Creativity Theory and Action in Education 7

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Creative Provocations: Speculations on the Future of Creativity, Technology & Learning

Springer

Preface

ποταμοῖσι τοῖσιν αὐτοῖσιν ἐμβαίνουσιν, ἕτερα καί ἕτερα ὕδατα ἐπιρρεῖ — Ἡράκλειτος
(*Ever-newer waters flow on those who step into the same rivers* — Heraclitus)

If you do not change direction, you may end up where you are heading — Lao Tzu

It is questions with no answers that set the limit of human possibilities, describe the boundaries of human existence — Milan Kundera

We live in times of exponential change—fueled in large part by technological innovation and human creativity. These changes are dramatically reshaping how we live, work, think, create, and make sense of the world. Ideas and knowledge can be discovered, created, and shared faster and more widely than ever before. This has led to a flowering of creativity at the individual and social level in historically unprecedented ways. At the same time, it has also led to a plague of misinformation, tribalism, and new societal and individual problems. These forces combined with the forces of globalization and rampant growth, often in the face of significant inequalities (local and global), bring significant social and economic challenges. Ironically, the inequities created by advancing technological changes can in turn deprive many people of the technological, economic, and social benefits that the changes brought about.

It can be argued that, at some level, this has been a failure of education—that the challenges we face, whether global climate change or the spread of misinformation, social unrest, the rise of tribalism, among others, can be traced to failures within our educational systems. The COVID pandemic and the scattered, inconsistent, inequitable, and often ineffective response to it, as well as the range of educational innovations that emerged from the pandemic to, are cases in point. The pandemic itself is an example of one of many "planet-sized" (Gidley 2016) global disruptions, which will continue to stress our already inefficient political, economic, and cultural institutions. The accelerating influx of information and technology, in a volatile, uncertain, complex, and ambiguous, i.e., VUCA (Cousins 2018) environment, underlines the key role of creativity in education, since uncertainty and unanticipated situations and problems require creative thinking and novel solutions.

At the foundation of this book is an acknowledgment that the only way these current and upcoming challenges can be addressed at scale is through creativity and ingenuity: through the development of new sustainable, humane, and creative technological educational ecosystems. Only through education can these changes become part of the broader global social fabric to prepare us, individually and collectively, to address and design better and more equitable futures. In a world where change is the only constant, we must find ways to learn and educate, through creativity and with the technological tools at hand (and those emerging in the future), to determine our place in this ever-evolving, emergent future.

If the COVID crisis and its impact on education has demonstrated anything, it is that technology (particularly the Internet) has an important role to play in equitable (or inequitable) educational futures. Access to digital or Internet technologies may be the biggest equity issue facing education through the pandemic and beyond. Further, existing non-digital pedagogical practices do not necessarily map effortlessly onto the digital world, which means that creativity is needed in translating between digital and non-digital mediums effectively. Educational institutions and contexts have typically molded technology to fit existing education practices, rather than take advantage of the affordances of the technology to reimagine what education could be. While there are examples of creative uses of technology, they are often idiosyncratic, not systemic, and limited by preconceived structures and practices. For instance, during the pandemic, when schools or universities moved to remote settings, some individual educators demonstrated creativity (technologically and pedagogically) to connect with their students and continue their learning. However, within most systems it was unclear that any basic assumptions about education and the use of technology had been fundamentally questioned and reframed, and there was limited discussion of technology and its potential role in advancing creativity in learning contexts.

That said, incorporating creativity into education requires an accurate and grounded understanding and articulation of the construct itself. Too often, creativity in education is framed in ways that are out of step with global changes and with little understanding of the role of technology in the present and emergent futures. If creativity is to truly find its value in education, it must build new understandings and framings of the relationship between creativity and technology. For instance, the emergence and potential of artificial intelligence forces us to confront the possibility of creativity beyond or outside of the human. This is an idea that is rarely considered in popular societal discussions, and even less so in education—but it prompts a posthuman perspective on creativity that demands consideration. The same kind of (re)consideration can emerge from many different new, networked, and digital futures that are emerging and will continue to unfold.

This weakness in conceptualization and grounding of the meaning of creativity and the role of technology in fostering it in learning is in sharp contrast to developments outside of education, in society at large. The advent of digital tools and the Internet has unleashed a tidal wave of ground-up creativity, with people across the globe engaging in polished, socially savvy, and technologically mediated creative behaviors (through tools such as Tiktok or Twitter, Instagram, YouTube, and more).

While creative technology use in education broadly lags, both in quantitative terms (access and time spent) and qualitatively (what is done with digital tools and connectivity), learners (and society overall) have taken up new tools as opportunities to create, share, explore, construct, inquire, communicate, and express themselves—all of which are universally recognized as being good learning behaviors.

At the heart of this book is the idea that to foreground creativity within educational systems and take advantage of technological affordances, we must better understand both creativity and the inherent propensities of the technology to support and enhance it (while being sensitive to and aware of inequities that restrict access to resources for large swaths of people). We suggest that there are organic synergies between a societal or distributed view of creativity and the affordances of digital technologies to change how we think of both creativity and technology in educational situations.

It is also important to acknowledge that the affordances of technology to affect thinking, learning, or creativity did not originate with the Internet, computers, or digital media. Pea's (1987) definition of cognitive technologies as "any medium that helps transcend the limitations of the mind (e.g., attention to goals, short-term memory span) in thinking, learning, and problem-solving activities" (p. 91) includes systems of written language or mathematical notation. Every new technology, whether oral/written language, pencil and paper, the digital computer, or the Internet, has transformed how we learn and engage with the world. Thus, we do not assert that digital technologies are the only or the best path to creativity in education, rather, we highlight how digital technologies are central to our world and its future, and more importantly, to the world and future that learners inhabit. They provide powerful affordances for inquiry, information access, creating, editing, remixing, and sharing. However, these affordances offer little unless they are aligned with meaningful learning goals, creative purposes, student needs, or the cultural geography of the world and the classroom's place within it.

It is important for learners, educators, and creative users of tools to be aware of affordances and consider what available (digital or non-digital) resources have to offer. Technological tools are not just individual gadgets but are embedded in and constitute systems of knowledge, skills, and organization. Koehler et al. (2011) argue that the idea of repurposing, or melioration (Passig 2007), is at the heart of the creative uses of technology. Educators and learners need to develop fluency with the tools and recognize which rules to bend, which they can break, and which to leave as is (Koehler et al. 2011). This suggests that a technology's purpose, while shaped by affordances and properties, is not pre-determined. Rather, the inextricable interactions of objects, environment, and human psyche determine its potential and significance. Despite the obvious potentialities and dramatic shifts wrought by digital technologies, it is still an individual's (or collective's) evaluative ability and creative use of tools that dictate what they do or create.

In between the good, the bad, the unimagined, or the unintended consequences, there is a wide range of complex and intertwined issues, topics, arguments, and points of view to understanding the potential and possible futures of what it means to live and learn creatively with and through technologies (Henriksen et al. 2016).

These issues have resonance in education, as an arena deeply tied to the exploration, development, construction, or deconstruction of knowledge (Peppler et al. 2016) for the future.

This book explores the complex, yet critical, relationship between technology and creativity, specifically in educational contexts. Chapters in this volume, by some of the foremost thinkers and researchers in the areas of creativity and/or technology, examine the impact of recent and future developments in technology on creativity, teaching, and learning. These chapters, which emerged from authors with expertise across disciplines and with diverse perspectives, all consider, analyze, or speculate in ways that might inform the field of education.

Given the rapid and shifting challenges and opportunities before us, the best way to understand the future may be through *grounded imagination*—combining expertise with thoughtful speculation. In seeking chapters for this book, we emphasized that authors should feel free to use their expertise to speculate, to imagine, to step outside the standard academic boundaries, and if or where possible, to bring new perspectives on this rapidly evolving future—exploring issues, paradoxes, tensions, and points of interest around creativity and technology relevant to learning. Thematically speaking, the chapters in this book take on a range of perspectives, often in agreement and sometimes in opposition. That said, certain foundational ideas stand out.

First, education is always about preparing learners for the future, and the future will always be uncertain. It behooves us to ask, what are certain values-driven principles of creative learning under such uncertainty? To ask, how existing and new technologies might help or further impede efforts aimed at promoting creative learning in and beyond the walls of schools and classrooms?

Second, creativity is an essential skill and one that can be developed. That said, the meaning and role of creativity in our world is deeply connected to context. This means that creative education or education for creativity is denied to many (due to existing disparities within our broader societal contexts), so there is a profound issue of equity involved.

Third, it is useful to expand our understanding of creativity to recognize its social-cultural elements, embedded in contexts, and histories, which develops not just in individuals but in broader and larger "clusters" or communities of practice. And these clusters/communities are often connected through online methods of connection and mediation—which can have negative and positive consequences.

Fourth, technology has a complex relationship with creativity and education. Technologies offer significant possibilities but can also be distractive or inhibit creativity or get in the way of learning. The COVID pandemic in particular thrust educators into using technology for teaching and learning—leading to unexpected challenges and breakdowns, but also emergent possibilities, particularly in generative, creative, and embodied artistic spaces, such as therapy, music, and theater/dance. Technologies also mediate the creative process, but newer forms of technological development can be disruptive as well, at levels that may not have been possible earlier. In particular, artificial intelligence, and all the potential that is

emerging in this field, could change our perceptions of the human relationship to creativity, leading to new visions of a posthuman future.

Finally, there are also significant challenges that creativity faces within broader political and educational systems. Although an emphasis on creativity can be generally seen as a positive thing, the manner in which it is embedded within broader social, economic, and educational systems is worthy of attention. This means we must continually question how creativity is defined, instantiated, and supported. Who is included in this conversation and how should we seek to measure or evaluate it? It requires us to question normative and foundational issues, because not doing so may lead to the perpetuation and crystallization of existing frameworks that solidify existing disparities.

The authors in this book are some of the most provocative and thoughtful scholars in the field, and in each of their pieces they explore key provocations, raise critical questions, argue for and against particular positions, and, just as importantly, speculate on potentials and possibilities. These chapters shed light on the role of creativity and our technological future for thinking and learning, across a range of educational settings. They individually and collectively highlight the complexities and paradoxes inherent in these issues, exploring them from multiple perspectives, while at the same time aiming to put a "stake in the ground" about their own perspective, and through that provide a range of "creative provocations" to help us think about these emergent futures.

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