EDUsummIT 2019
Thematic Working Group #3: Creativity for teachers and teaching

TWG3 Discussion Paper

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Introduction

Creativity has been highly touted as a central concept for thinking, teaching, and learning. It is widely noted in both academic literature and popular discourse as being essential to the types of thinking skills and approaches to the world that students will need for the present and future. Moreover, creativity is vital in teaching, because students learn and adopt creative habits of mind when these are modelled by teachers.

The intersection between technology and creativity is an important and growing area of research. However, we are cautious of oversimplified popular discourse such as causal and deterministic connections between digital technologies and creativity. Creativity and technology are complex areas in of themselves let alone when they intersect. Nevertheless, creative practices may inform rich learning with and through technology. We also believe technological practice may support developing creative habits as well as learning in creative ways.

TWG3 aims to explore the intersection of these constructs and provide insight into how we can develop creative thinking in teaching and learning. In doing so we embrace, but also go beyond, internalized cognitive and psychological notions of creativity. Creativity may be understood as a personal skill, but is always located within social contexts and practices, such as within learning environments.

Our working group will recognize the broader context and systems within which both technological and creative practices are situated. This means that we are also interested in areas such as administration, policy, and community, and how these may be involved in shaping the artefacts, processes, experiences, systems and culture that influence creative teaching.

Our focus

The intersection of creativity and technology is an expansive field of inquiry, too broad to fully cover in the EDUsummIT context—which requires a focus on an area of research which is both feasible in scope and rich in practical relevance to the field of education. Having reviewed the literature and building off of previous EDUsummIT events, this year we specifically focus our attention to that of the concept of risk taking and productive failure.

Risk taking and productive failure are fundamental components of creativity (Glover, 1977). A small but growing base of research literature suggests that digital technologies and practices can both support and inhibit (for both teachers and learners) these aspects of creative practices (Manalo & Kapur, 2018).

In order to better focus our work, we frame our inquiry based on critical questions of relevance for research and practice. While we understand the importance of failure and risk taking in creative teaching, we must ask several key questions:

1. How do teachers and learners develop the capacity to fail productively in classrooms? And how might technologies support this?
2. How do teachers and students develop skills for creative risk taking? And how might technologies support this?

Failure is important for creativity

Creativity, in academic literature and in policy, is often foregrounded as desirable and necessary as a 21st century skill (Beghetto & Kauffman, 2007). It is frequently positioned as a vital part of education for digital futures, and for the technology-driven learning settings and work lives that students will inevitably face (Craft, 2010). However, the rhetoric about creativity often fails to account for the link between creativity and failure. A small but critical body of literature affirms what is already known in any real-world area of creative work—which is that failure is one of the most integral and unavoidable aspects of creative processes, and productive innovation. Failure is essential in creative processes, whether in the sense of iterations of failure that lead toward ultimate success; or in terms of how struggling with uncertainty can lead to contemplation or reflection on a given situation, its outcomes and possibilities, and greater ability to manage ambiguity (Swanson & Collins, 2018).

While there is hesitancy around failure, it is rare that good original, creative work or ideas come together in the first try. We contend that it is critical to afford teachers and students space to understand the value in productive, creative failure, and is important to account for design of learning environments that recognize productive failure. Petroski (2006) noted that "Failures are remarkable. The failures always teach us more than the successes about the design of things" (p. 49). The affirmation of failure as a pedagogical principle is important not only for fostering creativity in education, but also in preparing students for the sorts of adaptations and flexibility they need in an environment of technological change. Research and policy development about the affordances of failure in facilitating creativity within education are much neglected, especially in an educational climate of caution and standardization (Harris, 2016). Our work at EDUsummIT will critically examine the place of productive failure as a pedagogical principle for promoting creativity, with an eye to technology-rich environments and for developing 21st century skills.

Creativity involves a complex process of thinking that is understood in variable ways across existing literature. Tahirsylaj (2018) affirms that failure, and therefore risk, are fundamental components of any creative endeavor. The capacity to engage and manage risk taking (and the potential of failure) is essential in most existing conceptualizations of creativity. Creativity invariably involves some degree of uncertainty about expectations, outcomes or recognition that undesirable outcomes—and thus there is individual and social risk, in putting forth new ideas with potential for failure (Hansson, 2011).

Within the creative processes of classrooms, failure does not always fit the desired goal, narrative or outcome for students or teachers. Given the emphasis on productivity and data-driven results in many schools and classrooms, failure may seem incompatible with practices that steer students towards such results.

Traditional notions of educational approaches may also contain denote failure as a negative, and do not position failure as essential in learning or connect it to creativity. Rich (1991) stated that "schools are haunted by failure. Failure haunts the hallways, grounds, and classrooms; it insinuates itself into the lives of the school's inhabitants." (Rich, 1991, p.4). As such, the climate of education, in terms of schooling and policy, views failure as a problem to be solved, rather than a part of the creative process that must be acknowledged, allowed and managed—educating teachers and students on how to take stock, iterate, improve and move forward through creative failure.

Pejorative ideas about failure exist within creative thinking and making practices in classrooms, as well as at the systems level in terms of curriculum policy frameworks. This is problematic in considering the importance of failure outside of classrooms, in the real world, as part of innovation and productive or creative success. Policy settings tuned to standardization and metrics tend to promote risk aversion, via avoidable of failure and pursuit of narrow conventions and single-correct-answer approaches (Creely, Henderson, & Henriksen, 2019; Hartlaub & Schneider, 2012).

Manalo and Kapur (2018) point to a quote of John Dewey's that "failure is instructive", and explain that "a person who really thinks should be able to learn as much from experiences of failure as from experiences of success" (p.1). The notion that failure is an essential component of creativity is well recognised in the literature. For example, Dewett (2007) points to intellectual risk-taking and a willingness to fail as core elements of creativity. Harford (2011) focused on the concept of adaptability in any creative processes that yield something unique and valuable, emphasizing that individuals need to embrace a willingness to risk failure. Without this they will never be able to think, act, do, make or learn in new ways and thus never truly succeed.

Smith and Henriksen (2016) note that failure is an imperative for the creative classroom. Yet, despite a general consensus that failure can be valuable, when allowed for as a part of productive learning and creativity, it is also simultaneously made unpalatable through popular discourse, as they state:

> The idea that 'failure is not an option' is a trope of competitive thinking…in business, sports, and even schooling. However, when it comes to creativity, it is clear that anyone who succeeds creatively must be willing to try and fail—and to learn, regroup, and try again. (p.6)

Smith and Henriksen (2016) go on to point out the implications of such a stance, particularly in the area of growth mindsets:

> Aversion to risk and failure has consequences for growth and learning, which can be seen in Dweck's (2006) research that describes the differences between two common types of mindsets, "fixed" versus "growth." People with a fixed mindset view traits as innate and tend to tie identity to success and performance, which often leads to discomfort with failure (e.g., bad grades, mistakes). People with a growth mindset view their own selves as changeable through learning, including the need to try new things in order to advance. People with a growth mindset associate mistakes and failures with positive learning and improvement—not negativity. Unfortunately, the fixed mindset is commonly cultivated in education, in how we approach mistakes, grades, and failures. This is problematic for creative practice and development. (Smith & Henriksen, 2016, p.7)

Such aversion to failure is deeply embedded in education. Much education policy often has a punitive attitude toward failures, eliminating opportunities for teachers and students to fail, learn and improve in developing their creativity and criticality—instead grounding a fear of failure more deeply into the system. This is also compounded by the fact that fear of failure is rooted deeply into evolutionary aspects of the human psyche, which makes risk-taking a natural aversion (Nicholson, 1998). However human creativity and discovery have always indulged curiosity, which requires being open to failure. Konner (2010) notes that when

circumstances are safe enough, this kind of learning and play through creative risk-taking is often what people do. However, while policy frameworks often suggest a rhetoric that supports creativity, they often allow no space for the kinds of failure and risk needed to truly afford it.
In a comparison of Australian and United States curricula documents, Henriksen, Creely and Henderson (2019) note:

> What is emphatically absent from the curriculum policy documents examined in this article is consideration of the place of risk and failure in facilitating creativity. Indeed, there appears to be no space to achieve creativity and allow for the coming together of circumstances that promote it. Policymakers must write about and embrace spaces of creativity, including those where risk and failure are valued and managed, with a nuanced and practice-focused understanding. (p.9)

Applications (supporting failure for creativity)

Manalo and Kapur (2018) identify a significant dilemma in this field; while there is a degree of agreement that failure can be productive, there is no clear way of how to achieve or harness this. They state:

> The biggest hurdle is that, although we are not short on intuitive and common sense advice about benefiting from failure, there really is a dearth of methods and guidelines (especially ones supported by research evidence) about how exactly this can be done. For example, although teachers can encourage their students to keep trying when they fail at something, the reality is that some students will give up in spite of the encouragement. We do not sufficiently understand the factors that influence or the mechanisms that determine those differing outcomes. (p.1)

However, Manalo and Kapur (2018) do point to limited research that makes the connection between productive failure and the learner's perception of control or agency in being able to influence future outcomes, in other words, "our perception of failure influences our feelings and subsequent action" (p. 2). For example, perceiving failures as controllable can improve resilience and thereby be more likely to lead to future success. Manalo and Kapur (2018) draw connections to Bandura's work and argue that we need to cultivate a sense of causal agency. In a similar line of argument Smith and Henriksen (2016) point to the way in which risk and failure are central to creative iterative processes; which points to the need to develop a capacity in both teaching and learning to seek and take risks and manage, learn and iterate on failures.

Manalo and Kapur (2018) go on to identify a number of educational implications of the small but growing research in the field, including:

- Internal representations of failure influence responses to it
- Beliefs matter
- External representations of failure also influence responses to it
- The learning environment needs to be accepting and supportive of failure
- Teachers need training in methods for effective failure utilization
- Students need to develop skills to effectively benefit from experiences of failure
- The benefits of failure are often indirect … and can be delayed

Taking a different approach, Smith and Henriksen (2016) in their work on visual arts teachers identify three key themes that may usefully guide instructional strategies to facilitate productive failure: "nurturing a growth mindset, playing with mistakes, and embracing ambiguity" (p.11). They go on to suggest three specific examples of strategies: "(1) integrating multimedia reflections as formative assessments, (2) structuring class time to allow learners to re-examine, rethink, and revise, and (3) framing activities with ambiguous criteria that empower individualization" (p.11).

Picking up on the iterative nature of creative practices, Henriksen, Creely and Henderson (2019) argue that:

> Practitioners should introduce positive risk-taking creative practices. This strategy might involve the context of drafting, rehearsal, group discussions, design work, projects, and other kinds of iterative development. In implementing this approach, problem-solving or exploratory work can be recast as forms of taking risks and seeing failure as spaces of possibility, not of deficit. (p.9)

Vedder-Weiss, Ehrenfeld, Ram-Menashe and Pollak (2018) focus on how teachers themselves develop the capacity to learn from failure. In their study of a team of teachers, they noted the potential of instructional failure as a learning stimulus, however they also noted the significant impact of social and emotional tensions in explicitly identifying and discussing pedagogical failures. They conclude that "it is imperative that teachers and their leaders and coaches develop awareness and understanding of framing and acknowledge the related socio-emotional challenges" (p.40). In order to achieve this they argue that (1) the facilitator needs to continuously role-model as well as encourage the team to adopt productive framings of the issue; and (2) the team actively working together in analyzing evidence such as observations and exploring the frames that could be at play.

Of interest to this working group may also be their observation that "the socio-emotional challenges the analysis revealed may be culturally specific" (Vedder-Weiss, Ehrenfeld, Ram-Menashe and Pollak, 2018, p.40) and that further work needs to be done in this regard.

Role of teachers

Intellectual and creative risk-taking practices (not to be interpreted as risky behavior or dangerous risks) have long been considered an integral component for creativity (Dewett, 2007; Glover, 1977; Martins & Terblanche, 2003). Anderson (2002) reflected on creativity among excellent, creative teachers, stating,

> The most fundamental risk these teachers accept is found in their willingness to confront both success and failure in the interest of teaching better. They risk themselves in being responsible for their work. In this way, they are not so different from creative artists in other arenas. (p. 35)

In a study of U.S. National Teacher of the Year award finalists, Henriksen (2011) found that one of the most consistent and articulated pedagogical themes among innovative and accomplished class-room teachers was in the importance they place on trying new things, taking risks, and embracing failure, as a key to their teaching creativity. In this way, openness to failure supports and affords excellent creative teachers to identify and try new, interesting and effective approaches in their classrooms (Henriksen & Mishra, 2015).

Henriksen, Creely and Henderson (2019) note that, "It is important that teachers recognize their role in gatekeeping because they may simultaneously be encouraging some forms of creativity, while rejecting others" (p.10). This fits with Csikszentmihalyi's (1988) systems view of creativity in which gatekeepers play a central role in defining what is creative. Henriksen, Creely and Henderson (2019) go on to argue that in many educational contexts there are often little room for risk taking, however, teachers in these situations can:

> …build creative confidence through small steps and "safe" risk-taking practices. Here, practice can evolve by trying new things or looking for possibilities and wiggle room within the curriculum. Small steps may make a big difference over time; and keeping an eye out for potential creative tweaks and slight shifts may feel safer for teachers who are not positioned to make bold changes. Trying new things or creative approaches can begin in small ways or comfortable increments— in essence, "sneaking in" opportunities for students to take risks, safely fail, and iterate wherever an opportunity arises. (p.10)

Role of Technology

Dwyer, Hogan, and Stewart (2014) note that creativity is consistently listed in educational discourse and rhetoric as being one of the most desired 21st century skills, and it is understood as vital to innovation and problem solving. For this reason, in the positioning as a skill and necessity for the future, creativity is often linked with digital technologies. This link is often emergent both in the connection to futures thinking and the idea that technological tools have affordances that can allow for more creativity. Yet despite the common rhetorical positioning of creativity alongside digital technologies in discussions of 21st century thinking, there is little in the way of empirical educational research that fully integrates how these constructs connect in education practices. This is particularly true in terms of understanding how technology relates to the notions of risk and failure that are replete in creative abilities and processes (Siegler, 1996; Page & Thorsteinsson, 2017).

We suggest that within the emerging possibilities for doing and thinking creatively, digital technologies allow modalities for dealing productively with failure—perhaps even assuaging concerns about failure in outcome-driven systems. Technologies such as online digital tools offer ways of enhancing adaptability and independent thinking skills, promoting novelty and opportunities to trial ideas safely—foregrounding traits and components established by existing research as correlates of creative thinking (Casminaty & Henderson, 2016; Prabhu, Sutton, & Sauser, 2008;).

Engaging with failure can foster resilience, flexibility and the ability to adapt to change (Trilling & Fadel, 2009). This is important in terms of creative skills that students today need in order to be employable and productive in a technologically evolving future with changing work practices (Creely, Henderson, & Henriksen, 2019). It is common for creativity to be described as being enabled by and through technologies—yet we need an understanding of how this happens, with more attention to the positioning of failure in creativity and learning processes. Allowing and adapting to failure is critical for accepting ambiguity in the real world, and to the ability to consider and develop multiple possibilities to complex problems.

One of the key goals of this EDUsummIT 2019 working group then, is to begin to fill the space and gap that exists in research around creativity and technology with respect to risk and failure in the classroom. If we are to suggest that digital technologies can support strategies for creativity and offer possibilities in allowing failure to be contained and managed within the limitations of systems that teachers work and students learn in—then it is essential to begin to develop a richer picture of what this might look like. Throughout the course of TWG3's EDUsummIT work, we aim to do this via the goals and outputs outlined in our working plan. Our aim is to collectively develop a set of narratives around classroom experiences that support risk and failure in creativity, via digital technologies. As we build and work through a set of individual narratives, we seek to develop a framework that helps to articulate a vision of how technology may support creative risk taking and productive failure.

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