

Chapter 12

Education as the Key to Facing Today's Challenges: How We Can Generate a More Resilient Environment and Promote a Paradigm Shift in Economics



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Abstract Nowadays, we are still trapped in a paradigm whose guiding principle is to increase intensity: higher, faster, further. Therefore, many still think that an ever-stronger exploitation of natural resources and increasing monetary profits would bring us wealth and make us happy. For this very reason, we still teach students the values of an 'elbow-society', in which everyone seems to think only of themselves first. In this chapter, we show why it is important to shape a paradigm shift from a material to an ethical focus in order to construct a sustainable (in an economic, social, and ecological sense) and resilient society. From this perspective, we outline the importance of setting cornerstones in the field of education, describe concrete competency models, and recommend their implementation through teaching methods like Social and Emotional Learning (SEL) and Project Based Learning (PBL). Moreover, we contrast the old paradigm and a possible new paradigm based on the values of love and respect that would foster resilience, as illustrated by the best practice example of Bhutan. The complexity of adaptive challenges results from the fact that people are part of both the problem and the solution and key factors such as habits, customs, and cultures come into play and have to be reconsidered.

Keywords Paradigm change · Resilient paradigm · Teaching · Love · Respect

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12.1 Why a Paradigm Shift?

Albert Einstein once said that “we cannot solve our problems with the same thinking we used when we created them” (FBIS Daily Report, 1995). This recommendation is more up-to-date than ever given the phenomena of our time such as globalization, climate change, and the so-called fourth industrial revolution. We are facing challenges that are forcing us to rethink our way of living, working, and educating. Automation, for instance, has increasingly replaced repetitive and analytical tasks, placing greater demand on jobs that require social skills (Deming, 2015). This means we will need a different type of preparation for life, new ways of thinking in order to solve our problems. Moreover, we must realize that sometimes our way of thinking even co-creates problems, such as constantly seeking more economic growth, which fosters the destruction of the natural environment (Daly & Farley, 2011). This moment of insight that our way of seeing things is the problem is called *Eureka* (Vitruvius, n.d.) and is key to a paradigm change.

However, a paradigm change is a considerable challenge as it requires a perspective transformation (Clark, 1940) that has three dimensions: psychological (changes in understanding of the self), convictional (revision of belief systems), and behavioral (changes in lifestyle). Many times, it requires that we rethink our patterns and routines, which is not easy. On the contrary: when people realize that a certain way of thinking and acting is not bringing the expected result, they tend to intensify the existing solution, which can be illustrated by Henry Ford’s statement: “If I had asked people what they wanted, they would have said faster horses” (Vlaskovits, 2011). This shows that, instead of an automobile, Ford’s clients were likely to have thought of a more powerful version of the old solution. Today we are still trapped in a paradigm whose guiding principle is to increase intensity: higher, faster, further. Therefore, many still think that an ever-stronger exploitation of natural resources and increasing monetary profits would bring us wealth and make us happy. For this very reason, we still teach students the values of an ‘elbow-society’, in which everyone seems to think only of themselves first.

However, higher forces such as natural disasters teach us that it is high time for a change of perspective. In the following, we would like to illustrate how impulses in education could lead to a paradigm shift towards more resilience and an economy whose driver is love instead of competition as proposed in Chap. 17.

12.2 How to Create a Resilient Paradigm?

The aforementioned change of mindset and behavior will, most probably, not eventuate on its own. However, it could be encouraged, developed, and supported through educational measures. If we want to create a paradigm shift from competition to love in the economic system (see Chap. 17), we should start with a shift in the competency model for all actors in the system. In other words, if our aim is to create an economy

of love where people believe that their purpose in life is to contribute to society with their talents, then we must first allow and appreciate different kinds of talents and second, teach the actors of this economy to know and respect themselves and their environment. This means that the educational system and teaching methods should aim to develop broader skills in order to gear all social actors' attitudes, values, and ethics towards holistic ways of thinking, feeling and acting.

In this regard, we argue that the mission of education should be to prepare students for real life by generating resources that enable them to deal with themselves (i.e. identifying and developing one's talent and vocation) and their environment (becoming part of the social and ecological context). This would entail the application of a certain set of values. Such a reform has parallels with the sense of resilience established by Christoph Steinebach, which includes internal processes, the environment, and a value framework. For Steinebach, resilience means:

The positive adaptation and sustainable development of a system to respond to short- or longer-term everyday challenges or severe stress. Based on internal system processes and through dealing with the environment, the system defines new reference values and develops required competencies, and the ability to cope with future stress improves. (Steinebach, 2015, p. 557)

Resilience is the result of a paradigm that aimed at constructing a strong, responsive, and sustainable system. Our hypothesis is that promoting a shift in our approach to education and the way we see the economy, based on the three dimensions identified by Steinebach (2015), will lead to more resilience on an individual level and eventually translate into a positive impact on the whole society and environment. Those three dimensions are the following:

- (1) Learning to know and manage oneself
- (2) Interacting with the environment
- (3) Applying values.

12.3 Education as Key to a Paradigm Shift: Competency Models for a New Paradigm

In order to define the “new reference values” and develop the “required competencies” identified by Steinebach, it is necessary to constantly rethink and adapt competency models and teaching methodologies. Through new competency models and teaching methods, pupils acquire the necessary tools to develop self-awareness, fully understand their own abilities (in different roles and contexts), and identify their vocation, which enables them to face their environment differently. All of this will make individuals more *resilient* and produce active participants of an economic system based on love and respect, which is described more in detail in Chap. 17.

There are different competency models for education and lifelong learning that consider competencies beyond technical aspects and include social and emotional

factors. This is in keeping with the idea that humans possess *multiple intelligences* (Gardner, 1993) and are not limited to the cognitive intelligence quantified by classic IQ testing. According to Gardner's model, there are seven different types of intelligence: linguistic, logical-mathematical, musical, spatial, bodily-kinesthetic, interpersonal, and intrapersonal.

Indeed, in many situations we need emotional intelligence to complement knowledge in order to take the right decision. Five key principles are seen as features of emotional intelligence. These are (i) being aware of one's emotions, (ii) being able to manage one's own emotions, (iii) being sensitive to the emotions of others, (iv) being able to respond to and negotiate with other people emotionally, (v) being able to use one's own emotions to motivate oneself (Salovey & Mayer, 1990: 313). Emotional intelligence includes, alongside other factors, empathy and ethical thinking. The psychologist and neuroscientist Howard Gardner goes as far as to claim that a "bad person can never be a good professional" (Amiguet, 2016). According to Gardner, to be "really good" we need to have an emotional investment in our work. This is something that many sources from both the educational and the economic domains agree with; therefore, a competency model outlining the skills required in the 21st century needs to include interpersonal competencies like communication and collaboration (Soffel, 2016), interacting in heterogeneous groups (OECD, 1998), and learning to live together. These all require broader aspects of emotional intelligence such as empathy and tolerance (Delors & UNESCO, 1996).

Within such a context, it is interesting to identify competency models which allow for the incorporation of both educational and economic disciplines. One example is Vocational Training. Note that vocation is at the heart of the term Vocational Training. Also, the German word for profession (*'Beruf'*) is based on the root *Berufung* (vocation). In this field, the German Standing Conference of the Ministers of Education and Cultural Affairs (*Kultusministerkonferenz*, KMK) developed a model in 1996 whose purpose was to empower students/professionals to be able to act responsibly in a working context. This was termed *professional acting competency* (in German: *Berufliche Handlungskompetenz*). Similarly, the German Qualifications Framework for Lifelong Learning (AK DQR, 2011) also provides a model of *professional acting competency*, composed of two triads that create two different dimensions. In one, there are three different types of competencies (technical, social, and personal), whereas the other comprises knowledge, abilities, and attitudes. According to this model, all of those aspects are necessary and equally important in the process of creating a holistic professional (Fig. 12.1).

Another model that goes beyond cognitive competence and integrates personal behavior in an environmental context is the "Four Pillars of Education" proposed by Jacques Delors in a report for the UNESCO (Delors & UNESCO, 1996). The first pillar is related to mental processes, and is entitled "learning to know". This requires acquiring tools of comprehension as well as training attention, memory, and intellect. The second pillar refers to the acquisition of skills and is entitled "learning to do". Here, the emphasis is on empowering students to influence their environment. This might require coaching to help negotiate real-world interactions and situations. The third pillar refers to social competence and is called "learning to live together".

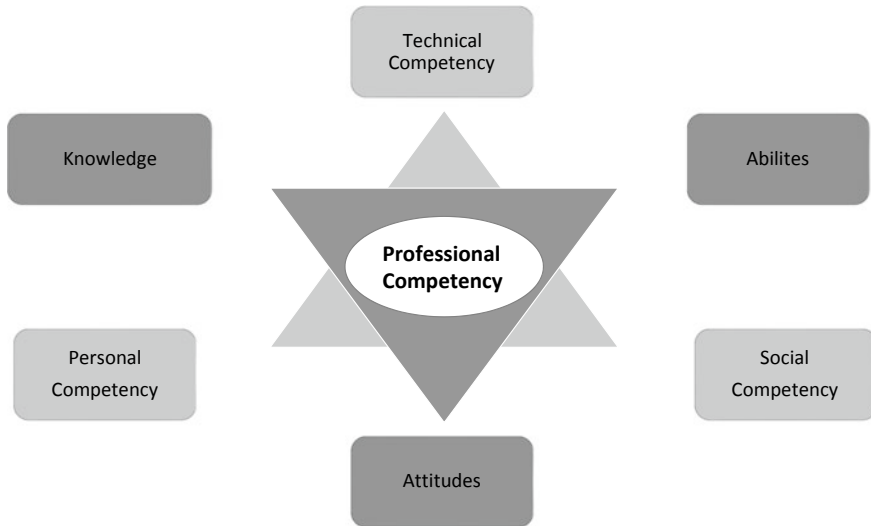


Fig. 12.1 Professional acting competency, cf. German Qualifications Framework for Lifelong Learning (2009)

A person who has acquired this competence is able to cooperate with others. This interdependence requires a level of mutual understanding (empathy) and compassion. The fourth and last pillar is called “learning to be” and refers to the integration of the three previous pillars. This final stage produces responsible, self-confident students.

One characteristic both models have in common is that they describe the components a person needs to develop in order to act responsibly and holistically within their environment. Both models also include the three dimensions mentioned above: (1) Learning to know and manage oneself, (2) Interacting with the environment, (3) Applying values (Steinebach, 2015) or, with the terminology suggested by CASEL, (1) Self-Awareness and Management, (2) Social Awareness and Relationship Skills, and (3) Responsible Decision Making (CASEL, 2017). The two models also illustrate that the concept of a holistic person, in a constructivist sense, is not recent but the product of decades of development. Nowadays, the real challenge is to determine how to translate these models into workable educational initiatives. Therefore, we propose teaching methods aimed at facilitating the shift toward this new paradigm.

12.4 New Teaching Methods for a New Paradigm

How can we best transfer the models outlined above to teaching practice so as to promote change and prepare individuals to be active and responsible actors in an economy based on love instead of competition? This is clearly an important question.

For such a task, teaching methods are needed which stimulate not only cognitive but emotional intelligence.

We now outline teaching methods that are part of a constructivist learning theory paradigm. This means that learning is the result of an active construction process by the learner and includes his or her previous knowledge and experience, among other elements. Furthermore, the constructivist view rests on the notion that the learner and his or her history and context are a central aspect in the learning process. Within this paradigm, the learner's autonomy, self-respect, and observational capacity are key concepts. In other words, the learning process is tailored to the student. This is certainly not a teacher-based process where the learner "suffers" passively, as might be the case using the framework of a structuralist paradigm.

For constructivist teaching, according to Dubs (1995), this means that learning should meet the following criteria:

- Learning is an active process
- Complex and holistic areas of concern, that are oriented around real-life situations
- Through collective, group learning, the individual interpretation is reflected and reconsidered
- Mistakes are regarded as part of the learning process
- Previous experience and interests of the learner are highly important
- Emotions and identification have to be included in the learning process
- Evaluation is not only concerned with the learning outcome, but also with the process, methods, and strategies used.

This makes it clear that the learner's talents and predispositions play an important role and that his or her intrinsic motivation is highly relevant for the learning process. This is possible as learning happens actively, not only as a result of extrinsic motivation. Both methods—"Social and Emotional Learning" and "Project Based Learning"—have real potential to contribute to the necessary paradigm shift to achieve an *economy of love* and a more resilient society.

Social and emotional learning (SEL): Social and emotional learning integrates five different competencies that are commonly acquired at school. However, their impact goes far beyond the classroom: a number of studies have shown that they can influence the culture not only of the whole school, but also that of the students' homes and communities (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011; Weissberg, Durlak, Domitrovich, & Gullotta, 2015). In other words, they impact the learners in the micro, meso, exo and macro contexts. The broad influence of this educational initiative has parallels with Steinebach's resilience model, whose resources can also be found in different contexts (Steinebach, 2013):

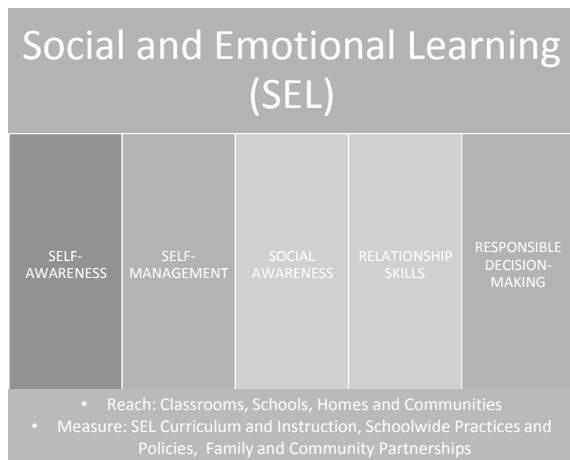
- Resources of the person and social competencies
- Resources of the family
- Resources of the school or vocational training institution (good climate, clear rules and models)
- Relation with peers (social and emotional support)
- Resources of society (availability of education and training offers).

Researchers generally agree upon five key competencies of SEL (Durlak et al., 2011; Weissberg et al., 2015). These competencies provide the foundations for high-quality social relationships and nurturing resilience to a variety of challenges. These core competencies of SEL are Self-Awareness, Self-Management, Social Awareness, Relationship Skills, and Responsible Decision Making. These competencies are in keeping with those we have already outlined as necessary to build up both *resilience* and an *economy of love*. In the following model, provided by CASEL (2017), the competencies are described more in detail with real-world examples of their application. Once again, one can conclude that those competencies (e.g. identifying problems, empathy or ethical responsibility) are key to a long-term paradigm shift in economics and society (Fig. 12.2).

Importantly, studies that have compared the learning outcomes of Social and Emotional Learning with those of traditional instruction methods have shown that SEL increases students' academic performance (Durlak et al., 2011). Furthermore, SEL programs have broader positive effects: they reduce aggression and emotional distress among students, increase helping behaviors in school, and improve positive attitudes towards oneself and others (Durlak et al., 2011). SEL also strengthens students' relationships with their peers, families, and teachers, meaning that it can help build a student's support base and therefore their resilience to challenges (Steinebach, 2013) and shows measurable benefits that exceed its costs, often by considerable amounts (Belfield et al., 2015). These characteristics make SEL a potentially valuable tool to achieve the suggested paradigm shift.

Project Based Learning (PBL): Project Based Learning is another example of a teaching method that, alongside fostering resilience (Barron & Darling-Hammond, 2008), develops competencies necessary for a paradigm shift in economics. PBL allows students to learn by experiencing and solving real-world problems, complement theoretical and practical learning, and integrate reflection into the learning environment. It promotes the autonomous learning process of students through com-

Fig. 12.2 Social and emotional learning, cf. framework for systemic social and emotional learning and contexts, Collaborative for Academic, Social, and Emotional Learning (2017)



plex tasks that have more than one solution. To complete these tasks, students usually work in pairs or groups while teachers act as coaches and facilitators to stimulate inquiry and reflection (Barron & Darling-Hammond, 2008; Thomas, 2000).

One of the unique aspects of the PBL method is that it purposefully includes the whole process of stages required to a complete action (Hacker, 1998). This can be viewed as a cycle where students plan an action, decide on specifics, execute their idea, and control the results before evaluating them and reapplying their knowledge to inform the whole circle again. This is conceptualized in Fig. 12.3.

This teaching method engages students in creating, questioning, and revising knowledge, while at the same time developing their skills in critical thinking, collaboration, communication, reasoning, synthesis, and resilience (Barron & Darling-Hammond, 2008). Studies comparing learning outcomes for students taught using PBL and those taught using traditional instruction show that PBL deepens long-term retention of content, improves problem-solving and collaboration skills, and improves students' attitudes towards learning (Strobel & van Barneveld, 2009; Walker & Leary, 2009). As with SEL, PBL goes beyond the school context and can be applied in learning contexts in a wider sense. This is illustrated with the example of GaiaEducation, an education project that contributes to the UNESCO Global Action Programme on Education for Sustainable Development. GaiaEducation applies PBL to prepare stakeholders with skills and tools for real-life solutions such as designing sustainable settlements in developing countries.

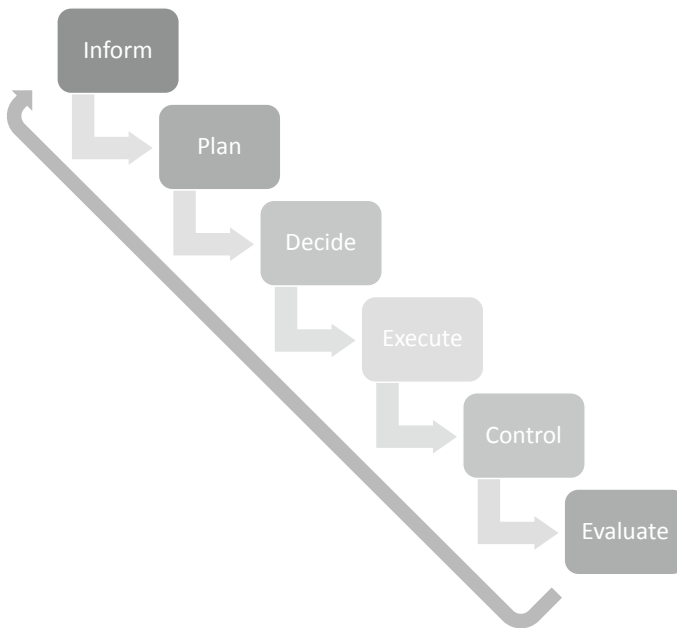


Fig. 12.3 Phases of a complete action, cf. Hacker (1998)

Both mentioned methods, SEL and PBL, foster interpersonal skills such as teamwork, coordination, and collaboration, as well as leadership skills such as responsibility, assertive communication, self-presentation, and social influence. These can be seen as essential tools to enhance consciousness and to promote the realization of a resilient society and economy. Moreover, in both examples, students are learning from and with peers while the teachers operate as facilitators. This suggests that we also need a new role distribution between teachers and learners for a paradigm shift. This fits into Haidt's interpretation of Jean Piaget's recommendation for moral development—for Haidt, “the best thing adults can do to foster moral development is to get out of the way” (Haidt, 2008, p. 66).

To illustrate the teacher's role, we can use the metaphor of how a gardener (the teacher) tends to his or her plants (the students). Here, in order to produce the best botanical specimens, the gardener knows he must give the plants space to grow and develop on their own. To continue the metaphor, conventional teaching can be seen more as a “sculptor” who limits his students and works with pressure like a craftsman producing a certain good. The role of the teacher as a gardener or facilitator also implies higher self-guidance by the students in the learning process (which has to be trained). This leads to different evaluation methods that are not only teacher-centered but also oriented toward self or group evaluations among the students. Through such activities, the students get trained to (i) reflect on and contextualize their learning process, (ii) identify their strengths and areas to develop, and (iii) recognize valuable resources and abilities in themselves and others that aid the achievement of a common goal. The suggestion that teaching is most efficient when a student is given an active role in the learning process has parallels with an ancient Chinese proverb, which again shows that even though the idea is not new, it is hard to implement:

Tell me and I'll forget it,
Show it to me and I may remember,
Involve me and I will understand.

12.5 A Shift Towards Resilience: The Old and the New Paradigm

After having analyzed how educational measures could favor a paradigm shift, we would now like to introduce a simplified model that shows the contrast of the old to the new paradigm and what that means in the fields of education and economics. A more detailed analysis about the shift in the economy towards an economy based on the value of love is presented in Chap. 17 of this book.

Another objective of this table is to visualize that the cornerstones we set in education will later be reflected in the economic system. For instance, if a person was taught at school that the most important thing is to be the best and win in his or her work life, it will be challenging for this person to work within a team, as this requires a

different mindset. However, for companies to be competitive, their employees needed to have experience sharing ideas and viewpoints with diverse groups of people. Such an acknowledgment highlights the importance of cross cultural and interdisciplinary thinking in societal advancement. This coincides with the experience of one of the most successful businessmen in China and founder of *Alibaba*, Jack Ma, who emphasized the importance of the triad of different quotients: the intelligence quotient (IQ), the emotional quotient (EQ), and the love quotient (LQ). In an interview given to the World Economic Forum, he made the following statement: “To gain success a person will need high EQ; if you don’t want to lose quickly you will need a high IQ, and if you want to be respected you need high LQ—the IQ of love” (Flashman, 2018).

To achieve these competencies, it is extremely important to set a sound foundation within the education field and prepare people step by step for a new paradigm and their future challenges. Students have to be trained to work in a team, use their different intelligences, manage themselves, assume responsibility, and perceive mistakes as an opportunity to learn (Bradberry, 2017). If we educate young people this way, they will be more likely to apply those competencies in their adult lives and become valuable actors of a more resilient society and economy. This kind of education is the cornerstone of flexible, innovative, and empowered working people who are aware of their strengths and weaknesses and act in awareness of their environment, seek to contribute to the common good, and make responsible decisions.

In this regard, the kingdom of Bhutan, located in the Eastern Himalayas, can serve as best practice towards a new paradigm. Bhutan is a very interesting example, not only given the fact that its performance is measured by the Gross National Happiness (GNH) instead of the Gross Domestic Product (GDP) like in many other countries, but also because this paradigm shift was accompanied by educational measures. While the GDP is the final value of the goods and services produced within the geographic boundaries of a country during a specified period of time (The Economic Times, n.d.), the GNH consists of the following indicators: physical, mental, and spiritual health; time-balance; social and community vitality; cultural vitality; education; living standards; good governance; and ecological vitality (Ura et al., 2012).

This measuring shift from a material, quantitative production focus to an ethical approach that privileges the holistic well-being of the citizens and the environment was implemented alongside an educational initiative of the government called *Educating for GNH*. On an educational level, the measures to promote the GNH paradigm are twofold. First, values have been integrated in the curriculum: they inform the principal’s and the teachers’ actions and daily life practices at school (Drupka & Brien, 2018). Drupka and Brien summarized the following emphasized values: “deep critical and creative thinking, ecological literacy, practice of the country’s profound ancient wisdom, contemplative learning, a holistic understanding of the world, genuine care for nature and for others, competency to deal effectively with the modern world, preparation for right livelihood, and informed civic engagement” (Drupka & Brien, 2018, p. 12).

Second, this was complemented by the *Green Schools for Green Bhutan* campaign, that understands “green” in a broad sense including both the ecological and the social environment (Hayward & Colman, 2010). Two of the central pillars of this initiative were promoting the involvement of parents and communities, which can be understood as an important source of resilience, as well as the creation of an atmosphere “that provides respect, care, warmth, and delight in the school” (Drupka & Brien, 2018, p. 13), values that are also the heart of a different economic paradigm as described in Chap. 17.

We can conclude that the GNH vision is strongly in line with a resilient paradigm, as we can presume that it promotes the pillars established by Steinebach and CASEL: (1) Learning to know and manage oneself (Self-Awareness and Management), (2) Interacting with the environment (Social Awareness and Relationship Skills), and (3) Applying values (Responsible Decision Making).

Another example that can be mentioned in the context of a paradigm shift in the education sector is Singapore, the leader of the 2015 PISA (Programme for International Student Assessment) ranking (Wood, 2018). After a solid track record of ranked exam results, the island state is adapting its educational system according to the future skills that will be required in working environments. Those skills will be less routine and memory oriented, instead focusing on typical human skills like creativity, leadership, and problem solving, according to the 2018 Future of Jobs report issued by the World Economic Forum (Wood, 2018), which is in line with the new paradigm detailed in Table 12.1.

12.6 Summary and Outlook

In this chapter, we have shown why it is important to shape a paradigm shift from a material to an ethical focus in order to construct a sustainable (in an economic, social, and ecological sense) and resilient society. Therefore, we have outlined the importance of setting cornerstones in the field of education, described concrete competency models, and recommended their implementation through teaching methods like SEL and PBL. To enhance a paradigm shift, we suggest that the highlighted educational measures are a vital resource in preparing for a perspective transformation and therefore build up abilities, values, and attitudes. Those measures would not only encourage more personal and societal resilience but also establish further innovation and entrepreneurial skills (i.e. stress management, self-discipline, self-motivation, goal setting, communication, relationship building, problem identification, and problem solving). These, in turn, would make the whole economy more flexible, resilient, and forwardthinking. Through such an initiative, sustainable economic development could also be fostered alongside improved ethics and values.

Moreover, we have contrasted the old paradigm and a possible new paradigm based on the values of love and respect that would foster resilience, as illustrated by the best practice example of Bhutan. Besides the measures mentioned in this chapter, for a future paradigm shift it would be equally important to consider new

Table 12.1 Comparison between the old and a possible new paradigm from an educational and economic point of view

Field	Dimension	Old paradigm	New paradigm
Education	Learning process	Knowledge-based	Integration of knowledge-based with social and emotional learning
	Measuring intelligence	Intelligence quotient	Multiple intelligences: Intelligence quotient Emotional quotient Learning quotient Among others
	Education focus	Teacher-focused approach, students compete	Pupil-focused approach, students work together
	Role of the student	Receives information	Creates knowledge, empowered
	Role of the teacher	Teacher as “sculptor”	Teacher as “gardener” (facilitator)
	Learning Motivation	Mainly extrinsic	Mainly intrinsic
	Mistakes are synonym for	Failure	Part of the learning process
	Monitoring	External control	Self-management
	Competency model	One-dimensional hierarchy of competencies	Competencies are multiple and complete each other
	Output	Discipline, applying orders	Creativity, Network Thinking, Decision Making, Responsibility
Economy	Goal	Exploitation, Maximize profit, Growth	Sustainability (social, economic and environmental)
	Way of relating with other actors of the system	Competition (only one actor can win)	Collaboration, respect, love (win win)
	Performance index	Gross Domestic Product (GDP) [1]	Gross National Happiness (GNH)
	Organization	Hierarchy	Network, Team
	Society model	Industrial Society	Knowledge Society
	Individual model	The individual is alone and therefore has to compete	The individual is part of the society and acts in awareness of its environment. It seeks to contribute to the common good
	Output	Repetition	Innovation

(continued)

Table 12.1 (continued)

Field	Dimension	Old paradigm	New paradigm
	Prepares for	Routine	Flexibility
	Relationship between person and system	Adapts person to a framework like an object	Promotes a persons' talents like a subject who creates the system
	Organizations focus	Internal	Context-sensitive, integrated in ecosystem
	Decision making	Egoistic	Ethical, based on the common good
	Motivation for career choice	Mainly extrinsic (e.g. prestige-, money-, security-based)	Mainly intrinsic (vocation- and talent-based)

leadership models, in analogy to the mentioned teaching models, which would lead to increased creativity, diversity, and resilience in the working world. It should be noted that studies have shown that the labor market increasingly rewards social skills as they permit to reduce coordination costs allowing workers to specialize and work together more efficiently (Deming, 2015). As we emphasized, paradigm shifts not only in general but also in every organization are complex processes which can be facilitated by external experts through training and consultancy. This can be especially helpful when the challenge is not only of a technical nature but also has an adaptive component (Heifetz, Grashow, & Linsky, 2009)—as is the case with most of the big and knotty phenomena mentioned at the beginning of the chapter such as global warming and digitization, among many others.

The latter applies to the models we highlighted above for both education and economy. The complexity of adaptive challenges results from the fact that people are part of both the problem and the solution and key factors such as habits, customs, and cultures come into play and have to be reconsidered. To put it once again in Albert Einstein's words: "We cannot solve our problems with the same thinking we used when we created them" (FBIS Daily Report, 1995).

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