

Chapter 7

The Uncertainty of Creativity: Opening Possibilities and Reducing Restrictions Through Mindfulness



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Abstract This chapter explores the pivotal role that uncertainty plays in creative learning, with a focus on mindfulness as an approach to working with uncertainty and supporting creativity. Creativity is a highly sought capacity across disciplines, and creative thinking operates as a force that drives new knowledge and ideas, advancing growth and change in society. We live in an uncertain world of rapid, often accelerating, change and instability. Creativity offers us ways of thinking that prepare us to manage and address unexpected situations and consider fresh perspectives or possibilities to devise better outcomes. However, creativity can be uncomfortable for some, given the uncertainty inherent in the creative process, as well as the risk of embarrassment that comes with failure. Thus, people may hold back and hesitate to engage creatively. Such risk-aversion can be ramped up in traditional educational environments or school settings, which tend to focus on one-right-answer approaches and punitive responses to mistakes or failures. In this chapter, we explore the critical and complex relationship between creativity and uncertainty, suggesting mindfulness as a valuable approach to supporting creativity in school settings and addressing the perception of risk associated with failure. We discuss existing research around the relationship between mindfulness and creativity, and position mindfulness as a way to ameliorate fears, allow for uncertainty and open up new creative possibilities—particularly by changing one’s relationship to uncertainty, becoming a better observer of the world, enabling greater openness to experience, and expanding empathy. We conclude with a call-to-action for creativity in learning settings, recognizing the need for uncertainty as part of the process, as well as the challenges that uncertainty presents to the human psyche and in school processes. We offer strategies for mindfulness in learning settings that can reduce restrictions on creativity, by supporting mindsets that are geared toward allowing and working with uncertainty.

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“No problem can be solved from the same consciousness that created it. We must learn to see the world anew.”

~ Albert Einstein

7.1 Introduction

We live in a volatile, uncertain, complicated, and ambiguous (VUCA) world. The future is inherently uncertain, heightened by unprecedented change in society, and driven by rapid technological evolution, globalization, shifting demographics, and fluctuating economies (Zhao 2012). Patterns and solutions that worked in the past are unreliable guides to uncertain futures. Complex problems require new ways of seeing the world—of identifying new patterns, and developing novel, unique and contextually grounded solutions. In addition, learners need appropriate knowledge, skills and mindsets to face these complex challenges with equanimity, see the emerging contexts through “new” eyes, and devise creative solutions to these problems (Peschl 2019). Therefore, creativity—the ability to devise novel and effective ideas and solutions (Runco and Jaeger 2012)—combined with an ability to ‘see’ the world, a willingness to suspend judgment and an openness for the new, is essential in addressing the uncertainty of complex global and societal challenges (e.g., climate change, wealth inequality, racial injustice, and countless others).

Although creativity is considered a desirable and coveted trait, its value becomes even more prescient to addressing complex challenges in an often-chaotic world (Glăveanu et al. 2020). Creativity is one of the most critical factors in futures-thinking, as a response to the uncertainty of the future (Heinonen and Hiltunen 2012). Yet while uncertainty can be addressed through creative thinking and solutions, the creative process itself can also fall prey to uncertainty. The inherent open-endedness of creative challenges as compared to highly structured problems, the entry into new ideas and spaces, and the need for risk-taking with the potential for failure, all may generate uncertainty and discomfort. It is no surprise, then, that individuals or institutions sometimes avoid creative choices or behaviors (as well as uncertainty and risk of failure) in favor of known solutions, preferring problems with predictable parameters to novel challenges.

In this chapter, we examine the relationship between creativity and uncertainty, wherein creativity is both a solution to dealing with the external uncertainties of our world, as well as a cause of internal uncertainty. In this, creativity and uncertainty coexist in a complex but essential tension. Uncertainty drives the need for creativity, while creativity can be the generator of uncertainty too. While uncertainty may have negative connotations, given the psychological stress that often accompanies not knowing, it may be a neutral reality, given the limited reach of control humans possess in a VUCA world. We suggest that mindfulness may be one way of addressing this tension by transforming one’s outlook; providing new ways of both being in and observing the world, which allows us to contend with the ambiguity that coexists with uncertainty. This ability to embrace ambiguity offers a way of learning to

navigate through uncertainty, providing the possibility for fundamentally changing our relationship to it, as neither a good nor bad condition, but a state of reality. This is critical to genuine dialogic engagement with the world, allowing us to be both an observer as well as a participant. It recognizes that we are working on understanding the world around us, even as we try to act on improving it.

Education—as a force that prepares students for the future—must have a pivotal role in supporting creativity and the ability to deal with uncertainty. We focus on mindfulness as a valuable approach or mindset toward this end. We discuss research findings around the connection between mindfulness and creativity, and position mindfulness as a way to ameliorate the fears and discomfort of uncertainty and open up creative possibilities. This can occur through reducing fear of judgment, enabling greater openness to experience, and expanding empathy. We end with a call to action for creativity in learning, focusing on the need to recognize uncertainty as an inherent part of creative processes, as well as the challenges that uncertainty presents within the human psyche and institutions of schooling. We offer strategies for mindfulness in learning settings that can reduce restrictions on creativity, by supporting practices that are geared toward allowing and working with uncertainty.

7.2 The Role of Uncertainty and Creativity in Learning

The aim of education is to prepare students for the future. In times of turbulence, where predicting the future is difficult if not impossible, the role of education must be to develop mindsets that allow students to respond to unexpected challenges with thoughtful yet flexible applications of their knowledge and skills. This is the domain of creativity—the ability to devise novel, effective and organically whole solutions to unexpected problems (Csikszentmihalyi and Wolfe 2014; Henriksen et al. 2015). Most educational systems, however, do little to address creative development, instead focusing on problems that have been important in the past (Craft 2010). It may be argued that in many cases, educational systems do the opposite of developing, expressing, and exercising creativity among learners. Rather, they repress it, by instilling a fear of risk and failure, and favoring following exact instructions over the ability to see possibilities, consider the unexpected, deal with real-world messiness, and manage multiple perspectives (or even handle conflicting information) (Henriksen et al. 2020). Educational systems are often built around an artificial separation between subjects, focusing on the development of abstract disciplinary knowledge divorced from the complexities of the real world. There may be little, if any, requirement to collaborate with others and manage the inevitable conflict of opinions or information that characterize current societal problems. Clearly, responding to uncertainty requires bringing creativity into the educational context.

Creativity and learning have often been seen as related to each other (Dewey 1934/2005). Starko (1995) suggested that learning is an inherent part of the creative process, while Guilford (1950) argued that creativity itself is an example of learning. More current conceptualizations integrate these perspectives and suggest that

creativity and learning are interdependent (Beghetto 2016; Sawyer 2012). Creative learning, in our use of the term, covers a range of concepts and ideas. First, it is acceptance that academic knowledge and skills alone will not allow our society to meet the needs of a rapidly changing world. Rather, it will be the ability to both learn creatively as well as the creative application of knowledge in new (often ambiguous, uncertain) contexts (Beghetto 2020). Second, it is the rejection of the standard one-right answer approach to education which often provides a false sense of certainty. Thus, creative learning recognizes and embraces both the uncertainty inherent in the learning process and emphasizes the value of spending time in spaces that may be uncomfortable and the self-doubt that often follows. Third, and finally, creative learning focuses on the development of creative identities that are not invested in compliance and conformity, but rather those that identify and accept the messiness inherent in the process.

Creativity inevitably requires a sense of open-endedness, in allowing the risk of engaging with the new and managing undefined parameters and outcomes. Creative endeavors touch on social risk because of the potential embarrassment or discomfort in sharing ideas with others, especially if there are possible negative outcomes. With this uncertainty many people experience a sense of fear or uneasiness around creativity—fear of failure, risk, embarrassment, mistakes, or punitive outcomes—thus they may instinctively hold back and avoid creative endeavors (Erez and Nouri 2010). Yet, in an uncertain future and unstable world, holding back and sticking with known solutions or avoiding change is a recipe for trouble. Although creativity does not endorse or denote “dangerous” or haphazard risk—risk-taking (as an openness to experience and willingness to try new things) is essential to conceptualizations of creativity (Dewett 2007); and risk is unavoidable in creative learning given the potential (and inevitable) fear of failure.

Despite this, risk is often viewed negatively in educational settings. Policies tuned to standardization and metrics promote narrow norms and algorithmically driven responses. School environments, driven by policy and high-stakes assessment framings, often designate failures punitively (Luke 2011). Creativity can be uncomfortable to engage with, not only because of our human tendency to want to stay in the “comfort zone” of experience; but also, education systems may ignore creativity because of the inherent uncertainty that exists in creative spaces and action (Cremin 2006), which are difficult to standardize, measure and evaluate. Current educational systems, with their focus on the predictable and the known, have a difficult time integrating creativity, a process which looks directly into the unknown, with its focus on the new.

Creative processes inherently engage with the novel. After an act of creation, the uncertainty persists because it is “difficult to know the consequences of something truly new” (Moran 2010, p. 76). Uncertainty can linger beyond the creative act or precede it through a fear of failure. As Sternberg and Kaufman (2010) note:

Individuals may decide against creativity, merely because it exposes them to risk that they deem unacceptable. Why risk your job when you can do it a little less creatively or perhaps a lot less so, and retain it? Why risk your grades in classrooms when, by taking fewer creative risks, you are likely to please teachers more, not less?” (p. 475).

This suggests the need for processes or constructs that support creativity toward solutions for our uncertain future, and also offer a path through the inherent uncertainty of the creative landscape. We assert that *mindfulness*, a trained practice of paying attention to the present moment with curious, non-judgmental awareness, is a critical connection point to uncertainty and creativity in education. It does this both by reducing setback factors that uncertainty may produce (e.g., reducing fear of judgment, stress, anxiety, fear of failure, and similar derailing factors), and increasing factors that can support creativity (e.g., openness to experience, empathy and perspective taking, ability to observe one's thoughts). Moreover, we suggest how mindfulness practice can support creativity by developing an ability to both participate in the world and see it, noticing and considering all possibilities and developing the creative self. Because mindfulness can help people to allow, persist and sit with whatever feelings they may experience, it may have the ability to change one's relationship to uncertainty. If we can recognize or allow the experience of uncertainty, we can also allow the open space of new possibilities that comes with uncertainty, allowing creativity to emerge (Beghetto 2020). As follows, we define mindfulness and discuss research findings on its connection to creativity, synthesizing this with the possibilities of working with uncertainty and supporting creativity in learning.

7.3 Mindfulness: Bridging Between Uncertainty and Creativity

Mindfulness is the practice of purposefully placing awareness or attention on the present moment, with open, non-judgmental awareness (Kabat-Zinn 2013). Shapiro et al. (2006) point out three axioms to this practice—intention (purposefully), attention (engaging awareness), and attitude (with openness/non-judgment). Mindfulness is not about seeking a specific outcome or experience. It is not the absence of thoughts or trying to control or push away thoughts. Mindfulness involves recognizing your experience, inside and outside of your body, in the present moment, with a particular attitude of openness, curiosity, or non-judgmental awareness (Kudesia 2019). Such an orientation may be helpful in recognizing and allowing for the uncertainty within creative experience, or in facing uncertain situations with an openness to allow for creativity.

Although the practice of mindfulness originated in Buddhist teachings approximately 2,500 years ago, it has made its way into current Western culture and highly secular settings and practices. Jon Kabat-Zinn is often credited with developing mindfulness as a secular wellness practice, through the creation of his Mindfulness Based Stress Reduction (MBSR) at the University of Massachusetts General Hospital. Research demonstrates that in developing awareness of one's own mind and body in the present, people experience less anxiety, more positive emotions and engagement, and other mental and emotional benefits (Weinstein et al. 2009). In

learning settings, students can become more skilled at navigating thought processes in psychologically healthy ways (Bennett and Dorjee 2016), as mindfulness increases self-efficacy, concentration, mood, self-regulation, and engagement; and as we will discuss, creative thinking skills (Kudesia 2019).

Typically, mindfulness is learned through seated meditation. There are many structured practices available for learning mindfulness, which can be accessed through books, guided recordings on websites, retreats, classes, and apps. Different guided meditations can focus on targeted areas, such as cultivating concentration, reducing stress, self-acceptance, letting go of the past, among others. In addition to seated meditation, other formal practices can involve attending to experience in activities of daily life, such as walking meditation, eating meditation, and listening meditation. The goal of these formal meditation practices is to practice mindfulness, or moment to moment awareness with open attention, in moments of daily living. Whether engaging in ordinary, mundane life experiences, such as waiting in line at the post office, or more intense situations, such as engaging in a difficult conversation, this sense of open awareness, brought to direct experience, can be cultivated through formal practice and informally brought into daily life.

Practitioners of mindfulness consider the breath as the gateway to presence. As the breath connects with and steadies the mind, the five sensation pathways of the body connect the body and the outside world. Attuning to the breath and body allows space to notice thoughts and emotions. Engaging in this over time presents the opportunity to become more self-aware and gain awareness of repetitive thought streams, patterns of emotional responses, and ways of relating to others.

Shapiro et al. (2006) termed the phenomenon of “waking up” to one’s thoughts and inner experiences and noticing that internal experience is separate from the self, as a kind of “reappraisal.” This can be thought of as a positive coping mechanism and the opposite of suppression, a defense mechanism (Garland et. al. 2011). Over time, through the process of reappraisal, emotions and thoughts take on less power as the individual begins to understand that they are not their thoughts, their thoughts are separate from who they are. This is an extension of the natural developmental process of subject versus object identification (Kegan 1982). A child’s first experiences others through subject identification, as not separate from the self. The child does not recognize that their mother, for example, has feelings or needs separate from their own. As the child grows older, they move through the process of recognizing the self as separate from others, with their own needs, feelings, etc. into a state of object identification. Through the process of reappraisal, an individual begins to see that they are not fused with their experiences, internal or external (Shapiro et al. 2006). This experience of reappraisal, can result in a profound shifting of outlook as the relationship with oneself and by extension, experience in the world begins to change. This changing perspective can allow practitioners to see more clearly into the true nature of phenomena as they are, including the fleeting or ephemeral nature of all things (Fisher 2021) In seeing clearly into the impermanent nature of things as they are, practitioners may begin to see that certainty itself may be an illusion to some extent, thereby changing their relationship with uncertainty.

7.3.1 *Research Outcomes Related to Mindfulness and Creativity*

Outcomes of mindfulness practice are related to intentions for practicing mindfulness (Shapiro et al. 2006). Relevant to the discussion of addressing uncertainty and obstacles to creativity, mindfulness practice is associated with decreased states of self-judgment, and increased feelings of empathy and compassion towards others and oneself. Mindfulness and creativity are independent constructs, but there is a theoretical basis for presuming a relationship between them. They are both areas of human psychology which connect to emotions, attention, stress, and awareness of one's own self and the surrounding world (Baas et al. 2014). Studies have shown that mindfulness improves a person's ability to concentrate (Sedlmeier et al. 2012). It also may decrease fear of judgment, and enhance open-minded thinking while reducing aversive self-conscious thinking (Brown et al. 2007). These factors relate directly to characteristics of creative thinking habits, including: relaxation or flow states (improved concentration), risk-taking (requiring a lack of fear about judgment), and curiosity or open-mindedness/openness to experience (reducing self-conscious experience) (Prabhu et al. 2008). Several aspects of trait mindfulness (or skills developed with mindfulness training) are linked with creativity. For instance, mindfulness has been associated with increased perspective-taking ability as it expands empathy and open-mindedness (Carson and Langer 2006). Moore and Malinowski (2009) found that mindfulness also increases a person's capacity to respond to situations in non-habitual ways from fresh perspectives, which is essential to creativity. Mindfulness also reduces fear of judgment, which is particularly conducive to creativity. Similarly, its ability to improve working memory is supportive of creative habits of mind (Chiesa et al. 2011). Experienced meditators have often proven to be better problem solvers and score better in verbal creativity (Greenberg et al. 2012). Jedrczak et al. (1985) found that meditation of any length has a positive effect on creativity, meaning that even short meditation breaks can effectively stimulate creative abilities.

Looking to the overall nature and direction of the mindfulness-creativity relationship, Lebeda et al. (2016) conducted a meta-analysis of quantitative research on the relationship between these constructs. Their review hypothesized a positive relationship between mindfulness and creativity, and they used statistical meta-analysis to examine 20 peer-reviewed, quantitative studies with direct measures of mindfulness and creativity—seeking to measure the relationship between the two and consider the role of moderators. The study estimated the correlation between mindfulness and creativity at $r = .22$ ($r = .18$ without correction for attenuation), and they found a significant but heterogeneous correlation. Their work suggests that creativity correlates with mindfulness significantly, with a small-to-medium effect size. Although this effect was not moderated by study design, it was stronger when creativity measurement was based on insight or problem-solving tasks and certain meditation practices (such as 'open monitoring' meditation, a practice in which the

meditator aims to observe and notice all objects or experiences that emerge in consciousness, including thoughts and all five senses).

Going beyond removing hindrances to creativity, and acknowledging or accepting the role of uncertainty, there are also theoretical foundations connecting mindfulness and creativity related to observing and understanding the world. It may offer ways of noticing possibilities without being clouded by mental blinders or limiting stories. Fisher (2006) suggests that mindfulness may be most vital for young people who are most often affected by a lack of control over the uncertain world they inhabit. He notes:

For many children childhood is not a carefree time. In a materialistic, competitive world they are subject to many of the same stresses and strains as adults. They are bombarded by an information overload of words, images and noise. They are prey to the frustration and anger of others and often experience negative emotions more deeply and intensely than adults (p. 148).

Fisher points out that such stressors are common blocks to learning and creativity, and suggests mindfulness as a beneficial psychological support for creativity. He notes that among the ancient Greeks and Romans, a quiet mind was believed to serve as an opening to the creative muse. Contemporary psychology reflects how meditation engages the mind in non-verbal ways, offering new and different ways of thinking or experiencing. Our conscious minds are caught up in language, yet the brain's linguistic structures can restrict the scope of human knowledge and action. Meditation can offer an experience of the mind that is not purely linguistic, expanding creativity by tapping into subconscious and intuitive thought. Claxton (1997) referred to this as the "under-mind" and Gladwell (2005) termed it as the "adaptive subconscious." Such intuitive experience is essential to creativity and requires a mind that is focused upon the present moment and free of distractions, fears, and immediate desires. As Justo et al. (2014) note:

Mindfulness is a technique which allows introspective and perceptual awareness, encouraging the awareness towards our psychological processes and habits. It increases the inter-hemispheric communication, which is typical of creativity states, since the individual who meditates is able to perceive more and more subtle details of the stream of consciousness and mental processes (p. 233).

Mindfulness and creativity are not yet fully understood, neurologically or psychologically. Both are inherently complex and variable constructs, but much research investigating their relationship points in a positive and beneficial direction (Henriksen et al. 2020). Mindfulness may help to manage the uncertainty surrounding creativity, and also support creative habits of mind, which in turn are key to addressing the challenges of an uncertain world. Even beyond the existing research, there are theoretical foundations that reflect how mindfulness may develop creativity by shifting perceptions of the self.

7.3.2 *Mindfulness, Creativity, and the Self: Moving into Wholeness*

Human beings possess the innate capacity to engage in both mindfulness and creativity. Both require practitioners to become more open to and aware of what arises in the present moment, whether that is a prominent emotion or a spark of the imagination. The creative process and mindfulness practices have the capacity to enhance and support each other when used effectively. Ultimately, the self is at the forefront of each practice. Mindfulness and creativity can lead to the process of self-discovery, transcendence of the self through creation of something new, or they may bring aspects of the self that serve as stumbling blocks into direct awareness.

Mindfulness and creativity both have the capacity to help practitioners develop the ability to discover what is here in the present moment, within the self, and all that is occurring. Cassou and Cubley (1995, p. 109) write the following about the creative process: “you cannot know what you are going to express. What is really creative is bound to be a surprise because it is something you couldn’t have thought of.” Creative expression goes beyond the thinking mind and comes from the space between the thoughts or demands of the conscious mind (Cassou and Cubley 1995). This is the same state of presence mindfulness practitioners become attuned to through the practice of mindfulness. Creativity emerges from presence: “...you open yourself to the unknown experience. You connect with the background of life, and at moments your boundaries dissolve. You become one with the movement of all things” (Cassou and Cubley 1995, p. 170).

A person cannot do their best creative work if their autonomic nervous system is in ‘flight or fight’ mode, which the body automatically goes into under stress, real or imagined (Kabat-Zinn 2013). In this mode, the sympathetic nervous system is activated and the body is tense and constricted, blood pressure is elevated; intense emotions, like anxiety, shame and anger are likely to arise, and the individual is in a state of physical and psychological alertness, ready to respond to environmental threats (Kabat-Zinn 2013). The practice of mindfulness, especially when paired with intentional breathing, has the capacity to move a person from this “fight or flight” response to the “relaxation response” (Bensen 1993)—an alert but relaxed state mediated by the parasympathetic nervous system. As the parasympathetic nervous system is activated, feelings of safety generated from this relaxed state create space within the nervous system for new experiences and ideas (Menakem 2017). Creativity, as an expression of the new, arguably requires feelings of safety, both emotionally and physically. Conversely, creativity also has the potential to bring the person into the present moment, initiating the relaxation response generated by being in a present state, calling to mind the kind of flow states noted by Csikszentmihalyi (1997). Together, the practices of mindfulness and creativity are a potent combination for changing an individual’s internal and external experiences, opening up the possibility of the creation of truly original work—allowing and managing the experience of an uncertain world.

Mindfulness, and creative expression, can facilitate the process of coming into wholeness, a state of knowing oneself fully. Carl Jung suggested the creation of spontaneous images in psychotherapy was useful in “digging up again the fantasy images of the unconscious” and breaking down of “rationalistic walls” held within the mind that cause distortions to relationships with the outer world (Abbenante 1994). From a Jungian perspective, creative expression, like mindfulness practice, has the potential to go beyond the “sheltered walls of self-protection” to reveal the authentic, inner personality (Lev-Aladgem 1998, p. 242). Going beyond the recognized aspects of the personality, these practices can reveal what Jung called the shadow, parts or aspects of the hidden self “that interfere with a more satisfying life” (Abbenante 1994). Jung stated that this process of self-realization must occur in relation to the outside world: “the self is relatedness...The self only exists in as much as you appear. Not that you are, but that you do the self. The self appears in your deeds and deeds always mean relationships” (Schmidt 2005, p. 598).

Some work suggests that engaging in creativity may offer a way to heal the relationship with the self and the outside world (Forgeard and Elstein 2014; Shah 2020). This process can become a powerful vehicle for what Jung called individuation, the result of full self-realization. When the individual has recognized the expressed and repressed aspects of the self, the individual can come into a state of wholeness, which ultimately leads to a recognition of one’s purpose in life, while having access to all parts of the self, including creativity, bringing one’s gifts and potential in a state of self-realization and self-actualization. When one knows themselves fully and acts from this stance, and has a deep understanding of their place in the world, the relationship to judgment and fear changes and the capacity for creativity grows. That is, if the practitioner is not identified with their thoughts or mistakes but something greater, there is increased energy, ability to connect with creativity, and less fearfulness, with more acceptance in relation to uncertainty.

7.3.3 Mindfulness, Creativity, and Uncertainty: How Mindfulness Engages Hindrances

One of the most difficult obstacles to work with in both meditation and the creative process is uncertainty. In his book on the creative process, McNiff (1998, p.1) states, “A person’s license to create is irrevocable, and it opens to every corner of daily life. But it is always hard to see that doubt, fear, and indirectness are eternal aspects of the creative path.”

In educational settings, creativity and uncertainty co-exist, which leads practitioners to “invariably confront the way in which people have been conditioned to expect certainties in learning situations. There is an expectation that something concrete will be delivered by the teacher to the learner” (McNiff 1998, p. 26). Challenges which arise within a mindfulness meditation practice could also be characterized in a similar way. Yet this practice provides tools for working with this emotion. When

uncertainty arises, the doubt or fear associated with it can be dealt with first by identifying it and recognizing it as such. Doubt, or uncertainty about the merits of practicing mindfulness is so common that doubt is identified as one of the seven hindrances to practicing mindfulness. Doubt, along with sleepiness, restlessness, craving, aversion, boredom, and fear are other hindrances that have been recognized over the last 2,500 years, since the creation of the Buddhist practice of mindfulness (Smalley and Winston 2010).

Labeling an emotion as it arises, like uncertainty and any fear or doubt surrounding it, is a form of mindfulness. The act of labeling thoughts and/or emotions creates space between the practitioner and the mental state, as it calms the “emotional circuitry in the brain” (Smalley and Winston 2010). UCLA researcher Golnaz Taibiana explains that when mindfulness practitioners label their emotions, they are engaging in activity that activates the prefrontal cortex, which is associated with higher levels of thought and decision-making, while decreasing the activity of the amygdala, the fear response center in the brain (as cited by Ellenberg and Hanson 2020). After labeling the emotion of doubt or uncertainty, the practitioner can then remind themselves of their reasons for practicing meditation or engaging in the creative process (Smalley and Winston 2010). Generally, as practitioners of mindfulness begin to recognize that emotions and thoughts are ephemeral states and recognize and name them as they arise, these states have less power to pull the practitioner in and get lost in their undertow. As McNiff (1998) writes about the creative process, “if we are to stay with a situation, it will carry us to a new place.” He further writes that, “Trusting the (creative) process is based on a belief that something valuable will emerge when we step into the unknown...The ego is willing to relinquish plans and expectations in order to receive an unanticipated result” (p. 27). The practice of engaging with a blank page or sitting on a meditation cushion may be fraught with uncertainty for the practitioner. After all, when we open ourselves up to experience, we do not know what will happen. Just as we do not know what will happen as we are trying to create a new business model or painting.

7.4 Mindfulness, Creativity, and Uncertainty in Education

Being mindful of the important role that uncertainty plays in creativity can provide an assurance that the time spent in spaces of uncomfortableness and self-doubt is actually time well spent in teaching and learning. Through mindfulness techniques, we can approach the creative process with a renewed sense of engagement and purpose. This is especially applicable in learning environments where there is often limited time to spend in periods of open-endedness or experimentation and where there is a push to cover content. Academic knowledge and skills alone will not allow our society to meet the needs of a rapidly changing world.

7.4.1 Allowing Uncertainty Without Judgment

An initial step to embracing creative thinking is to be mindful of the importance of uncertainty in any creative undertaking and to allow it to be present without judgment and harsh or unfair expectations. The non-judgmental quality of mindfulness allows for experiences and thoughts that might otherwise be discarded or suppressed. Through the act of being non-judgmentally aware of our own engagement in the creative process, we can recognize the need for uncertainty and make intentional decisions about how we will react to the inevitable moments of discomfort and creative risk. Practicing mindfulness in moments of uncertainty then, means being fully present in the moment, and recognizing that the uncertainty need not cause fear, alarm, or a sense of overwhelm, but rather that it is a natural part of the process (Williams and Kabat-Zinn 2011).

While it may sound simple, this practice is easier said than done. Meditation is one foundational way to practice the skill of being present in the moment, recognizing what is happening, and pausing before making decisions about how to react. Research has shown that meditation techniques that help people connect with the present moment can lead to reduced anxiety and positive emotions (Weinstein et al. 2009). Rather than avoiding the creative act because of fear of failure, or quitting partway through the process because we are not satisfied with our progress, we can use mindfulness techniques to pause, become aware of what is occurring in the moment, recognize the need for this space, and reset our thinking so that we are not overwhelmed. An increased awareness of one's own creative process, the recognition of risk-taking and uncomfortable spaces, and the non-judgmental navigation of feelings of uncertainty, is beneficial to the success of many creative professionals (Preiss and Cosmelli 2017).

7.4.2 Managing Uncertainty in Schools

There has been a call by psychologists and educational experts for years for the support of creativity in schools (Beghetto 2010; Robinson 2011). Beyond the personal judgment that prevents many people from engaging in creative acts, those who attempt to support creativity in learning environments are faced with multiple challenges driven by the uncertainty that “experimenting” with learning brings.

Glăveanu and Tanggaard (2014) describe schools as places that deny creative identities in students and teachers. However, research shows that while schools may not always support creativity, school-aged children are at an important stage in the development of their own creative self-concept. Symonds and Hargreaves (2014) explored adolescent transitions in school and found that adolescents felt that the environment of school engenders negative emotions. Few students in their study felt comfortable exploring or participating in creative endeavors in school. Adolescents are among the most susceptible to what Beghetto and Dilley (2016) termed creative

mortification, in which negative feedback after a creative act can result in disengagement and loss of interest and self-efficacy in creative endeavors.

Stevenson et al. (2014) found that adolescence is a period of enhanced susceptibility for experiences that can impact creative potential, and that this stage provides a favorable time for progression into creative thinking and ideation. The challenge then, is overcoming the uncertainty that comes with engaging students in non-traditional strategies or taking social risks in sharing and expressing. Although the United States has focused heavily on test scores, still, in comparison to other countries American students are seen as performing poorly. The answer to this has been to test more frequently, which has led to a curricular narrowing as teachers spend time teaching to tests. Other countries (i.e., Australia, Canada, China, to name a few) have begun to engage policies that call for schools to support students' creative potential (Beghetto 2010). It is indeed a substantial risk for a teacher or administrator to decide to implement an unfamiliar pedagogical strategy involving risk. This fear of the unknown results in convergent teaching practices, where the teacher does most of the talking and "teaching" while students are the receivers of information (Beghetto 2010). In this type of environment students have little opportunity to share ideas, collaborate, or create.

Holistic education, on the other hand, embraces mindfulness as a core value and practice. It emphasizes the growth and development of wholeness among students and recognizes the interdependence of life through the teaching of six major areas of connectivity: subject connections (e.g., interdisciplinary lessons), earth connections (e.g., lessons on humanity and its connections to the Earth), community connections, (e.g., beginning with emphasis on positive community in the classroom, extending out to into the world, eventually students seeing themselves as global citizens), thinking connections (e.g., integration of brain hemispheres through symbolism, imagery, etc.), body mind connections (e.g., helping students develop a positive relationship with their bodies through movement practices like yoga), and soul connections (e.g., recognizing and encouraging the student's inner life, through meditation, visualization, etc.) (Miller 2010). Through this model of education, children learn with their "thinking hearts" and come to know themselves as individuals, part of a community and greater society at large, with an awareness of unity and the interconnectedness of life (Miller 2010).

For many educators, any departure from convention might be avoided as a risky endeavor. Much research has investigated pedagogical strategies that support creative thinking, including problem-based learning, place-based learning, or project-based learning. These instructional strategies may support student creativity, and also result in learning experiences where students learn content in deep and meaningful ways (Craft et al. 2014). Mindfulness allows for the mitigation of the psychological distress surrounding uncertainty, transforming one's relationship to it, through the intentional act of recognizing the importance of supporting creativity, and taking the necessary risks to make it a reality. We share some direct strategies as follows.

7.4.3 *Strategies for Teaching and Learning Mindfulness*

Mindfulness, or moment-to-moment awareness, can be taught and practiced by students and teachers, both as a way to mitigate uncertainty and to support teacher well-being. The normalization of risk-taking as a routine learning activity has the potential to turn an atmosphere that restricts creativity into one that nourishes creativity. An atmosphere in which students feel safe to take risks and make mistakes is essential, as students begin to see that feelings of uncertainty, and even self-doubt, are normal feelings that they can experience while still being successful (Chan and Yuen 2014).

It is important that teachers not only encourage the sharing of novel ideas, but also give students the time and space to explore and develop them, with tools, like mindfulness, to prepare the mind to deal with the process. We offer a few possible ways of incorporating mindfulness into the normal processes of schooling, that educators can teach and practice with their students.

7.4.3.1 **Practicing in the Moment Awareness with Meditation Moments**

Mindfulness encompasses a diverse range of practices, of which meditation is a common entry point. Basic meditation practices can be done with few moments of class time (even as little as one minute), either at the start of any class or at strategic points during a lesson or a school day (Henriksen and Shack 2020). This simply requires guiding students through a few moments of heightened awareness and attention to a specific focus (e.g., their own breathing, a phrase, a feeling, an image, etc.). There are a variety of tools available to guide such practice. In a meditation that focuses on in the moment awareness, the teacher, or a mindfulness app or tool (i.e., apps like Calm or Headspace), can guide the group through an exercise that brings awareness to the present moment by focusing on the breath, an image, or a phrase. As the mind wanders, vocal cues can help the group bring awareness back to the focus of the meditation and to the present moment. As people practice being in the moment they are able to separate themselves from thoughts of inadequacy or fear of the unknown, and are thus able to better manage times of uncertainty. The practice of meditation with a focus on increasing in the moment awareness helps learners process their realities in psychologically healthy ways (Bennett and Dorjee 2016).

For instance, Equinox Holistic Alternative School in Toronto, Canada, which follows a curriculum based on the holistic education scholarship of John P. Miller, uses mindfulness in the classroom and illustrates how mindfulness can be embedded into daily classroom activities (Miller 2016). Some teachers here use mindfulness twice a day, once at the beginning of the day and then after lunch (Miller 2016). This routine can help students orient themselves to being at school and set an intention for their school day right at the start. Practicing mindfulness after lunch can have a settling effect on students, allowing them to feel focused and ready to learn.

The type of state of relaxed alertness is reminiscent of Csikszentmihalyi's (1997) work on flow and creativity, pointing to a state of being that allows the mind and body to feel more immersed in what is happening in the moment.

Teachers can be creative with these practices and even empower students to get involved with leadership roles. In one Equinox classroom, students are often called to lead mindfulness practices with their classmates (Miller 2016). The teacher provides the guidelines and parameters with regards to time and anchor (e.g., the breath, body, sounds, etc.) and the child leads the meditation (Miller 2016). Structured mindfulness practices like these can be as brief as a minute, depending on the amount of time available and age group of the students. Another teacher routinely leads students through meditation and mindful movement outdoors (Miller 2016). After lunch, students practice "noble silence," in addition to practicing mindful listening during class time to help students hone their ability to deeply listen (Miller 2016). This kind of practice has implications for developing the kind of deep awareness and observational powers (be it through listening, seeing, touching or engaging any of the five senses), that are linked to creative perceptions of the world (Root-Bernstein and Root-Bernstein 2013). Creative people often take in more stimuli and observe more from the world around them, providing fertile grounds for imagination and inspiration (Carson et al. 2003). Certain mindfulness practices, such as open-monitoring meditation, offer direct training into the practice of noticing one's experience—not only one's own thoughts, but anything or everything that may be available to observe through the senses in the moment. Furthermore, there are a range of mindfulness practices related to meditation, that provide learners with training in observation of direct experience. For instance, mindful eating can help people, particularly young children, to hone in on what they notice and observe through sense of taste; or mindful walking may focus closely on the experience of touch, pressure, weight, the movements of the body, or anything else occurring during the act of walking. Any of these offer a kind of unique support to creative being, through learning to see the world, as well as wellness practices that allow for and manage feelings that arise around uncertainty.

Techniques like noble silence, guided mindfulness practice, and mindful movements can be used throughout the day at key transition times or even during moments when the classroom environment is unsettled. Teachers may have a bell on hand, commonly used to signal the beginning or end of a mindfulness session, to call students' attention. When the class needs a reminder to settle, the sound of the bell may be used to alert children that it is time to go into silence and stop what they are doing to follow the sound of the bell. Teachers may also choose to bring their students' awareness into their bodies throughout the day. For instance, during a time when the teacher is reading aloud to their students, they may say something like: "as I am reading this, see if you can pay attention to your breath or your seat in your chair, etc." Or, "as we are listening to this recording, see if you can place your entire attention on the words and sounds of this recording...As you are writing, notice the pencil in your hand."

Mindful stretching might be done throughout the day in moments of restlessness. Emotion labeling can be used during social emotional sharing time. The teacher

may even model this by sharing their particular emotion or mood of the day (as appropriate), even noting where they feel the emotion within their body. Or as noted, mindful eating could be introduced as a fun activity with a special snack and mindful walking could be cultivated in hallways between classrooms.

7.4.3.2 Coloring Mandalas

According to Jungian theory, a mandala is a circular image that represents “wholeness and unity of the archetypal Self” (van der Vennet and Serice 2012). Jung wrote about his own experience of creating mandalas to reduce the activity of the thinking mind and cultivate a sense of inner peace (van der Vennet and Serice 2012). Jung believed all people should have the experience of coloring mandalas. Research suggests that coloring mandalas is an effective tool for reducing anxiety, which is closely related to uncertainty. Drawing original mandalas (Henderson et al. 2007; van der Vennet and Serice 2012) or coloring already existing mandalas (Curry and Kasser 2005; van der Vennet and Serice 2012) have both been empirically shown to be effective ways to decrease anxiety.

Mandala images are relatively easy for teachers to access for their students. There are mandala coloring books available in bookstores and for order online (as well as freely available for online printing on various sites, e.g., <https://printmandala.com/>). Teachers may also direct students to draw their own images within a circle template. Drawings may be free form or a directive might be provided, linking images to a pre-existing aspect of curriculum content. Original representations of mandalas could also be used to have children represent their experiences in a new way. Instead of writing in a journal, students could generate a book of mandalas to express their thoughts, emotions, and experiences. Mandalas could also be used for purposes of enjoyment during choice time or for their calming effect as a way to center students before taking a test or approaching a difficult task.

Learning, exploration, or relaxation derived through mandala making or coloring could be further reinforced by identification of mandala-like images found in the outside world. For example, mandalas are prolific in the natural world or part of everyday life, such as the circle students may sit in on the carpet for circle time. This focus on individual and also collectively experienced mandalas mirrors the individual working with mandalas on their own, experiencing their own wholeness and unity, while also connecting with a sense of unity in the external world.

7.4.3.3 Saying Positive Affirmations

The practice of saying positive affirmations is something that can be implemented easily as it can take as little as 30 seconds a day. Positive affirmations are phrases that an individual recites to oneself. Examples of positive affirmations that students could use include: “I am proud of my creative hard work and can overcome the challenges in front of me;” “The mistakes I made yesterday are helping me do better

today;” “My creativity grows when I take risks;” and “I give myself permission to fail.” By engaging in the practice of saying positive affirmations, learners are learning a new way to talk to themselves. This has the potential to decrease damaging self-talk and reduce self-conscious thinking (Brown et al. 2007). The practice has the power to change negative thinking patterns and re-wire the brain, creating space for positive thinking (Stinson and Arthur 2013).

7.4.3.4 The Voice of Judgment

Another creativity-focused mindfulness concept is the “Voice of Judgment” (or VOJ) (see Henriksen and Shack 2020 or Workmon 2018). Conceptually, it is described by psychologists as an internal monologue (more prevalent for older children, secondary students, and adults, more so than young children). This internal voice critically judges our thoughts and actions, and affects our willingness to engage creatively (Ray and Myers 1989). Human beings have thousands of thoughts every day, and while some are helpful, many are counterproductive. These are paired with our own internal-mental voice that judges and filters personal experience. Ray and Myers (1989) describe this Voice of Judgment as central to creative identity. Creative identity is a continual and developmental process in life, and reducing or quieting self-judgment increases capacity for creative engagement.

One arts-based activity which can be done in almost any curriculum where students are being asked to create (described in Henriksen and Shack 2020), allows people to identify and persevere through the VOJ. Given the abstract nature of this, it may work better with older students (though conceptually it may be adapted for younger students). In this, each student creates a visual of their own design to represent their own VOJ as a person or a physical object/idea (through sketching, drawing, or any other simple arts-based means). Workmon (2018) showed how the technique may help students to identify limiting or self-defeating narratives in their own mind. By objectifying thoughts through an external personification, learners may be more comfortable in separating and letting go of negative self-narratives or other unhelpful thoughts. When used with arts and design students, this allowed more creative thinking to emerge in their project work. Such activities may be most effective when couched in discussion with students about their self-beliefs related to creativity, or feelings about their work in school and other settings.

Another related activity which can also ‘flip the script’ of the VOJ, is the Voice of Persistence (VOP) (Workmon 2018). Here, students identify an internal narrative or representation that helps them persevere and keep going when they are struggling, when they are unsure, or experiencing discomfort and uncertainty. In personifying that voice in an external or visual representation (e.g., a friend or family member, a person who inspires them, or even something like a sensation of sunshine or feeling of a warm glow). Activities such as this can be helpful because in letting students discuss and represent their inner monologues, they can become more mindfully aware of them, and more able to manage them through uncertainty and toward creativity.

7.5 Getting Started: Suggestions and Implications

With any change in practice, it can be challenging to figure out how or where to begin. An important first step before implementing any of these ideas is to accept that an adjustment in practice comes with inherent risk and uncertainty, so the most essential first step is accepting and even embracing the knowledge that uncomfortable spaces are ones where positive change can emerge. In embracing creativity and uncertainty, we suggest that educators reflect on the reason for change and the goals they have for students. Then, educators can use the suggestions we have provided, or others, to identify the change in behavior, practice, or thinking that they would like to see. We suggest that educators pick one small thing to implement that will help bring about this change. For example, if an identified goal is to support high schoolers with the management of stress, a simple change might be to include a few minutes in each class period for students to self-reflect on their VOJ and to engage in some positive self-affirmations that they create or are provided by the teacher. Large scale change may be overwhelming, and many K-12 educators simply do not have the power to make huge changes to curriculum or practice. But, small changes to daily routines that are easy to implement can add up to powerful practices over time and provide important opportunities to support students.

7.6 Conclusion

We inhabit an uncertain world, in a complex society, with an unpredictable future. Learners must be prepared to act creatively through this uncertainty, to develop unique and unexpected solutions to problems we may not yet have encountered (in addition to the ones we already face). While we need learners to be creatively prepared to be novel thinkers and flexible agents in the world, uncertainty can upend creative processes and turn people away from their own creative potential. Schools rarely ameliorate this, instead exacerbating it through a focus on getting the correct answer, as opposed to pushing through the discomfort into the open-ended nature of creative challenges. The kinds of open-ended, project-based, transdisciplinary creative challenges that allow for creativity are clearly needed in educational settings, and along the way, teachers and students may be served by mindfulness practices to recognize, allow and support uncertainty. These practices may also support creative development through increased ability to observe the world, and to relate to the self in ways that allow for fresh framings and creative development, along with an evolving relationship to uncertainty itself.

Engaging in creative work involves risk and uncertainty, bringing possible fears of failure, negative self-judgment, and withdrawal or refusal to engage in creative acts. Mindfulness offers a way to mitigate these feelings by supporting one's own recognition of the value of these moments and the role that they play in the creative

process. Our collective future depends on the creative potential of everyone. Educational systems must support the creative development of young people, and eschew the tendency towards compliance and conformity. By recognizing and allowing uncertainty, and providing the tools and practices of mindfulness, educators can start to create spaces where risk-taking is normalized and creativity is practiced intentionally.

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