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Introduction: Creativity and Learning as Sociocultural and Intertwined Phenomena

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The importance of creativity and learning cannot be overestimated in education, in working life, and in society at large. In recent years, educators and employers alike have highlighted creativity and learning as some of the most significant phenomena in a constantly changing world.[1] The requirements for competence, expertise and innovation in various fields of life are so high that the individual's chances of

[1] In fact, the OECD's list of the top 10 job skills for 2025 include analytical thinking and innovation (1), active learning and learning strategies (2), and creativity, originality and initiative (4). More details can be found here: https://www.weforum.org/agenda/2020/10/top-10-work-skills-of-tomorrow-how-long-it-takes-to-learn-them/.

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meeting the requirements independently are negligible. For this reason, the skills associated with cooperation and thus, with acquiring an expanded understanding of different perspectives, are particularly relevant (Hmelo-Silver et al., 2013). In complex environments, problem solving and the development of new inventions that require deep and continuous learning and creativity are commonplace. Creativity and learning have also been found to have similar dynamics and to support each other across domains. Studies have shown that they are strongly intertwined and mutually reinforcing (e.g., Karwowski et al., 2020). From the perspective of sociocultural theories, both creativity and learning emerge from interactions among individuals, other people, and the environment (Glăveanu et al., 2019).

What does creativity mean? Even in the scientific literature, there is no final or universal answer to this question. However, many descriptions of creativity have been recognized by those working in creativity research. Runco and Jaeger (2012) have traced the historical roots of the "standard" definition of creativity, which states that creativity includes two main criteria: originality and effectiveness. The first criterion refers to the novelty and uniqueness of the creative product. The latter criterion pertains to the product's value and usability. In some definitions, surprise and intentionality have also been mentioned as essential (e.g., Simonton, 2018; Weisberg, 2015). Much of the essence of creativity depends on the context and the requirements; in art, the demand for novelty is often

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emphasized, while in organizations, effectiveness and added value are essential (Puccio & Cabra, 2010). In terms of usefulness, the new and creative outcome should be sensible and socially relevant (Runco, 2003; Runco & Jaeger, 2012). Several theoretical models of creativity have been presented (Glăveanu, 2015; Lubart, 2017; Simonton, 2018), which provide tools for examining the phenomenon from different perspectives. The essential "components" of these models are the individual or creative actors, acts or practices, the environment and the outcome (e.g., Glăveanu, 2015; Lubart, 2017).

One of the major challenges faced by creativity researchers involves the difficulty in studying creative expression in a systemic and developmental manner, as the action of an "entire" person, situated in an evolving network of relations (Gruber, 1988), instead of situating the whole dynamic in the individual's mind. This is largely due to a longer history of considering creativity a personal quality and the trait that distinguishes an individual the most from others. However, a closer look at how people create in practice reveals the importance of interaction and co-creation. As noted by Barron years ago, all creativity is collaboration (1999), a statement meant to bring to the fore the fact that even solitary moments of creativity are never asocial in nature. We always depend on other people, other perspectives and tools to generate novel and meaningful outcomes, from ideas to the most visible creative achievements. A comprehensive theory of creativity thus requires us to perceive at "persons in context" rather than as isolated creators, as well as to bring to the fore their embedding in a world of objects and of others who are part and parcel of creative acts.

Similar to creativity, learning has been described in a number of ways; over the decades, different definitions and approaches to learning have emerged. In general, learning can be considered as referring to a process that produces a relatively stable change in persons (see e.g., Alexander et al., 2009). Learning is normally defined as the internalization and control of knowledge and skills, the formation of a new understanding and the development of competence. As in research on creativity, the area of learning has focused on learners and their abilities and activities, on the progress and practices of learning processes, and on learning outcomes. When reflecting on the key learning theories, from behaviorism and cognitivism to constructivist approaches, it becomes clear

that the latter have had a huge impact on how we define knowledge and learning (e.g., Ermer & Newby, 1993, 2013; Loyens & Gijbels, 2008; Tynjälä, 1999). On this basis, for example, the concept of collaborative learning (see Dillenbourg, 1999) has emerged, which refers to shared learning processes, joint learning activities, such as goal setting and the construction of knowledge among group members. Appreciating and consulting all group members about their views, as well as joint dialogue, lie at the heart of collaborative learning.

On one hand, the existing literature focusing on the links between creativity and learning has focused primarily on examining both as separate phenomena, with a view to finding differences or similarities between them. On the other hand, the phenomena have also been approached together, for example, through the concept of creative learning (Gajda et al., 2017). Indeed, in the past, the relation between creativity and learning has been more prominently attached to formal contexts, such as the classroom (basic and higher education). However, it still seems that in formal education, creative pedagogies need to be further developed, producing an overarching synthesis that encompasses both creativity and learning (Cremin & Chappell, 2019). Much of the potential of creativity and learning to transform everyday life (e.g., problem solving, creating something new, coping with life, or producing innovative outcomes) has been overlooked. However, research on creativity and learning as intertwined phenomena in different life contexts is central to increasing our understanding of both and developing context-specific practices (see e.g., Anderson et al., 2014).

Additionally, different methodologies need to be developed in order to study the diversity of creativity and learning across contexts so as to understand their sub-processes and reach a more dynamic conceptualization of their manifestation rather than a general statistical understanding (e.g., Said-Metwaly et al., 2017). The constant development of technologies, the unpredictability of the future, and rapid processes of globalization have created the need to gain a better understanding of the nature of creativity and learning as co-occurring processes, as well as to develop ways of supporting them in different applied contexts. To address this need, this book's contributors approach creativity and learning as (a) sociocultural phenomena and (b) interdependent processes. Next, we

briefly present the building blocks of creativity and learning for a sociocultural examination of both as intertwining phenomena. In addition, we will discuss the usefulness of this approach.

Sociocultural Perspective for Creativity and Learning

Creativity and learning are strongly interconnected in people's daily lives in a global society, whenever we are faced with small or large problems, in situations of interaction and in new, often digital environments. It matters how we understand and approach these phenomena in research and practice, as our approach strongly determines the opportunities (and challenges) that arise for the realization of creativity and learning. Creativity and learning have long been perceived as individual-driven processes, although new information about their sociocultural nature has emerged in recent decades, transforming our view of both (e.g., Eteläpelto & Lahti, 2008; Glăveanu, 2015; Wenger, 2009). To cite a concrete example, constructivism has established itself as the dominant educational theory in one way or another (Ertmer & Newby, 2013), and it shares a lot of premises with sociocultural approaches. The main premise remains, that is, learning and creativity do not take place in a vacuum; both are the results of sociomaterial situations and therefore, strongly supported by factors outside the individual. If we study creativity and learning from a narrow individualistic perspective, understanding it as only emerging from and thriving in our minds and in us as people, we limit the possibilities offered to us by the environment. The sociocultural perspective on creativity and learning utilized in this book does not exclude the importance of the individual's mind, agency or action for the whole construct, but it provides a broader, more multidimensional and evolving perspective for examining creativity and learning (Glăveanu et al., 2015; John-Steiner & Mahn, 1996).

The sociocultural tradition in these areas has often relied on the theoretical views of Lev Vygotsky (1978) and Mihály Csíkszentmihályi (1996). These describe creativity and learning as whole processes arising from the interactions among the individual, the community and the

broader cultural environment. Indicating the differences and the relations between the individual and the social field is therefore useful for understanding the dynamic nature of creativity and learning in specific contexts. From a sociocultural perspective, creativity thrives in a collaborative environment (Moran & John-Steiner, 2003) and can be viewed as an event that occurs within a group when its members'different ideas are brought together (Sawyer, 2012). At the level of societal debate, creativity has been highlighted as one of the main strengths in meeting the challenges of change and renewal (see e.g., Amabile & Khaire, 2008; Florida & Goodnight, 2005). Creativity and learning manifest themselves as part of the social activities of many different groups and occur in many areas of life, industries, or organizations (Craft, 2008; Miell & Littleton, 2004; Perry-Smith, 2006; Shalley & Perry-Smith, 2008). At the same time, both phenomena are context-dependent and focused on different issues in various situations and environments. The importance of context is thus paramount.

The sociocultural approach is a broad, heterogeneous orientation under which we can find several different theoretical lenses used to examine creativity and learning. These range from pragmatism (e.g., Dewey, 1993) to cultural-historical and activity theories (e.g., Vygotsky, 1978) and the dialogical theory (e.g., Bakhtin, 1981). Each of these ultimately studies creativity as an ecology that includes actors, actions, audiences, artefacts, and affordances (Glăveanu, 2013). We can thus focus our attention on acts that bear the mark of creativity and learning, as well as the roles of actors in creative (inter)action. We can investigate the outcomes of creativity by asking what value they bring to the community in which the creative learner works or to the society where he or she lives. We can broaden our perspective by positioning ourselves in the situation of another person or group and engaging in perspective-taking. Because creativity and learning often produce useful meanings for individuals, communities or societies, sociocultural approaches also encourage us to understand the importance of supporting creativity and learning from the "outside." The most typical and common descriptions of supporting creativity and learning are often related to the culture of the operating environment, for instance, characteristics such as climate, guidance, and autonomy (see e.g., Lemmetty, 2020).

In summary, the sociocultural premise brings to our attention the different contexts, environments, and platforms in which creativity and learning take place. It highlights the roles and practices of different actors in the processes of creativity and learning. The sociocultural approach also provides an opportunity to step outside the individual and observe the forms of support that enable learning and creativity in the environment: teaching methods, leadership culture, or group activity structures. At the same time, it would be good to remember the statement of Billett et al. (this volume): "There is nothing more social than individuals (e.g., workers), whose understandings, practices and values arise through their engagement and negotiation with what is experienced socially, albeit in personally idiosyncratic ways, across their life histories."

Creativity and Learning as Intertwined Phenomena

According to the late professor, Anna Craft (2005, p. 53), "It seems that'creativity' and'learning' are not distinguishable if we take a constructivist approach to learning, unless we take a harder line on what counts as'original and'of value.'" Indeed, currently, creativity and learning are increasingly clearly equated, especially when viewed as collective or social phenomena (Craft et al., 2007; Jeffrey & Craft, 2004). According to Beghetto (2016, p. 4), creative learning has been defined as a "combination of intrapsychological and interpsychological processes that result in new and personally meaningful understandings for oneself and others." Problem solving and the related process appear to be key features of creativity (e.g., Collin et al., 2017); at the same time, they have been said to expand knowledge and expertise (Bereiter & Scardamalia, 1993). Operational challenges and problem situations thus serve as resources for continuous learning (Watkins & Marsick, 1993). The process of creative activity is closely related to the actors' competence and previous knowledge (see Runco, 2015; Simonton, 2012), which in turn are closely associated with learning. Obviously, the role of learning in creative activity is relevant. According to Lemmetty and Collin (2020), the processes of

creative activity should be approached and studied as learning. Similarly, learning should be perceived as a creative activity. Biskjaer et al. (this volume) elaborate this point when it comes to curriculum and classroom activities through twofold demands and conceptualizations of creativity—one as a prerequisite for learning, the other as a learning outcome—especially when addressing collaborative learning.

Indeed, many researchers have combined creativity, learning and expertise when examining different creative processes. For instance, Ness and Soreide (2014) have studied the progress of knowledge construction processes in group situations. The researchers have observed that the creative process begins with detecting the need to develop something new. It is helpful if the participants have previous knowledge about and skills relevant for the topic. Through this previous knowledge base, a new shared understanding can be constructed in dialogue. Thus, at the heart of the creative process is the shared knowledge through which the ideas are developed and finally exercised (Ness & Soreide, 2014). Ness (this volume) continues this approach by addressing creative knowledge processes, used as a bridge between creativity and learning, elaborating idea development through both collective and individual efforts. Lemmetty and Collin (2020) have found that the process of creative activity includes learning practices that appear to be prerequisites for the transition from process to progress. These practices are related to the learner's activities, such as setting a learning goal, designing learning methods, applying what has been learned and evaluating the outcome. Accordingly, it is easy to agree with Beghetto's (2016) view that creativity plays an important role in learning. He suggests that creativity researchers and educational scholars have long asserted that theories of learning need to be broadened to include creative cognition, but the nature of that role is not clear yet (i.e., the way it articulates acquiring and creating knowledge).

Focus, Purpose, and Contents of the Book

This book, *Creativity and Learning: Contexts, Processes, and Support*, focuses on the relations and connections between creativity and learning.

The focus is broad, from basic education to the learning emerging in workplaces. In the chapters of this book, the writers examine sociocultural definitions of creativity and learning in the contexts of children's education and adult education, as well as workplaces and organizations, making visible the differences and the similarities across settings. By shifting the focus from individual psychology to a sociocultural framework, we become more firmly attached to the multidimensional nature of the processes under study, something that necessarily results in the "bigger picture" of creativity and learning and their interdependence. The idea is not to render individuals invisible but to acknowledge and illustrate that creativity emerges in the interaction and the context, not in a vacuum. We also focus on describing and providing insights concerning the frameworks, cultures, structures, and practices developed to enhance creativity and learning in different applied contexts.

The book combines theoretical understandings, recent empirical findings and practical tools to be used by researchers and teaching staff, as well as practitioners, educators, and managers. The chapters included in this volume bring new evidence of the fact that creativity and learning are strongly intertwined and strongly contextual. This book has a threefold purpose: (a) to provide new information on sociocultural theories of creativity and learning in the contexts of education and working life, (b) to describe the processes of creativity and learning by presenting empirical research and examples of practice, and (c) to develop an understanding of the ways of supporting creativity and learning in different contexts. The book is thus a comprehensive, research-based volume on creativity and learning and their dynamic interconnection in various spheres of our life.

The book progresses from theoretical perspectives to more practical viewpoints. In the first chapters, the writers examine the concepts of *creativity* and *learning*, as well as *creative learning* in general. Next, the phenomena are addressed in the contexts of children's education, of teacher education and higher education, and finally, of working life and organizations. In each chapter, the writer/writers introduces/introduce interesting and relevant concepts and descriptions to understand creativity and learning in different contexts. The writers also

reflect on and explore ways to support creativity and learning in different environments and with different kinds of methods or tools.

In this first "introduction" chapter of the book, we, as the editors, present three main conclusions based on all the chapters of this book. In the second chapter, Ronald Beghetto frames creativity through uncertainty, and by this, to some degree, provides the ultimate warranty for creativity education as we most certainly live and work in a world filled with uncertainty, filling the gaps between our established routines and habits, on one hand, and changes, on the other hand. Beghetto discusses the central role of uncertainty in creative learning and defines the concept, leading to an understanding of uncertainty as an essential element of it. In the third chapter, Michael Hanchett Hanson and Ana Jorge-Artigau introduce readers to Howard Gruber's (1988) work around historical materialism and individual agency, both of which have implications for the creative development of individuals in different sociohistorical contexts, such as education. The discussion partly revolves around the important topic of creative transformative agency and determinism, which are also proposed as dynamic and contextually changing. His investigation moves with systemic, interactional, and collaborative accounts, detailing the creative process as emerging over time.

In the fourth chapter, Giovanni E. Corazza et al. continue this line of thought with their account of paradigmatic change from standardized education to education that can better adopt organic creativity. They discuss the problem of designing an educational system for the development of intelligence and creativity—perceived as crucial for the future. They address the importance of different means to involve the students in developing high-level cognitive skills that allow them to appropriate knowledge today and in the future. The concept of the space–time continuum can be utilized to this end. In the fifth chapter, Michael Biskjaer et al. invite us to ask which creativity we wish to educate within computing education if we want children to be creative in their use and understanding of technology. They also highlight the fact that we already (for example, in the curriculum) expect students to use creativity as a prerequisite for learning and in the manifested outcomes of learning. The authors find it important to educate our students to

become informed and engaged participants in the increasingly digitalized twenty-first century.

In line with the bifold requirements for creativity, in the sixth chapter, Tamás Szabó et al. argue for the recognition of multiple creativities as a new vision for both education and teacher education, for example, approaching everyday creativity as a manifestation of real-world learning. In their chapter, teacher professional learning is based on the diverse creativities-as-practices, which catalyzes educational change in whole-school contexts. They also present teachers' narratives that discursively reconstruct not only their professional identities but also their perceptions of creativity in their whole-school ecologies. Szabo et al. also investigate the Finnish National Core Curriculum and its impacts on the creativity required in schools and from teachers. In the seventh chapter, Anu Kajamaa and Sakari Hyrkkö utilize a case study of distributed creativity and expansive learning in the context of a teacher training school that conceptualizes creativity through creative acts and multiple creative acts as leading to creative leaps. The authors address the fact that creativity and novel creative products emerge as a collective interactive process. The chapter contributes to the understanding of creativity as an object-oriented and distributed process, including tensions and innovation creation in the multifaceted interactions within a group of people.

In the eighth chapter, Ari Tuhkala et al. consider how a virtual enterprise simulation game (RealGame) can potentially cultivate digital creativity and collaborative learning and thus provide an example of using the digital environment to foster creativity and learning in working life and higher education. Despite their notion that students focus more on collaborative learning than on collaborative creativity, they address the importance of studying collaborative creativity in the future. In the ninth chapter, Ingunn Johanne Ness presents a description of the creative knowledge process and the characteristics attached to it in interdisciplinary groups. Additionally, she explains how these findings can be applied and transferred to another context student groups in higher education. For both employees' and students' creativity, Ness highlights the importance of utilizing differences constructively, for instance, by ensuring psychological safety and trust within the groups.

In the tenth chapter, Stephen Billett et al. focus on describing the co-occurrence of work, learning and innovation. In their presented study, they provide examples of how the cultural practices that comprise occupations are remade and transformed through the co-occurrence of workers' learning and innovation in and through work. Their findings highlight the importance of employees' initiation, engagement and agency in innovating, as well as managers' and supervisors' support in offering opportunities for innovations in small and medium-size organizations (SMEs). In the last chapter, Kaija Collin et al. present the practices and structures that support creativity and learning in the context of growth companies that they have discovered through the Human Resource Management Supporting Creativity and Learning in Finnish Growth Companies (HeRMo) research project. Their findings reveal the challenges for workplace learning posed by a self-directed organizational structure, highlight human resource development (HRD) practices supporting creativity and make visible the practices and the conflicts experienced by human resource management (HRM) concerning employee and team operations.

The Main Conclusions of This Book

In all chapters, the writers illustrate and underline the importance of creativity and learning in the fast-paced and changing environments where we live. A plurality of voices is fostered, framing creativity as a prerequisite for learning, on one part, and as an evaluation aspect of the learning outcome, on the other part. Creativity is also framed as an everyday phenomenon that is connected with real-life learning, something that emerges from multiple sources and becomes manifested in various ways. Everyday creativity is connected with organic learning that is partly opposed to standardized designs and testing, with an emphasis on interpretive and transformative views of learning—aspects often associated with constructivism (e.g., Beghetto & Kaufman, 2009). Overall, the call is for sustainable and student-centered approaches where educational planning and design consider multiple perspectives—in schools as well as in working life. With this aim, the contributors address

learners as co-authors and co-creators, partners describing their active engaging roles. The chapters' authors provide an understanding of the importance, nature, and means of creativity and learning, as well as how these are supported in different contexts. This understanding is increasingly important for educators and practitioners in working life in a rapidly changing world where problems are complex, multifaceted, and interconnected. As the approaches drawing from the constructivist learning paradigm agree on the construction metaphor, knowledge is actively built, not passively attained. Naturally, these then produce accounts where interactions and distributed ways of producing and co-creating are emphasized, in a world and society where understanding and taking on different positions are important. From this perspective, the book makes three important—partly interconnected—contributions to understanding creativity and learning:

1. change and uncertainty as bases for creativity and learning;
2. agency and autonomy (as sources of creative interactions), leading to creativity and learning; and
3. cultures, shared goals and different methods of building, supporting, and facilitating creative learning communities.

Change and Uncertainty as Bases for Creativity and Learning

In this book, we can find a wide variety of descriptions of the changes and the challenges they bring. For example, the challenges of digital transformation in educational programs (Biskjaer et al., this volume), the move toward an information and knowledge society (Corazza et al., this volume; Hyrkkö & Kajamaa, this volume), continuous growth of organizations (Collin et al., this volume) and business requirements and demands for innovations (see Billett et al., this volume; Tuhkala et al., this volume) are contexts for change that are described as the starting points for creativity and learning. Living with change often means coping with different, unfamiliar situations and adapting to something new. Both small changes in everyday life and major social or global events

affect our operations and force or push us to look for new solutions—better ways of doing things. Changes may not always draw enthusiasm and bring inspiration; they can also be frightening or worrying. Even perceived as negative, change is still a breeding ground for learning and creativity.

The coronavirus pandemic that began in 2020 has proven to be an example of such a context. The pandemic has caused tremendous concern, fear, and sadness. It has resulted in a global crisis that has adversely affected not only human health and safety but also the economy and the functioning of communities. At the same time, it has radically changed people's behaviors, served as a breeding ground for innovation and forced us to learn new things. Vaccine development, the use of digitalization in both teaching and working life, and new (remote) community practices are examples of the creative solutions that have been implemented due to the pandemic.

Situations of change, such as the coronavirus pandemic, are associated with acute experiences of uncertainty. However, as Beghetto (this volume) suggests, it is good to note that there is no creativity without uncertainty. Despite the unpleasant tone of the word, uncertainty is one of the most important starting points for creativity and often also for learning. It is natural because creative processes are unpredictable. We aim for something that we do not know yet and thus learn something new: "Creativity is needed in order to envision solutions that don't yet exist" (Hanson & Jorge-Artigau this volume). As Hanson & Jorge-Artigau (this volume) describes, the creative process involves questions, blind alleys, frustrations and long pauses—it does not appear in a singular moment of a sudden realization but can actually include multiple Aha! experiences, some of which eventually turn out to be right and many others wrong. The same message is also conveyed by Ness (this volume), who emphasizes the need to step out of one's own comfort zone to achieve creativity and learning. The question here concerns basically the decisions and interpretations made in interactions, where moment-to-moment contingency can direct emergence of creativity in a wide range of directions (Sawyer, 2010, pp. 368–369). What is essential in creativity and learning involves the different ways of thinking or acting that arise from breaking routines (Beghetto, this volume), and this is

the essence of uncertainty and changing environments. Inadequate and limited routines and habits make a change—framed through learning and creativity—inevitable.

Thus, life not only thrives on creativity and learning but also requires both. Being aware of the systemic nature of life, as well as understanding the complexity and contingency connected to it, elaborates the basic nature of both creativity and learning. Uncertainty and change can be fertile grounds for creativity, which produces natural and organic learning and new knowledge. However, such creative learning potential essentially depends on the active engagement of the participants. It involves what decisions, interpretations, and ideas are presented and acted on in contextual and situational interactions. As Beghetto (this volume) sums it up, a new kind of thinking is needed when engaging in learning experiences and preparing for uncertainty. To maintain creativity and learning and motivate people, engagement, participation and active agency also play essential roles.

Agency and Autonomy (as Sources of Creative Interactions) Leading to Creativity and Learning

In simple terms, change and uncertainty result as breaks from routines and habits, from situations where these—what used to be the case and what already exists—are not enough. When we address and offer creativity and learning as the solutions, we perceive learners and individuals as active subjects involved in the process—whether knowledge construction or creation are in question. Thus, the issue is how we can make subjects involved, interested, engaged, and act in given situations and contexts. In different chapters of this book, scholars address this "active subject" aspect with a plurality of voices. For example, Hanson and Jorge-Artigau call for *students as active participants* who understand, participate and take on the affordances and the challenges present in complex distributed systems. By reflecting on Gruber's (1988) ideas on agency, a proposal highlighting the importance of a person's sense of purpose as a source of this agentic enablement is made (see also Archer, 2012). Tuhkala et al. (this volume) take a different approach

to subject activity, describing a process where engagement is facilitated by the immersive nature of gamified simulation (RealGame). Using the RealGame, they state that providing an "environment where failures are safe and acceptable" and where team "decisions are [made] continuously and in synchronous collaboration" will lead to authentic experiences, open-minded thinking, and the potential emergence of new insights.

According to the sociocultural paradigm, creativity and learning do not happen in a vacuum. Simply stated, the perspectives and philosophical assumptions behind different views appear significant—and if we still adhere to constructivism, knowledge is contingent on human practices, and meaning is constructed in interactions between the subjects and their surroundings (e.g., Crotty, 1998, pp. 42–48)—for the understanding and assumption generated. Generally, throughout the different chapters, explicit—and at times implicit—accounts of perspectives, stances and viewpoints are used to describe human agency in the midst of social interaction, namely, how knowledge is built and meanings are given. As part of this discussion, it is important to acknowledge the complexity of learning and working ecosystems. Formal and traditional learning arrangements are often directed by official documents, such as curricula. Biskjaer et al. (this volume) focus on one subject curriculum in Denmark and find that creativity is presented there through a double-bind conceptualization, framed as both a prerequisite and an outcome of learning. One solution is their call for collaboration and contributions from creativity scholars (literature) to the teaching—a worthy idea that they frame as follows: "come together to ask the inconvenient, but inevitable question of *which creativity* we wish to educate … if children should learn to be (more) creative." This might also connect with the multiple creativity approach (Szabo et al., this volume), focusing on everyday creativity as a manifestation of real-world learning, and how that could be advocated in pre- and in-service teacher training. Through contemplation on the nature of knowledge and the ownership and authorship of *new knowledge*, *new learning,* and *new ways of teaching,* Szabo et al. argue for the *creative ecologies model*. By diversifying and pluralizing the creativities in school, Szabo et al. show through situational and contextual examples how everyday creativity is important for education and learning, as well as how transformational changes arise

from this real-world learning that entails material and immaterial enactments in the intersectional entanglements of various creative ecological components. There is a need for a more distributed, rhizomatic approach (in pre- and in-service teacher education and beyond).

Beghetto (this volume) describes (the creative process in terms of) engaging with creative opportunities and transforming these into creative actions and achievements, depending on individual and group values. The question is whether "they are willing to take the creative risk to engage with uncertainty." The idea not only gives in to the autonomous decision making instilled in human beings but also acknowledges the potentially deterministic nature of situations and contexts. Rightly, Hanson et al. (this volume) ask, "Are we equipping students to understand the deterministic forces of their worlds and exercise agency as they participate in, encounter, and/or resist those systems?" Thus, it is proposed (e.g., Beghetto, this volume) that it would be important to focus on shared and expressed established values (e.g., the value given to creativity) and how these influence students' confidence and willingness to take risks. It is proposed that students (and why this should not include employees) need to be given the opportunities to develop a positive creative identity if we want to support the recognition and transformation of creative opportunities into creative acts and achievements. In the bigger picture, this discussion pans back to the discussion addressing the relations of individuals and structures, so the question is what we really want to support and facilitate in our schools and in further working life—traditional knowledge transition or collaborative co-construction of knowledge.

The issue becomes visible in accounts about the autonomy and decision making of individuals in given contexts. Does the system allow and support the needed creativity and organic learning of various stakeholders (including teachers, students, and employees)? As approaches can be perceived as drawing from the constructivist paradigm—which as such does not necessarily make statements about the nature of being, just about the nature of knowing—it is necessary to acknowledge and respect the active roles of different subjects. Whether the framing is collaborative learning or creative learning, it all pans out to social interactions in given situations and contexts, expanded with cultural artifacts (both

abstract and tangible) and interpretations drawn from those. How do we respond to the complex challenges? Do we allow enactment in learning and interaction situations? Do contextual and situational outlines repeat traditional educational arrangements and roles, or is there room for change and uncertainty?

Education can have an impact on and facilitate active agency (engagement, active participation, etc.) and autonomy in and with various arrangements. The following chapters include ideas and insights on how education design, planning, and arrangements can be made to support creativity and real-life organic learning, as advocated here. They can influence creativity, attitudes, and agency. Therefore, through creative experiences, trust and self-belief build the expertise that is called for in a changing and uncertain future. The question now is how to learn and teach pupils, students, teachers, or personnel of organizations and entire education communities to be creative or act creatively.

Cultures, Shared Goals, and Different Methods of Building, Supporting, and Facilitating Creative Learning Communities

From the perspective of constructivism, in defining, promoting, and realizing creativity and learning, the priority is to take into account the views of different actors (students, pupils, teachers, managers, and employees) and to build an understanding based on these together. Thus, supporting creativity and learning starts from the moment when the discourses of creativity are created. As Biskjaer et al. (this volume) note, "Students need didactic support in order to thoroughly engage with creativity in (at last some of) its conceptual complexity as a fundamental part of our lives and learning as human beings." Similarly, Hanson and Jorge-Artigau (this volume) points out that students should be helped to participate in complex, distributed systems of change, as they are not simply just receivers of such lessons but active actors who themselves should understand the values, framework, and challenges of long-term development from their own points of view. The involvement of individuals thus enables a commitment to creativity, as well as a means of interaction

through a common dialogue, regardless of whether it involves a young pupil, an older student or an adult worker. It is therefore essential to investigate what factors enable individuals to participate and engage in creativity and learning.

In several chapters of this book, a culture that supports collaborations and the engagement of individuals becomes an important driver of creativity and learning (see, e.g., Hyrkkö & Kajamaa, this volume). As Ness (this volume) states, confidence and psychological safety are important when we go to an uncertain area and step outside our comfort zone. It must be possible to ask silly questions and make mistakes, as they are part of the learning process. Billett et al. (this volume) point out that in the workplace, it is essential to create an environment where employees can truly work innovatively and produce practices and products that meet changing customer requirements. The kind of environment that innovative activities require in any workplace is often context-specific, as Collin et al. (this volume) describe. In terms of culture, Collin et al. show the importance of first developing the equality-promoting and clear organizational structures and practices, and then taking into account individual (i.e., employee-oriented) needs. Leaders and supervisors (see Billett et al., this volume; Collin et al., this volume) seem to play a key role in creating an environment conducive to creativity and learning in the workplace, in the same way as teachers do in educational organizations (e.g., Szábo et al., this volume). Of course, the creation of atmosphere and culture is also influenced by individuals, whether colleagues or fellow students.

In collective processes of creativity and learning, it is important to form and become aware of a shared goal (Hyrkkö & Kajamaa, this volume). This focus is linked to the previously described creation of a common understanding and from a community or societal perspective, to the larger question of which creativity we wish to educate individuals (Glăveanu, 2015). A shared, commonly defined and accepted goal engages actors to work toward it and create a framework for creative action. This book's contributors also highlight a variety of tools, methods, and concrete means (affordances) that can support creativity and learning in different contexts. Examples are different pedagogies in

the context of education (Corazza et al., this volume), courses and interventions (Hyrkkö & Kajamaa, this volume; Szábo et al., this volume), dialogical methods (Ness et al., this volume), and various checkpoint and developmental discussions in the workplace (Collin et al., this volume).

In the era of remote working and schooling, digital tools have become increasingly important for supporting creativity and learning. They are not only forms of support for individual learning and independent action but at best, enablers of collaborative learning (see Tuhkala et al., this volume). Digital tools can support learning and creativity by providing access to a variety of discussion forums, enabling feedback from others, or fostering group interaction, regardless of time and place. For example, the RealGame presented by Tuhkala et al. (this volume) appears to foster "collaborative learning and creativity by providing an environment for practising both domain-specific and general skills."

This book gathers a great deal of understanding and knowledge about creativity and learning and how to support and enable them in different contexts. Nevertheless, there are still many research needs and gaps related to the two phenomena. Changing contexts, tools, and trends are constantly creating new situations and challenges that require creativity and learning. Amid rapid change and uncertainty, we are on the ground of creativity and learning; at the same time, our well-being can be put to the test. It is important to remember that well-being and enthusiasm are also essential prerequisites for creativity and learning. For this reason, in the future, we must also find ways to strike a balance between uncertainty and well-being and strengthen the opportunities for enthusiasm that such a balance is meant to offer.

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