The Role of Environmental Factors in Fostering Creativity in the Classroom

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Abstract

Creativity is a set of skills, a form of thinking, and a way of meeting and excelling in the demands of the 21st century. This article explores creative gaps and inadequacies that hinder the development of teacher and student creativity in classrooms. Drawing from various disciplines, this article explores the challenges schools face in nurturing creativity through an in-depth analysis of existing literature, research studies, and expert views on the subject of creativity in education. The author discusses how teachers play a pivotal role in nurturing students' creativity and the importance of empowering teachers, with a focus on equipping teachers with the necessary tools and knowledge. The author contends that empowering teachers to create transformative educational experiences creates students who are critical thinkers, problem solvers, and contributors to a dynamic and innovative society.

Keywords: Creativity, student, teacher, practical suggestions, classroom environment

The Role of Environmental Factors in Fostering Creativity in the Classroom

Given the fast-paced, competitive and contemporary climate, creative thinking skills are essential to meeting the demands of our current era. Gerardo (2017) claims that in order for students to compete, innovation through creativity is necessary; accordingly, educators must foster creativity to help students adapt to complex environments as a means of survival. Combining new and useful ideas and creating value are, therefore, essential parts of living in the present and future (Gerardo, 2017). As discussed in this article, creativity needs to be an explicit pedagogical focus for educators. Leckey (2011) argues that creative activities also "help build students' resilience in the face of contemporary challenges, as creativity and creative thinking boost self-esteem, improve quality of life, and promote growth while enhancing well-being and lifelong learning" (p. 505). Particularly given the rate of change in contemporary times, resilience through creativity is critical for students to lead a fulfilling life.

This article presents a review of research literature examining the impact of the environment on enhancing students' creativity, supported by studies on neuroplasticity and the development of creative thinking skills. A significant portion of this research centers on how teachers cultivate creativity in the classroom by creating environments conducive to creative expression and exploration. It acknowledges the necessity of creativity as a set of skills, a form of thinking, and a means of excelling. The suggestions provided in this article are further reinforced by research on creativity and educational environments, as well as my own nine years of teaching experience. Additionally, the suggestions delve into how creativity is lacking in the education system and why schools encounter challenges in fostering creative classrooms and nurturing creative children.

Creativity and the Brain

As indicated by Mastnak (2018), neuroplasticity, or the process through which the brain undergoes transformative changes, occurs when creativity is harnessed within classrooms. Neuroplasticity is recognized for its ability to induce structural changes in the brain in response to one's thoughts, actions, and emotions, thereby organizing the brain and even augmenting brain tissue based on individual experiences (Patt Lind-Kyle, 2009). Consequently, as Patt Lind-Kyle (2009) discusses, the brain adapts to accommodate new skills and information, with novel experiences—such as those aimed at enhancing creative capacity—shaping and generating soft tissue for the formation of new networks of synapses. This means that when we direct our focus toward novel endeavors, we trigger the activation of fresh neural connections (Patt Lind-Kyle, 2009).

Creativity also helps students acquire knowledge and overcome real-life problems (Sukardi et al., 2021). In contrast to the long-held belief in fixed brain anatomy, advancements in mainstream medicine and science have provided evidence that the brain is adaptable and capable of change (Mastnak, 2018). This adaptability is not simply due to an independent regulatory mechanism, but rather, it involves intricate and sensitive processes, particularly when individuals engage with music or the arts (Mastnak, 2018). Notably, this discovery aligns with the observation of structural plasticity in various neuro-modulating cortical areas, such as the hippocampus. The integration of creativity and artistic pursuits into educational settings may hold the key to unlocking the full potential of neuroplasticity and fostering cognitive growth (Mastnak, 2018). Therefore, schools must foster creativity in healthy and transformative spaces, as education is the underlying factor in developing talent and identity (Pelfrey, 2010). Further, research in neuroplasticity suggests that creativity is an integral part of helping foster identity and, further,

finding success in future contexts. The privileging of creativity in education is also critical given that heightened creativity is linked to improved performance, as higher productivity is achieved when students are able to deeply engage authentic interests (Gerardo, 2017).

For many years, discussions have occurred around the topic of creativity. Research has found that creative learning environments enhance students' creativity (Fan & Cai, 2020). Teachers can play a key role in fostering creativity for all students, as they can change the educational environment and narrative, leading to strategies that directly impact students' creative thinking capabilities and experiences of creativity (Sukardi et al., 2021). Teachers can foster a culture of creativity and critical thinking among students by encouraging risk-taking, establishing open communication, nurturing creative ideas, and granting greater freedom and choice during assignment completion (Fan & Cai, 2020). If teachers can specifically target the building of new neural pathways through focused experiences, it will further reinforce the idea that everyone has the capacity for creativity. With new creative strategies being implemented, teachers can unlock the benefits of intrinsic motivation (Hennessey, 2010). Staging opportunities for students to pursue intrinsic motivation play a crucial role in fostering creativity amongst learners and also influences students' overall motivation levels (Hennessey, 2010). When children experience intrinsic motivation, they willingly engage in learning complex material on their own accord (Hennessey, 2010). This intrinsic drive towards new knowledge encourages students to delve deeper into tasks and to sustain their efforts for extended periods. Therefore, it is advised that teachers consider a range of factors in pursuit of increased creativity and associated exploration, giving time for exploring students' authentic interests in order to unlock the potential of creative engagement. However, in order for teachers to plan towards creativity with intention, it is critical first that creativity be defined.

What is Creativity?

When defining creativity, definitions vary from one source to another; each version defines creativity differently in relation to its audience and subject of focus (Robinson, 2008). For example, the concept of a creative person is often inherently linked to the type of work they pursue. As a simple example, a painter's creations will naturally differ from those of an architect (Glück et al., 2002). It is important to acknowledge that individual differences in creativity may lead to differing results on scientific and artistic creativity. Given the complexity of defining creativity, a comprehensive structural framework of creativity encompassing both scientific and artistic creativity have not been fully achieved (Glück et al., 2002). The definition of creativity must therefore be flexible, elusive, and interpreted in more than one way (Robinson, 2008), in part because what it means to be creative differs across contexts. Further, the variation in defining creativity can also be attributed to how creativity is viewed from person to person; what one may view as an expression of creativity, another may not. As such, researchers, teachers, and students interpret creativity in their own ways, whereas singular definitions of creativity often take broad approaches to satisfy a wide spectrum of disciplines, ability levels, and behaviours (Robinson, 2008).

Recognizing the variation in what creativity means is equally critical in the classroom because teachers need to align approaches with current topics when integrating creativity into the curriculum (Gerardo, 2017). From an educator's perspective, creative thinkers keep track of their ideas, ask questions, and are open to new ideas; they also avoid a set pattern or rigid way of doing things (Gerardo, 2017). Creative individuals can also explore problems from differing points of view. The point being made here is that creativity—while often viewed as a set of discrete skills

associated with fine arts— can be thought of, broadly speaking, as more of an orientation towards problem solving, exploration, and flexibility, rather than something only a small percentage of the population possesses. Creativity can be embraced in a range of classroom contexts provided it is placed at the centre of curricular planning and in instances where exploration is seen as an essential part of learning.

Defining a Creative Teacher

The teacher is the main mediator who determines what is practiced in the classroom, and therefore, teachers have the greatest ability to foster creativity in the classroom (Morais & Azevedo, 2011). Teachers are a source of information; they play a critical role as models for their students and thus have the responsibility of promoting creativity to enhance social and individual progress. Much of this responsibility involves teachers also embracing their own capacity for creativity. Creative teachers should be supportive, energetic, and knowledgeable. The creative teacher should also be self-reflective and critical of their own practices while demonstrating their own creative abilities (Morais & Azevedo, 2011). A creative teacher actively encourages taking risks, especially in unpredictable situations, but there needs to be a close and motivating relationship with the students in order to provide a supportive environment that allows for risk taking. In addition to teachers needing to acquire an affinity to creativity, the classroom space should also be vibrant, well-designed, and welcoming (Morais & Azevedo, 2011). Attention to constructing supportive, dynamic spaces can increase student motivation and help students become excited and interested in the learning process (Lily & Bramwell-Rejskind, 2004). From teacher orientation, to student motivation, to the actual spaces in which creative activities can occur, there are many overlapping factors to consider when thinking about how creativity can hold a more prominent position in education. For the remainder of this paper, I will consider the latter, often overlooked role that physical space plays in supporting creative growth.

Classroom Environment

According to Beghetto and Kaufman (2014), the learning environment emerges as a pivotal factor in nurturing creativity, playing a decisive role in determining whether creative development is encouraged. While teachers value creativity within their classroom environments, they also prioritize maintaining order. However, teachers often grapple with the concern that a creatively inclined student might disrupt the learning atmosphere (Beghetto & Kaufman, 2014). One way to address this concern is by recognizing that students will express creativity in diverse ways. Therefore, to foster creativity in the classroom environment, teachers can incorporate various creative approaches into their daily teaching practices to enrich all students' learning experiences and promote engagement. This can entail involving students in activities that prompt them to generate multiple ideas and take ownership of their learning. Providing opportunities for choice, imagination, and exploration is paramount. Additionally, teachers should carefully monitor the motivational signals conveyed through their classroom practices and actively demonstrate and support creativity (Beghetto & Kaufman, 2014).

Given the malleability of children's minds and their neurological predisposition towards creativity, the classroom environment can either enhance or hinder a student's ability to learn and feel secure (Bucholz & Sheffler, 2009). Moreover, classrooms designed to explicitly foster emotional well-being, create an environment conducive to both learning and emotional growth (Bucholz & Sheffler, 2009). For example, Mather et al. (2001) examined schools that partnered with psychologists, teachers, and parents to develop a framework that explains why children

experience behavioural issues. The developed framework is titled the "Building Blocks of Learning and Behavioral Problems in the Classroom" (Mather et al., 2001), and emphasizes that the learning environment is at the base of a pyramid and acts as a foundation for all learning.

In spite of research indicating its significance, the impact of the physical environment on creative learning is often overlooked (Rentzou, 2014). The physical structure of the classroom impacts student morale and their motivation to learn (Phillips, 2014). Room design also influences social context, student relations, and the overall effectiveness of the classroom (Warner & Myers, 2009). In order to encourage creativity, the classroom should be inviting and the environment should create a positive atmosphere for students; students should feel that the classroom is a space where they can safely take risks and explore (Phillips, 2014). Students are likely to feel empowered when they engage in environments that encourage risk-taking, learning, and personal growth. Such spaces should be inviting, promote individuality, and feature flexible designs that reflect the uniqueness of each student. Moreover, enhancing creativity in the classroom requires more than just adding a few posters. Teachers must be willing to take creative risks and envision expansive possibilities for their learning spaces (Cremin & Barnes, 2018). Yet, educators often face pressures in the educational system that constrain their ability to envision creative classroom environments. The focus on assessments and adherence to standardized guidelines can impede creativity, leading teachers to stick to conventional teaching approaches (Cremin & Barnes, 2018). Acknowledging this tension between external pressure and the aspiration to foster creativity is, therefore, an essential step. Consequently, it becomes crucial to convince teachers of the significance of nurturing creativity (Cremin & Barnes, 2018). Given the various pressures educators face such as assessment and monitoring classroom time, developing a physical classroom space to support creativity can be an important initial step and a catalyst for an ongoing process of centering creative learning experiences that can be adaptable to the myriad demands teachers face.

Practical Suggestions

In establishing the classroom environment as a factor in fostering creativity teachers might, therefore, consider the following aspects when designing classrooms specifically to support the development of creative competencies.

Lighting

Studies have found that the lighting in a room has a direct impact on brain activity. Lighting can create psychological impacts such as hormone production, alertness, arousal, cognitive and creative abilities such as working memory, attention, and problem-solving (Lan et al., 2021). With these factors in mind, research has found that natural lighting is the best option. In contrast, fluorescent lighting can create hyperactivity and agitation, which diminishes one's capacity to be creative (Warner & Myers, 2009). Research by Warner and Myers (2009) also reports that classrooms with minimal windows result in depression in some students.

Furniture

Schools use functional furniture that, although durable, is often uncomfortable. The institutional appearance of furniture in classrooms can also de-stimulate creative minds (Warner & Myers, 2009). Thus, furniture should have a positive psychological appeal (Warner & Myers, 2009), with a range of seating options and different textures. Warner and Myers (2009) suggest that tables in classrooms can help promote a creative environment, as tables are excellent for group work and

allow students to communicate with each other while exploring creative ideas. For example, using a table that is big enough to sit multiple students comfortably, allow for sharing and is easily assembled, stimulates greater creativity by facilitating collective exploration (Komendat, 2010).

Classroom Décor

Placing students' artwork around the classroom and in the hallway can have a positive impact on students by creating an environment where students work hard to have their artwork displayed (Komendat, 2010). Furthermore, allowing students to provide input into creating the classroom space, including its design and décor, fosters creativity and a healthy emotional environment as students see themselves reflected in the spaces around them (Komendat, 2010). In addition, the use of colour in environmental design significantly impacts students' attitudes toward school. While generally positive, an excessive array of colours can be unsettling, potentially leading to errors in test responses and increased distractibility (Grangaard, 1993). Many classrooms feature materials with bright, primary colours, which research suggests can be distracting. Instead, it is proposed that a student's learning space should prioritize materials directly relevant to the task at hand.

That environmental stimuli can influence behaviours (Grangaard, 1993) underscores the importance for teachers to strike a balance between an aesthetically flexible learning environment and one that is thoughtfully curated. Similarly, selecting a theme for the classroom was also found to be important, as themes create consistency and predictability (Komendat, 2010), while still giving educators space to create visually dynamic spaces. According to Komendat (2010), display boards were found to reinforce key learnings but, at the same time, too many displays were found to be overwhelming, so teachers should carefully consider how they aesthetically curate their classroom spaces.

Material Resources

Resources serve as the infrastructure of creativity in the classroom, meaning that resources must be readily available and usable (Warner & Myers, 2009). Without the availability of creative resources, other variable such as classroom lighting, the environment, and colours were found to not make a difference (Warner & Myers, 2009).

Space Configurations

The environment has a direct impact on comfort and motivation of learning in the classroom (Yildirim et al., 2011). Classroom clutter and uncleanliness were found to hinder students' productivity (Komendat, 2010). In addition to being clean and organized, classrooms should also have a space that allows for creativity during activities. Well-designed pathways for high-flow areas in the classroom are also necessary as this improves transition time from one subject to the next and supports a cooperative learning environment (Komendat, 2010). By creating large whole group spaces, students learn to share creative ideas. In contrast, when spaces are too small or when transitions are not easily executed due to limited space, behavioural issues arise. As such, teachers must try to create the illusion that their classroom is much larger than perceived. To do this, teachers can place material in cupboards, be thoughtful in their selection of wall décor or posters, and be strategic in how they place furniture (Komendat, 2010). These environmental factors can, in turn, have a positive impact on students' concentration and motivation (Yildirim et al., 2011).

Classroom Size and Interaction

Research indicates that an optimal class size is twenty-five students or fewer. Ideally, this number could be even lower as smaller class size results in improvements in a variety of learning factors, behaviours, and creative abilities (Komendat, 2010). While educators often have limited control over their class size, they can still facilitate individual attention that fosters creative growth by employing small group instruction. Utilizing small groups in the classroom promotes effective learning, leading to improved academic achievement and positive attitudes toward learning amongst students (Samson, 2015). In small groups, students can actively participate in problem-solving, which enhances their engagement and understanding (Samson, 2015). After nine years of teaching experience, I have learned that implementing small group instruction has significantly enhanced my ability to cover a broader curriculum. This approach not only empowers students to work independently but also encourages collaboration within groups, fostering a conducive environment for creativity to thrive. Additionally, it allows the teacher to work one-on-one with students instead of addressing a group of students simultaneously.

Environmental Changes in Response to Increased Pressures

Environmental changes in classrooms are one method through which teachers, burdened with increasing demands on classroom time, can immerse their students in creative and authentic learning opportunities. Teachers, in turn, face the ongoing challenge of not only instructing but also nurturing and evaluating creativity. However, the recent focus on a performative learning culture, meeting subject matter requirements, and heightened curricular demands has marginalized creativity (Tan et al., 2016). Standardized tests, cutting funding, the focus on assessment, and the narrowing of the curriculum have been shown to further drain creativity in children as pedagogical approaches often focus on singular learning goals without the openness creativity often requires (Frances, 2010).

A recent shift in the learning environment is evident, compared to the 1970s and 1980s, when teachers and students were immersed in projects that held genuine interest and meaning for them (Hennessey, 2010). In contrast, today's classrooms often encounter significant pressure stemming from the emphasis on standardized tests and frequent assessments aimed at fulfilling strict curricular standards (Hennessey, 2010). Therefore, teachers are witnessing a resurgence of rigid pedagogical modes and heightened demands, precisely when authentic learning experiences are most needed. This is particularly evident when recognizing the significance of fostering creativity in students to meet evolving educational requirements.

Personal Connections

As an educator, I have cultivated a culture of creativity within my classroom. Prior to the onset of COVID-19, I endeavoured to nurture an environment rich in imagination and innovation. This involved furnishing the space with tables adorned with decorative bins brimming with classroom supplies, complemented by bulletin boards with a rustic modern farm theme, and showcasing students' artwork to celebrate their artistic talents. Engagement flourished through collaborative activities and group projects, encouraging students to collaborate, exchange ideas, and learn from one another. To support their endeavours, my classroom was well-stocked with a diverse range of materials, tools, and resources aimed at igniting creativity and exploration. These resources encompassed art supplies, technology tools, books, multimedia resources, and hands-on learning materials.

Reflecting on the research, I am convinced that open classroom environments represent the future of education, offering innovative and student-centered learning experiences. While my

classroom continues to cherish all these elements, it is challenging not to acknowledge the profound impact of COVID-19. Many students find themselves lagging behind due to the lost time in education. Consequently, teachers are ensnared in the effort to impart fundamental knowledge. The prevailing focus in schools is to bring students up to grade level, leaving scant room for nurturing creativity. This is a constant struggle, and can leave teachers with a persistent feeling of inadequacy, fearing that our students may never catch up to the expected grade level standards.

Closing

As research focused on environmental factors and students' development of creative competencies suggests, creative thinking can be encouraged through positive environmental conditions that make space for curiosity, risk-taking, and imagination. Environmental factors such as social and physical conditions can often be overlooked, having a profound impact on students' learning experiences (Frances, 2010). Creativity is also an indispensable element of contemporary life. For instance, currently, many forward-thinking careers and emerging industries rely on their workers' abilities to think unconventionally, critically, and independently, as well as to envision new scenarios while producing high-quality work (Pelfrey, 2011). Therefore, students require an environment that fosters the acceptance of mistakes while problem-solving, as they may face similar demands in their future careers (Pelfrey, 2011). Creating new and improved services through innovation is necessary to meet the challenges before us, and nurturing creative thinking is part of the solution. Contrary to the notion that creativity is secondary to the primary objectives of education, I contend that creativity can and should be elevated to a central aspect of student learning. Creativity is, indeed, essential for ensuring that student learning remains pertinent in our evolving world (Cropley & Oppert, 2018).

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