, 1991).
- *Autonomy* refers to the need to experience volitional action and voluntary allocation of time and energy (Niemic & Ryan, 2009), and self-initiation and self-regulation of actions (Deci et al., 1991).

Table 18.7 Integrating positive emotions across the 5E learning phases

Learning phase	Connections with positive emotions research
Engagement	Positive emotions broaden our repertoire of thought and action, as well as generating and expanding our field of vision and attention, and preparing us for learning (Fredrickson, 2009)
Exploration	Positive emotions such as love, joy, interest, inspiration, hope, awe, gratitude, serenity, pride, and amusement are possible accelerators for learning (Fredrickson, 2009)
Explanation	When positive emotions prevail, we can build resources and create upward spirals generating further positive emotions. When negative emotions prevail, it can lead to downward spirals and feelings of frustration, doubt, worry, fear, and boredom (Fredrickson, 2009)
Elaboration	By promoting good relationship in class and focusing on teachers' relationship competences, it is possible to promote high-quality interactions in the learning process. Groups that manage to communicate positively function better and are more likely to be effective (Fredrickson & Losada, 2005)
Evaluation	Formative and summative feedback using positive, constructive responses (Gable & Gonzaga, 2006) supports students' engagement

- *Relatedness* refers to the need to interact with others, to feel connected, and to experience care for and from others. It involves the development of safe and satisfying relations with others (Deci et al., 1991).

A foundation based on competence, autonomy, and relatedness promotes academic achievement and positive learning outcomes, whereas the lack of such a foundation inhibits achievement and learning (Niemiec & Ryan, 2009). Research has found evidence that autonomous motivation is conducive to engagement and optimal learning, deep learning, and the ability to transfer and apply learning (Deci et al., 1991). Research on SDT has shown positive results in relation to perseverance and achievement (Guay, Ratelle, & Canal, 2008). Cognitive benefits include integration of knowledge, deep understanding, and creativity, while emotional benefits include experiencing more positive emotions in the classroom and more feelings of joy and satisfaction in relation to school. Furthermore, studies find a significant correlation between SDT and flow (Kowal & Fortier, 1999). According to Csikszentmihalyi (2005, 2008), flow is the ultimate positive learning experience, where competences and challenges are matched, resulting in an intrinsic motivation for more flow experiences. The process is bidirectional—satisfying the psychological needs from SDT (autonomy, competence, and relatedness) facilitates flow while flow facilitates intrinsic motivation (Kowal

& Fortier, 1999). Table 18.8 highlights how the concepts of motivation and potential flow experiences can be integrated in engaging learning.

R for relationships. Roy Baumeister and his colleague Mark Leary conducted a review of research on human needs for belonging, resulting in what they called *the belongingness hypothesis* (Baumeister & Leary, 1995). According to this hypothesis, “human beings have a pervasive drive to form and maintain at least a minimum quantity of lasting, positive and significant interpersonal relationships” (p. 497). According to Baumeister and Leary, humans are naturally driven towards building and maintaining relatedness and relationships with other people. And a few significant people will do, if the interactions are frequent and affectively pleasant. Research supports an evolutionary understanding of the need to belong as part of our biological inheritance: human beings establish relationships quite easily; they construct social rituals to secure continuity in relations, such as welcome and goodbye greetings. Evidence suggests that the need for belonging is a significant factor that forms the individual’s thoughts, and that the presence of or potential for relationships of belonging affects the way human

Table 18.8 Integrating engagement across the 5E learning phases

Learning phase	Connections with engagement research
Engagement	Filling the need for autonomy boosts student engagement (Deci et al., 1991). Pink (2009) suggested the four Ts as a method to increase autonomy. Offer students: • Choice of task • Choice of technique • Choice of team • Choice of timeframe
Exploration	Focus on students’ competences, their mastery experiences, and their sense of control over their own results (Niemiec & Ryan, 2009), thereby developing their understanding of how to achieve different goals and results and how to perform the necessary actions (Deci et al., 1991)
Explanation	When explaining subjects or themes to students, take care to ensure a match between students’ competences and challenges in order to promote flow experiences. When the challenges are too great, it causes stress and anxiety among students, while challenges that are too easy result in boredom (Csikszentmihalyi, 2005, 2008)
Elaboration	The need for relatedness emphasises the importance of social connection. Promote relatedness within the class via peer learning and group work
Evaluation	The flow zone optimises learning (Csikszentmihalyi, 2005, 2008). Using flow charts to establish optimal learning experiences is a possible way to evaluate lessons

beings think (Baumeister & Leary, 1995). Studies find that feelings of happiness are strongly correlated with close personal relationships; being accepted, included, and welcomed causes positive emotions, while being rejected, excluded, or ignored causes negative emotions. Positive relationships have positive effects on our health and wellbeing, while a lack of positive relations has potentially severe pathological consequences (Umberson & Montez, 2011).

With such a strong need to belong, the ways in which we connect and the quality of our connections become a critical aspect of wellbeing. Jane Dutton and her colleagues, John Paul Stephens and Emily Heaphy (2003, 2012) have focused their research on what they term *high quality connections* (HQCs), denoting shorter term moments within the context of ongoing relationships or even with strangers. An HQC is a connection that includes feelings of vitality, positive regard, and mutuality. Evidence suggests that HQCs improve our overall functioning by affecting cognitive, physiological, and behavioural processes (Dutton et al., 2012). Each mechanism includes three elements:

- *Cognitive*: other-awareness (orientation towards others and a willingness to interact), impression-formation (the impressions we form about another person shape the development of the connection), and perspective-taking (the ability to mentally represent the other person).
- *Emotional*: positive emotions (emotions that broaden our thinking and help us build durable social resources), emotional contagion (emotions that influence the interaction between people), and empathy (the ability to experience other people's feelings).
- *Behavioural*: respect (showing respect to others), task-enabling (helping others perform a task), and playing (engaging with others).

Building upon the need for belonging and HQCs, Table 18.9 illustrates how positive relationships can be embedded within engaging learning.

M for meaning. Meaning and purpose are often used interchangeably, but according to Steger (2012), meaning contains two dimensions: comprehension—to make sense of and understand one's life—and purpose—to have long-term aspirations. King, Heintzelman, and Ward (2016) argue that there are three central components in a meaningful life: purpose, significance, and coherence. Purpose refers to having goals in life, significance refers to a life of value or importance, and coherence refers to an individual's everyday sense-making routines. Baumeister and colleagues define meaning as “a cognitive and an emotional sense of purpose and value” (p. 506).

Table 18.9 Integrating relationships across the 5E learning phases

Learning phase	Connections with relationships research
Engagement	Emotional engagement refers to students' emotional reactions to their school, teachers, and schoolmates (Goodenow, 1993). Positive emotions fuel positive resonance between people (Fredrickson, 2013, 2014) affecting the emotional engagement in interactions
Exploration	A sense of belonging in class and in groups makes it safe to start explorations (Baumeister & Leary, 1995)
Explanation	HQCs between teachers and students can be supported by focusing on the cognitive element other-awareness and the behavioural elements respect and task-enabling (Dutton et al., 2003, 2012)
Elaboration	HQCs between students can be supported by focusing on cognitive, emotional, and behavioural elements to promote relations (Dutton et al., 2003, 2012)
Evaluation	Formative or summative evaluations should be based on respect for the student and for the work performed by the student (Dutton et al., 2003, 2012)

An important aspect of a meaningful life is social relationships and the feelings of relatedness, belonging, support, and closeness to others (King et al., 2016). When we experience meaning, we feel part of, or connected to, something bigger than ourselves (Peterson & Seligman, 2004) and we are inclined to contribute in a positive way to communities and the lives of others (Fredrickson, 2013). Meaning is anchored in our culture and, when we are asked to communicate this culture, language is paramount. What is meaningful for the individual may be part of a greater meaning, applicable to the culture we live in. Meaning is an experience and hence subjective; it is a cognitive and emotional construction. As such, meaning is constructed on the basis of our thoughts and feelings (Ravn, 2008).

According to Isaksen (2000), we can understand the concept of meaning on four levels:

- A cosmic level: What is the meaning of life?
- A subjective level: What is the meaning of my life?
- A local level: What is the meaning of attending school, going to a club, being part of a family, or some other local context?
- A situational level: What is the meaning of this particular situation or activity?

In our everyday lives, we primarily focus on the situational level. We find meaning in the situation by interpreting the social and linguistic context and

the narratives and negotiations taking place therein. We experience that a phenomenon makes sense when it is part of a larger whole or connection (Ravn, 2008).

Isaksen’s four levels of meaning may also be understood as representing either the *small meaning* (the local and situational levels) or the *big meaning* (the subjective and cosmic levels) (Tange, 2017). The small meaning involves grasping all the everyday situations that we constantly interpret in an attempt to understand our experiences. Every day, we construct hundreds of meanings in relation to the small meaning—but the small meaning is in constant interaction with the big meaning and at the same time, the big meaning becomes the reference framework in which the small meaning is created. King et al. (2016) argue that the “strongest predictor of a day’s being considered meaningful is the amount of positive mood experienced that day” (p. 213). Table 18.10 illustrates how the concepts of understanding, purpose, and small and big meaning can be integrated with the 5E model.

A for accomplishment. Vergil, the Roman poet, noted: “They can conquer who believe they can”. Self-efficacy refers to a person’s belief in his or her own abilities and expectations of performing successfully and influencing events that affect his or her life (Bandura, 1993, 2012). Having self-efficacy means that you have positive expectations and faith in your ability to manage the challenges and tasks you face. You view your chances of success in completing a given assignment in a positive light. Your self-efficacy affects your thoughts and emotions and, in turn, influence your motivation, behaviours, and actions. If someone has high self-efficacy, he or she will approach tasks as challenges and take pains to complete them successfully, which may lead to a high level of ambition and achievement. Conversely, someone with low self-efficacy will doubt his or her own abilities—sometimes unnecessarily—and will typically try to avoid difficult tasks and challenges,

Table 18.10 Integrating meaning across the 5E learning phases

Learning phase	Connections with meaning research
Engagement	Be clear on the purpose, helping to ignite a positive mood among students (King et al., 2016; Steger, 2012)
Exploration	Promote students’ social relationships and their feelings of relatedness, belonging, support, and closeness to others in pairs, groups, or class (King et al., 2016)
Explanation	Expand the understanding of the content (Steger, 2012)
Elaboration	Investigate the different levels of meaning: small meaning—big meaning (Isaksen, 2000)
Evaluation	Evaluate the level of comprehension of the content and goal attainment (Steger, 2012)

which may lead to a low level of ambition and less achievement. Those with low self-efficacy are apt to give up whenever encountering opposition.

Bandura concludes in his research that there are four ways of changing a person's self-efficacy:

- Mastery experiences—performing a task successfully.
- Vicarious experiences—role-modelling success by others.
- Verbal persuasion—being encouraged by someone.
- Emotional and physiological states—learning how to minimise stress and elevate mood.

The most efficient way to stimulate higher self-efficacy is through experiences of educational achievement, resulting in the development of a sense of mastery. If a student has once tried and succeeded with a given task or activity, it inspires the courage to repeat the action that led to the success. However, it is important to note that such successes must not be too easy; success can backfire and negatively impact self-efficacy if the student expects a quick and positive outcome every time. Vicarious experiences through the use of role models to show students what can be accomplished are another source of higher self-efficacy. By observing others who succeed with a task or activity, students may be inspired to believe that they can follow suit. The choice of role model is paramount. A superstar or an icon within the given field may be so far removed from attainable success that a quantum leap would be required to reach such a level. A more suitable role model is someone only one or two steps above the student's current level of understanding or skill; it must be a realistic learning goal that can be achieved through a concerted effort. Persuasion, praise and encouragement are provided verbally to show the way and help the other person to believe that he or she may succeed. A positive frame of mind strengthens perceptions of self-efficacy, whereas a negative frame of mind reduces it. For example, stress reactions and physical tension signal that a possible defeat may be lurking ahead and create a negative frame of mind. Reducing stress and experiencing positive emotions can help create a positive frame of mind. When our expectations are positive, we have greater incentive to perform an action, and once this incentive is present, a behaviour is established that can lead to a mastery experience (Bandura, 2012; Manger, 2009). The more successful the outcome of a learning experience, the higher the level of self-efficacy among students, which can then be used to motivate new actions.

Phan, Ngu, and Williams (2016) and Phan and Bing (2017) introduced the concepts of *optimisation*, *realistic best*, and *optimal best* in relation to

Table 18.11 Integrating accomplishment across the 5E learning phases

Learning phase	Connections with accomplishment research
Engagement	By increasing students' level of self-efficacy, it is possible to increase their willingness to engage (Bandura, 1993, 2012)
Exploration	Use self-efficacy strategies in the form of possibilities for mastery experiences, the use of role models, verbal persuasion, and a classroom promoting positive emotional and physiological states to support student accomplishment (Bandura, 1993, 2012)
Explanation	Encourage students to realise their realistic best achievement by setting learning goals appropriate to their current competence levels (Phan & Bing, 2017; Phan et al., 2016)
Elaboration	Support students in their pursuit of their optimal best achievement by focusing on motivation, confidence, and self-efficacy (Phan & Bing, 2017; Phan et al., 2016)
Evaluation	Evaluating students' mastery experiences and identifying ways to move from realistic best achievement to optimal best achievement (Bandura, 1993, 2012; Phan & Bing, 2017; Phan et al., 2016)

accomplishment and achievement. Optimisation is the process of facilitating and maximising a person's capabilities to their fullest potential and involves both a realistic best and an optimal best achievement. The intensity of optimisation relies on the extent and amount of resources needed, while the volume of optimisation relies on the effort and time needed to reach optimal functioning. The realistic best achievement—whether academic or non-academic—refers to the best that can be achieved in relation to a person's actual competences at a given time, while optimal best achievement refers to a person's quest to achieve full mastery of a given competence at a given time and involves intrinsic motivation. Realistic best and optimal best are based on a person's prior knowledge and experiences. To reach the optimal best accomplishment and achievement requires motivation, confidence, and self-efficacy.

Table 18.11 illustrates how improving self-efficacy and the concepts of realistic and optimal best achievement can be integrated with the 5E model.

An Example of Engaging Education

To bring this to life, Table 18.12 provides an example of this integration of the 5E learning phases and the PERMA framework. First, an example using the 5E model is provided, with the focus on academic skills. Then,

Table 18.12 An example of engaging education that supports both academic skills and wellbeing through a Year 8 maths lesson

Phases	5E	PERMA
Engagement	Caspar started the session with a few questions for the class. Please raise your hand: • How many of you have heard of Pythagoras? • How many of you know about different kinds of triangles? • How many of you know how to calculate triangles? Then he encouraged the students to give examples of the use of triangles in everyday life • Where are they found? • What are they used for?	Positive emotion: Caspar entered 8B's classroom with a big smile. He accessed the smartboard and funky music started playing as usual, allowing the students time to get settled at their desks ready for class and as a common signal for all students that the maths lesson had begun. He turned off the music, smiled, and greeted the students, promoting positive emotions. He started the session with a few 'how many of you' questions, activating and involving the students and setting the stage for today's content. The class was now ready for a 90-minute maths lesson on Pythagoras' theorem
Exploration	The students were placed in groups of four. Each group had to find/draw/cut out triangles in all kinds of shapes and sizes and to try to calculate if Pythagoras' theorem could be applied to these triangles	Engagement: Allowing the students autonomy to choose a method—if they wanted to explore the school and find triangular-shaped objects, if they wanted to draw triangles on paper/computer or if they wanted to cut out paper triangles. Making students work in groups in order to stress relatedness and making sure the necessary competences for accomplishing the task existed in each group Relationships: By working in groups, the students create HQCs and build and maintain positive social relationships

(continued)

Table 18.12 (continued)

Phases	5E	PERMA
Explanation	Caspar turned on the smartboard and showed the following YouTube clip to the students: https://www.youtube.com/watch?v=YompsDIEdtc Caspar asked the students to turn to a partner and explain their understanding of what they had just seen and why Pythagoras' theorem is important, as well as to listen to their partner's explanation Afterwards, a brief class discussion took place	Meaning: The academic content is explained in a brief animated video to promote understanding . Afterwards, the understanding is further clarified as students in pairs share their ideas and elaborate on the purpose of the content
Elaboration	Caspar told the students to continue working in the same groups, creating videos using their smartphones or tablets explaining Pythagoras' theorem with the help of their collection of triangles	Relationship: By working in groups, the students create HQCs and build and maintain positive social relationships Engagement: Students are given space for autonomy, competence, and relatedness If competences match challenges during group work, it can even promote team flow
Evaluation	Each group showed their video on the smartboard. The groups demonstrated six different ways of solving the task and explaining Pythagoras' theorem and created learning in many different ways. Caspar gave feedback to the groups, wrapped up the lesson, and identified the visible learning outcome	Accomplishment: All groups accomplished the maths task and had a chance to fully explore and understand Pythagoras' theorem. They all received constructive feedback . At the end of the lesson, they talked about where and how to use their new knowledge and experiences

an alternative approach that uses the PERMA pillars illustrates a dual focus on students' achievement of academic skills *and* their wellbeing, creating an engaging maths lesson in a Year 8 class.

Conclusion

Combining an engaging learning model with an engaging wellbeing theory provides a strong foundation for creating engaging education for twenty-first-century learners. However, it is extremely important that consideration also be given to how to prepare teachers for the task of creating engaging education. Even today, students report that teachers talk for more than 80% of lesson time, leaving their students passive and bored (UPRIGHT, 2019). Changing teachers' approach to engaging education requires changes in the education and training of teachers.

Implementing a positive education approach in schools that acknowledges academic skills and wellbeing as equally important calls for a whole-school approach involving student, teachers, school managers, other school personnel, and parents. Furthermore, policies and regulations are needed at a wider societal and political level in order to make room for and prioritise academic, personal, and social knowledge and skills within an engaging education to fulfil the requirements for twenty-first-century learning.

There are several learning paradigms and many learning theories and methods offering varying degrees of engaging learning. The 5E model provides a framework for engaging education that activates students and involves them in an explorative learning process by letting them do most of the talking and most of the work. This approach stands in contrast to more traditional teaching where the majority of the lesson consists of teacher instruction. But the 5E model focuses on academic knowledge. Engaging education is about much more than academic knowledge and skills—it also concerns the wellbeing of the student while learning and while at school. Positive education—and specifically the PERMA model provides an opportunity to expand the teaching methods of the 5E to also support student wellbeing and flourishing. In combination with the 5E model, the PERMA framework has the potential to create engaging education for all students, regardless of age and subject.

According to Bal, Bakker, and Kallenberg (2006) engagement in education is important because of its contagiousness: an enthusiastic teacher passes it on to the students, and an engaged student passes it on to his or her peers in a reciprocal or circular process. So let us get it started.

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