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Towards a Unified Approach to Creativity in Education: Integrating Whitehead and Dewey

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ABSTRACT

Creativity in education is universally valued, but the diversity of theories and directions in the field of creativity studies is challenging for practitioners to understand and apply in classrooms. In this conceptual article and position paper, we propose a unified educational approach to creativity based on the philosophical ideas of Alfred North Whitehead and John Dewey. Whitehead's notion of concrescence—where diverse experiences and resources are integrated into a coherent whole—alongside Dewey's pragmatic emphasis on experiential learning, provides a robust foundation for enabling creativity in educational settings. Drawing upon these stances, we offer a set of three principles derived from the integration of Whitehead's and Dewey's thoughts, aimed at enhancing the practical application of creativity in education. These principles focus on designing learning environments that foster creativity and align with learners' natural developmental tendencies, and the processual nature of learning. As a plausible practice example, we apply these principles within Science, Technology, Engineering, Arts, and Mathematics (STEAM) education, showcasing a practical thought experiment that applied the three integration principles and merges experiential learning and the integration of varied experiences and resources. This approach emphasizes the role of teachers as designers of learning environments that foster creativity. A design-based approach can inform curriculum development, teaching methods, and classroom management, influencing research, practice, and policy. By rethinking creativity through the integration of Whitehead and Dewey, educators, researchers, and policymakers can develop more coherent strategies that promote creativity more centrally in the educational process, addressing the need for innovative and adaptive thinking in students.

KEYWORDS:

Creativity, Whitehead, Dewey, educational design, classroom practice, STEAM

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The importance of nurturing creativity in education is widely acknowledged, but the diverse theories and approaches in creativity studies often leave educators uncertain about their practical classroom application for enhancing student learning and creativity (Collard & Looney, 2014; McKerracher, 2016). This article takes the form of a conceptual article and position paper. By this, we mean a theoretically grounded synthesis of existing scholarship, aimed at generating new practical insights. Drawing on the philosophies of Alfred North Whitehead (1985) and John Dewey (1938), we propose a unified educational approach to creativity that connects theory and classroom practice. This research thus adopts a philosophical-theoretical paradigm, employing conceptual analysis to synthesize philosophical foundations with educational practice. Through this interpretive framework, we examine how foundational philosophical concepts can inform contemporary educational approaches to creativity.

To establish a shared understanding of the theoretical foundations that underpin this unified approach, several key concepts require clarification. 'Concrescence' refers to Whitehead's concept of how diverse experiences and elements integrate into a unified, creative whole, a process where disparate components come together to form something novel and meaningful (Whitehead, 1985). Complementing this understanding of creative synthesis, 'experience' in Dewey's pragmatic philosophy encompasses the dynamic interaction between learner and environment, emphasizing that genuine learning emerges through reflective engagement with real-world situations rather than passive reception of information (Dewey, 1938).

These philosophical foundations become particularly relevant when examining two defining features of contemporary educational contexts. First, STEAM education exemplifies the integration of Science, Technology, Engineering, Arts, and Mathematics through interdisciplinary, hands-on learning experiences that prioritize creativity and innovation. This approach aligns closely with both Whitehead's vision of creative synthesis across diverse elements and Dewey's emphasis on experiential engagement. Second, the emergence of generative AI (GenAI) presents both opportunities and challenges for educational creativity. GenAI refers to artificial intelligence systems capable of creating new content, ideas, or solutions, fundamentally disrupting traditional human-centric assumptions about creativity and learning processes (Creely & Blannin, 2025). Together, these contemporary developments highlight the need for philosophical frameworks that can be employed navigate the intersection of human creativity, technological innovation, and experiential learning.

The field of creativity research faces significant fragmentation across academic traditions and disciplinary perspectives (Gabora, 2020; Kaufman & Sternberg, 2010; Ryhammar & Brolin, 1999), a challenge further complicated by generative AI's disruption of traditional teaching paradigms and redefinition of creativity itself (Zhou & Lee, 2024). Drawing on the conceptual foundations outlined above, we argue that Whitehead's notion of concrescence and Dewey's pragmatic emphasis on experiential learning offer a robust theoretical framework for both fostering creativity in education and unifying these varied elements in creativity research.

In response to this complexity, we propose three core principles designed to unify classroom practices for fostering creativity. First, creativity can be seen as a novel combination of human,

material, and non-human elements that leads to new hybridities. Second, creativity might be viewed as a complex process and product of many social, cultural and environmental interactions, such that there is a need to consider context. Finally, while creativity arises within disciplines, we advocate for an interdisciplinary, experiential, and holistic approach to foster positive creative experiences.

The structure of this article reflects a systematic development of these ideas. We begin by reviewing existing scholarship on creativity in education, identifying its affordances and limitations, including concepts like risk-taking, productive failure, iterative practices, interdisciplinary perspectives, and real-world learning experiences. Following this review, we discuss the theoretical foundations embodied in Whitehead's and Dewey's philosophies, exploring how their ideas can inform and unify diverse strands of creativity research for educational purposes. Building on these foundations, we then propose three core principles to enhance the practical application of creativity in educational settings. To illustrate these principles in action, we share a practice-oriented thought experiment (Aguinis et al., 2023) within a STEAM education context, demonstrating how the integration of experiential learning and combinatory emergence can foster creativity and engagement. Subsequently, we examine the broader implications of this unified approach for educational research, practice, and policy, emphasizing the need for creative and adaptive thinking in students. Finally, we conclude with a summary of key points and possibilities for further empirical research to validate and refine the proposed principles for diverse educational contexts.

By rethinking creativity through the integration of Whitehead and Dewey, educators, researchers, and policymakers can develop more coherent strategies that place creativity at the heart of the educational process, preparing learners to thrive in a rapidly evolving digital and AI-driven world.

CONCEPTUAL FOUNDATIONS AND FRAMING

This article adopts a conceptual and interpretive methodology, drawing on traditions of hermeneutic synthesis (Boell & Cecez-Kecmanovic, 2014; Gadamer, 2004) and philosophically informed inquiry in education (Biesta, 2007). Rather than conducting a systematic review or empirical study, we engage in a propositional and theory-building approach that interprets and integrates literature from creativity research and philosophy to offer a unifying framework for educational practice.

We began by reviewing key trends and limitations in creativity research, identifying areas where conceptual fragmentation was most evident. From there, we engaged deeply with the primary works of Alfred North Whitehead and John Dewey, both philosophically and educationally, to interpret their key concepts in relation to creativity and its practical application. Through multiple conversations, and iterative dialogue between these philosophical positions and the creativity literature, we developed a set of organizing principles intended to bridge theory and practice. Our approach aligns with scholarship that sees conceptual integration and theoretical contribution as essential forms of inquiry in education, particularly in response to fragmented or technocratic

domains (Maxwell, 2012). The result is a framework grounded in interpretive reasoning, rather than empirical generalization, intended to provoke new perspectives and guide design in creative educational environments. Before introducing the principles themselves, we first provide an overview of the diverse strands of creativity research that inform this synthesis and illustrate the need for a more unified conceptual grounding.

Diverse Models and Disciplinary Perspectives

Creative thinking is often viewed as an innate talent rather than a learnable skill (Cropley, 2016). Despite persistent myths, scientific research since the mid-20th century has greatly expanded our understanding of creativity. J.P. Guilford's (1950) influential call for psychologists to study creativity sparked increased academic research, with psychology and education leading the way due to creativity's central role in thinking and learning (Beghetto, 2019).

Creativity research now spans diverse disciplines including biology, neuroscience, economics, design, social justice, and the arts (Kaufman & Sternberg, 2010). Until recently, the field was primarily rooted in psychology, focusing on individual creativity and cognition through psychometric methods (Runco, 2014). While this psychological approach advanced understanding of individual creative potential, its focus on internal mental states has sometimes been limiting and disconnected from the practical needs of creative practitioners and educators (Henriksen, 2019). For example, psychometric tests of creative capacity may be impractical for designers, artists, or teachers supporting student creativity. This disconnect has made it challenging to apply creativity research to daily work and problem-solving (Glăveanu, 2014), often leaving educators unsure about how to translate theory into practice.

As creativity research has increasingly branched out across a range of fields, more applied theories have gradually emerged. In education, theories focused on teaching and learning have significantly enhanced our understanding of classroom creativity (Beghetto, 2019). For instance, Kaufman and Beghetto's (2009) Four-Cs model of creativity addresses the unique kinds of creativity that teachers and students may explore in classroom settings. Similarly, the rise of sociocultural theories and perspectives on creativity has expanded our understanding of how creativity unfolds in human life and society, introducing various social lenses on creativity (Glăveanu, 2015). Distributed and networked forms of creativity also emerged in this landscape of collective or social creativities (Sawyer & DeZutter, 2009). As different lenses (collective and individual) have framed various understandings of creativity, more studies and theories have emerged across diverse disciplines. Perspectives from the arts, sciences, and humanities have been crucial in building stronger understandings of creativity. Research now explores a diverse range of intersections with creativity, including mental health, genetics, sociology, culture, process models, assessment, personality, and networked models (Sawyer & Henriksen, 2024).

Considering how creativity emerges both in disciplines and the world, Csikszentmihalyi (1997) proposed a systems model to examine its societal operations. He suggested that instead of focusing on what creativity is, a more intriguing and valuable question might be, "Where is creativity?"

His model suggests that when an individual or team produces something, simply asking whether it is creative or not misses the larger point. We should consider how creativity emerges from a dynamic interaction of, "a system composed of three elements: a culture that contains symbolic rules, a person who brings novelty into the domain, and a field of experts who recognize and validate the innovation" (Csikszentmihalyi, 1997, p. 6). He asserted that creativity lies in the interaction between the individual, the domain, and the field in which the creative work is situated. Creative work functions between these three areas and is produced and disseminated based on the judgments and interactions of members of those levels. The individual is the person or team creating new ideas or products. The domain involves the established body of knowledge, symbol systems, and cultural conventions within a specific discipline (like art, science, or technology). The field consists of experts and gatekeepers who evaluate, validate, and recognize creative work, determining its acceptance or influence within the domain. This theory suggested that creativity is deeply embedded in socio-cultural contexts, with implications for developing environments that foster and sustain creativity (Henriksen et al., 2016).

The increasing diversity in conceptualizations of creativity presents both a richness and the potential dilemma of fragmentation. This dilemma refers to the challenge of drawing together diverse, sometimes conflicting understandings of creativity into a coherent and usable framework. In recent decades, creativity has evolved from a narrow psychological construct to a diverse and rich field of understanding. One might argue the field has scattered into diverse areas, understandings, narratives, topics, and intersections lacking a strong common unifying thread (Zhang et al., 2015). This is common in broad fields, but the lack of a core theory or conception, despite the wealth of knowledge, poses a challenge especially in practical fields like classroom teaching. Without unity, it is difficult to maintain clarity of purpose, which is crucial during societal change and technological growth, such as the rise of generative AI (Sharples, 2023). These un-unified perspectives may lead to inconsistency in creativity in education practice and policy (Henriksen et al., 2019), as purposefulness is crucial for successful implementation in teaching and teacher education.

To achieve a unified understanding of creativity in teaching, we can draw on both creativity and educational research, integrating concepts like risk-taking, productive failure, interdisciplinary perspectives, and real-world learning.

Creativity and the Role of Risk and Failure

Most research defines creativity as both a process and set of capacities to devise ideas, create solutions, and produce artifacts that are relatively novel and effective (Runco & Jaeger, 2012). Risk-taking is crucial to creativity, given the uncertainty of novel endeavors where outcomes are undefined (Dewett, 2007). Creative learning includes the fear of failure and social risk, such as embarrassment or discomfort in sharing ideas publicly (Beghetto & Kaufman, 2007).

Educational research often emphasizes the importance of risk-taking and the learning opportunities inherent in productive failure (Creely et al., 2019). However, traditional educational environments typically penalize failure, discouraging the kinds of risk-taking needed for creative develop-

ment (Cropley, 2016). Policy settings tuned to standardization and metrics often promote narrow norms and one-correct-answer approaches (Creely et al., 2019), and schools, driven by policy and assessment framings, tend to approach failure punitively (Hartlaub & Schneider, 2012). This conservative approach contrasts with contemporary educational frameworks that prioritize creativity across disciplines. Thus, messaging around risk-taking and productive failure is often unclear for educators.

Iteration is crucial to creativity, as ideas rarely come together perfectly on the first try. However, educational practices often emphasize summative learning and final products over exploratory creative processes (Kaufman & Sternberg, 2010). Educational models that incorporate iterative learning cycles may allow students to progressively refine their ideas based on feedback and reflection (Glăveanu, 2015). As Petroski (2006) noted, "Failures are remarkable. The failures always teach us more than the successes" (p. 49). Toward this end, Kapur (2015) coined the term 'productive failure' to describe an approach to learning through failure, in the classroom. However, this concept is more effective with unified instructional interventions that include guided reflection on risk-taking and formative failures within a carefully designed creative learning framework, rather than unreflective failure (Kapur, 2015).

To support creative risk-taking, educators design activities that allow for risk, experimentation, failure, and iteration (Koh et al., 2015). Learning requires space for reflective, nonjudgmental assessment of risks, failures, and challenges, recognizing the messy and blurred boundaries of creativity (Kapur, 2015).

Interdisciplinary Perspectives on Creativity

Creativity often requires transplanting ideas across different disciplines, and many scholars have argued that creativity is combinatorial; it involves combining or connecting ideas that seem different or working and thinking across disciplines (Root-Bernstein & Root-Bernstein, 2001). Research on creative teaching suggests that an interdisciplinary lens is a core facet of pedagogical creativity, allowing the transfer and integration of ideas across disciplines—what we refer to here as cross-pollinating ideas (Gardiner, 2020).

Henriksen and Mishra (2015) found that the most creative and successful teachers help students think creatively by making interdisciplinary connections—blending multiple disciplines (art and science or music and math) in lessons to promote diverse forms of creative expression and problem-solving. Their work was situated in K12 settings, while other scholars (Marteel-Parrish & Harvey, 2019) note examples in higher education (e.g., blending environmental science, chemistry, art, and art history) that emphasize the value of interdisciplinarity to support creativity and meaningful learning.

Several studies show the strong connection between interdisciplinary teaching and creativity. For example, Chang et al. (2022) found that university students in interdisciplinary curricula had higher creative thinking and problem-solving skills than those in traditional settings. Similarly, Liu et al. (2022) studied the effects of interdisciplinary teaching on creativity in a nursing cap-

stone course. They found that the intervention group, learning through an interdisciplinary design perspective, scored higher on creativity and developed more innovative nursing solutions than the control group, which used traditional methods. Similarly, Moirano et al.'s (2020) systematic review of interdisciplinary collaboration in education found that it plays a pivotal role in fostering creativity.

STEM disciplines have traditionally been taught in siloed ways, but recent decades have seen a push for more interdisciplinary STEM teaching to reflect real-world complexity (Mehta et al., 2020). One response has been the growth of STEAM approaches, integrating the arts into STEM to bring a creative lens to education. However, results have been inconsistent due to the lack of a unifying framework, as noted by Perignat and Katz-Buonincontro (2019). Henriksen and Mishra (2020) observed that STEAM education sometimes is relegated to adding art activities into STEM rather than exploring the unique connections across disciplines.

The interdisciplinary nature of creativity demands educational approaches that integrate disciplinary thinking (West, 2016). More theoretical development could benefit STEM, STEAM, and real-world creativity in learning. This would foster richer environments that mirror real-world complexity and enhance creativity.

Creativity in Practice and Real-World Learning

Linking creativity to real-world practices bridges the gap between abstract theories and practical applications. Studies show that creativity thrives in environments that simulate real-world complexities, allowing hands-on activities that enhance creative capacities (Griffith, 2023). Experiential learning can solidify theoretical knowledge and enhance students' ability to apply creative solutions in diverse settings. Research on real-world learning often focuses on maker spaces or STEM, suggesting real-world problems should be used in STEM education to foster creative thinking (Weng et al., 2022). When students find problems relevant and familiar, they may be more interested and motivated by activities, heightening their sense of creative agency (Chiu et al., 2021).

Real-world learning tends to be more project-based and open-ended, requiring students to solve problems by designing, making, and evaluating solutions like prototypes (Weng et al., 2022). This approach fosters creativity and entrepreneurial thinking, enabling innovative solutions (George et al., 2021). While some studies explore connections between creativity and real-world learning (Henriksen & Mishra, 2015), this area still needs more empirical and theoretical attention.

These themes of risk, interdisciplinarity, and real-world complexity align with Whitehead's notion of concrescence, integrating diverse experiences into a coherent whole. In real-world projects, students often can try new things, allowing fresh ideas to emerge and combining theoretical knowledge with practical applications to embody processual learning. Dewey's emphasis on experiential learning supports this approach, encouraging students to learn by doing, with uncertain outcomes that are more embedded and embodied, reflecting on their experiences, and applying insights to new contexts.

Designing learning environments for creativity

Designing learning environments for creativity involves integrating factors like those we have discussed (e.g., risk taking, interdisciplinarity, real-world connections, and more). Creative environments encompass psychological, pedagogical, and physical factors that facilitate the growth of creativity (Richardson & Mishra, 2018). However, much creativity research in education has focused on specific dimensions like pedagogical practices or curricula, often overlooking a more unified and ecological approach to the learning environment (Fan & Cai, 2022). Assessments of creativity often focus more on personality and psychological factors than on the environment that teachers can influence. Henriksen et al. (2015) found only 3% of creativity instruments overall assessed the environment, with less than 20% of that small number being designed for educational spaces (Beghetto & Kaufman, 2014).

Educators are effectively designers that shape environments by developing practices, norms, expectations, physical spaces, lesson designs, and assessments (Davies et al., 2013). Creative environments are designed to support learners' interests and passions, value their ideas, engage them in co-creation/collaboration, and embrace making mistakes as part of learning (Lilly & Bramwell--Reijkind, 2004). Open-ended and curiosity-driven environments that focus on exploratory activities like imaginative play, model making, and project-based learning have been shown to foster creativity (Chan & Yuen, 2014). Creative environments enhance personal and academic success, reasoning abilities, confidence, resilience, motivation, engagement, critical thinking, and problem-solving skills (Jindal-Snape et al., 2013).

Besancon and Lubart (2008) noted that a school's ethos and environment can significantly impact children's creative performance, with Montessori schools fostering greater originality than traditional schools. Environments that promote creativity require novelty and risk-taking, with authentic tasks connected to real contexts (Halsey, 2011). There is ample evidence that creativity is fostered in environments that create a safe space to take risks or try new things, giving autonomy along with guidelines to blend structure and freedom (Grainger et al., 2005). Some studies also emphasize the value of play in creative environments, via playful or games-based approaches to learning (Cremin et al., 2006). Furthermore, the physical aspects of learning spaces play a role, like openness and spaciousness, and practices allowing movement and sensory experiences (light, color, sound) enhance creativity (Jindal-Snape et al., 2013). Flexible time use is also a factor in creative environments to allow for deeper engagement and self-paced work (Burnard et al., 2006).

Thus, creative learning environments focus on task, activity, and lesson design, but also encompass exploration and the iterative nature of creativity in classroom norms and values. This approach views teachers as designers of spaces, curricula, relationships, practices, norms, and experiences (Henriksen et al., 2017). It also aligns with the approaches to creativity proposed in this paper, leveraging the philosophies of Whitehead and Dewey in educational practices and outcomes.

Gaps and Opportunities in Current Understandings

Despite the extensive study, the field of creativity in education is marked by certain limitations. A significant issue that confounds us is the lack of a unifying framework that accommodates the diverse aspects of creativity, which can also be applied successfully in practice settings like classrooms. There is also a notable gap in addressing how digital advancements, particularly the rise of artificial intelligence, are reshaping creative practices.

The existing literature on creativity in education is vast and varied and contains a multitude of important findings, theories and understandings. However, education still needs an integrated approach that reflects the interdisciplinary, iterative, emergent and experiential nature of creativity. This would also need to embrace the challenges and opportunities presented by technological advancements, ensuring that creativity education remains relevant and effective in preparing students for the complexities of the modern world.

THEORETICAL PERSPECTIVES

In navigating the myriad perspectives within creativity research, it is important to consider the experiential dimension of creativity, which transcends disciplinary boundaries and integrates the individual with the collective, the subjective with the objective. For instance, John Dewey's 'Art as Experience' (1934) reminds us of the critical importance of engaging with the environment and with each other in the creative process. Dewey's assertion that art and creativity arise from the interactions between the individual and the world offers a compelling lens through which to view the combinatorial nature of creativity. As Dewey (1934) explained, "life goes on in an environment; not merely in it but because of it, through interaction with it" (p. 19).

This perspective reveals an indissoluble link between classical aesthetic experience in art and everyday activities and experiences. For Dewey, to understand genuine aesthetic and learning experiences, people must begin from the events and scenes of daily life (Dewey, 1934). It is within this vein that we look to the work of Alfred North Whitehead to provide connective tissue for understanding creativity, particularly in education contexts.

Whitehead

As is indicated in the literature review above, the notion of creativity has a history of exploration across various fields of research and practice, but arguably its origins lie with the ideas of Alfred North Whitehead, a highly influential but not well-known mathematician, astronomer, and philosopher in the early 20th century. He was among the first to use the term 'creativity' as a broad description of a phenomenon (Johnson, 1952; Mesle, 2008; Whitehead, 1920, 1926, 1968, 1985). His application of the notion of creativity was applied to materiality and extended beyond human experience, for he conceived creativity as an intrinsic property of all material things in the universe.

This universalizing of creativity as cosmic novelty stands in contrast to more contemporary ideas about creativity as a human attribute that is part of the Anthropocene.

Whitehead's capacious notion of creativity is embedded in his process philosophy, a philosophical approach that conceives the universe not as an inert collection of matter but as strings of dynamic processes and interconnected events that construct its totality (Mesle, 2008; Whitehead, 1985). At the heart of his view of the universality of creativity in the universe is the idea of concrescence or the unique coming together of distinct elements in a variety of combinations and possibilities. As Whitehead (1985) defined it, concrescence is "the process whereby 'the many become one and are increased by one'" (p. 21). This idea suggests that creativity involves the combination of distinct entities in novel ways, leading to the emergence of something new and original. In Whitehead's philosophy, creativity is ubiquitous and an ongoing, a vibrant process elemental to the nature of reality (Johnson, 1952; Whitehead, 1920, 1926). He conceived the universe as evolving through novelty, with each instant generating new possibilities and outcomes. This emergent attribute of creativity incorporates all parts of existence.

Whitehead's concept of creativity starts with potentiality. As he articulated, "it belongs to the nature of a 'being' that it is a potential for every 'becoming'" (Whitehead, 1985, p. 22). In his view, every entity in the universe holds potential for creativity, and is awaiting realization (Whitehead, 1920, 1985). This potential becomes actualized as elements interact and influence each other, leading to the emergence of new combinations and myriad forms. According to Whitehead, actualization is driven by the innate tendencies of the interacting elements towards novelty, leading to outcomes that are not completely predictable, suggesting that there is spontaneity as part of the creative process (LeClerc, 1958).

This standpoint on creativity as integral to all things has implications for understanding both the natural world and human embodied experience. In the natural world, it suggests that creativity is primary to both evolution and change, perhaps even a causal principle. This includes the expanse of the universe with its galaxies and more locally in biological ecosystems. Whitehead's notion of concrescence thus insinuates that creativity is much more fundamental than being just a human trait and might be understood as a natural and integral part of the totality of human life and connection with the world (Bracken, 1995). This perspective also echoes non-western and indigenous understandings, knowledges and creativities, which are often centered in country, landscape, community and interrelatedness (Branco & Dantas de Paula, 2025). Contemporary scholars have noted that Whitehead's approach provides "a principle of unrest stirring at the heart of events" that "proposes a novel togetherness of creaturely experience where nothing has executive control" (Rousell, 2022, p. 75).

Whitehead's vision of the universe as oriented to novelty has implications for educational practice. Viewing creativity as an inherent property of the universe, and thus part of human materiality, implies that teachers might design environments that cultivate creative potential by promoting inquiry and diversity of thinking, alongside materials and technologies that allow for play and expansiveness of ideas. Whitehead's philosophy has long pointed to the interconnectedness

of human creativity and materiality, including the agency of the material in constructing how and in what ways humans can be creative. As Corazza (2016) observes in the *Creativity Research Journal*, Whitehead's process philosophy encourages us to consider "potential originality and effectiveness" as dynamic properties that emerge through creative processes rather than static characteristics (p. 258). Whitehead's process philosophy encourages us to consider the possibilities of creativity research beyond the Anthropocene. In a time where human endeavor has a significant impact on the planet, understanding creativity as a universal, interconnected process might promote sustainable and holistic approaches to innovation and problem-solving.

Alfred North Whitehead's conception of creativity as fundamental to all material things in the universe (including humans) suggests a more integrated and expansive view of creativity and its applications. His process philosophy, which positions creativity as an emergent attribute in all material and existence, provides a unifying way for understanding creativity as intrinsic to both the natural world and human experiences. This understanding recognizes the circumscribed conditions in which creativity emerges, while also acknowledging its openness to new novel forms and hybridities.

Dewey

John Dewey was a well-known American educational philosopher of the early twentieth century who strongly influenced educational practices with his ideas on learning, experiential learning, and the pragmatic approach to knowledge. Dewey's philosophy centers on the notion that education should be grounded in real-world experiences that involve active participation and critical thinking in the formation of knowledge and understanding. His ideas on experiential learning and the connection of learning with real-world contexts also point to the importance of creativity in education.

Dewey (1938) argued that education should be based on the principle of learning through experience. He believed that students learn best when they interact with their environment and engage in activities that are meaningful and relevant to their lives. As he articulated, "experience is a product, one might almost say bi-product, of continuous and cumulative interaction of an organic self with the world" (Dewey, 1934, p. 43). Dewey condemned traditional education models (of his time) that focused on rote memorization and passive reception of information. Instead, he advocated for a more dynamic and interactive approach, where students are active contributors in the learning process and have agency in the outcome of their learning. One of Dewey's (1915/2001) core concepts is the idea of "learning-by-doing"—a phrase he popularized in *Schools of To-Morrow to* describe education grounded in real experience and activity. He argued that education should not be a simulated and disconnected preparation for life, but should be life itself (Dewey, 1916). By engaging in real-world tasks and problem-solving activities, students develop critical thinking skills and a better understanding of how knowledge is made. This pragmatic and experiential approach is designed to help students see the relevance of what they are learning, making education more meaningful and engaging.

Dewey's pragmatic approach to knowledge emphasizes the idea that knowledge is not fixed but is constantly evolving through interactions with the social and physical environment. He believed that knowledge is created through the process of inquiry, where learners actively engage with their surroundings and then reflect on the significance of their experiences (Dewey, 1938). As Dewey (1934) wrote: "experience in the degree in which it is experience is heightened vitality" and "signifies active and alert commerce with the world" (p. 19). This interconnected process of inquiry and reflexivity is pivotal to Dewey's philosophy of experiential learning, where students learn through exploration, experimentation, and then reflection (Miettinen, 2000). Though he never made the direct connection, experiential learning appears to be linked to the development of creativity in students (Hondzel & Hansen, 2015). Creativity involves the capacity to problem solve, imagine, collaborate, experiment, and generate new ideas. By engaging in experiential learning, students are encouraged to explore, take risks, and think divergently.

Contemporary scholarship in creativity research has recognized the significance of Dewey's experiential approach. As noted in research on creativity and education, "the development of creativity is closely related to the development of the skill to form proper judgments in different situations" (Rawat et al., 2012, p. 264), a connection that aligns directly with Dewey's emphasis on situated reflective experience. Dewey also placed emphasis on the social aspect of learning, highlighting the importance of collaboration and a group orientation in the creative process. He believed that learning is a social activity and that students learn best when they interact with others and share their ideas (Dewey, 1938). This collaborative approach not only enhances students' understanding but also encourages them to build on each other's ideas, potentially sponsoring creative outcomes.

Dewey's ideas have been widely used and applied. Kolb's (1984) experiential learning theory presents a cycle of learning that includes concrete experience, reflective observation, abstract conceptualization, and active experimentation. This cyclical process encourages students to be reflexive about their experiences, generate new ideas, and practically apply their knowledge in a range of contexts. By constantly engaging in this cycle, students are given the opportunity to develop their creativity and learn to approach problems from different perspectives using available resources. Research by Robinson and Aronica (2015) found that students who engaged in project-based learning, an approach founded in experiential learning, demonstrated higher levels of creativity and problem-solving skills compared to those who were taught through more traditional methods. Sawyer (2011) also points to the importance of experiential learning in promoting creativity, arguing that hands-on activities and real-world problem-solving tasks encourage students to think creatively and develop innovative solutions.

Educational scholars continue to explore the implications of Dewey's aesthetic theory for contemporary practice. Alexander (2013) notes that Dewey's conception of aesthetic experience provides "a framework for understanding how meaning emerges through embodied engagement with the world" (p. 87), which has particular relevance for creative educational environments. Carr-Chellman (2023) suggests that Dewey's aesthetics can inform approaches to situational creativity in

educational contexts, demonstrating the ongoing relevance of his ideas for contemporary creativity research.

John Dewey's fundamental ideas about aesthetics, experiential learning, collaborative inquiry, and the integration of education with lived experience provide a robust theoretical foundation for fostering creativity in educational settings. His emphasis on learning through direct engagement with authentic problems, reflective observation of outcomes, and social construction of knowledge creates conditions that are particularly conducive to creative development. By participating in experiential learning cycles that involve hands-on experimentation, critical reflection on results, and collaborative meaning-making with peers, students develop the cognitive flexibility, divergent thinking abilities, and problem-solving capacities that constitute the core components of creative competence. Moreover, Dewey's integration of aesthetic experience with everyday learning helps students recognize the creative potential inherent in all forms of inquiry and expression.

PRINCIPLES FOR PRACTICE AND LEARNING DESIGN

In this article, we advocate for a revisiting of the origins of creativity scholarship for the purpose of making creativity more grounded and unified. This refocusing aims to invigorate both its theoretical underpinnings and practical applications, with a particular focus on classroom practices. The literature in the field appears to give an impression of being fragmented across various academic traditions and disciplines. In this landscape, artificial intelligence (AI), especially generative AI, continues to challenge traditional educational paradigms and human-centric viewpoints, and shift the boundaries of what might be considered creative, so that more complexity is on the horizon (Yan, 2024).

Revisiting foundational concepts of creativity, particularly Whitehead's idea of creativity as a universal, emergent, and novel combinatorial phenomenon, might meaningfully unify our current understandings of creativity and enable classroom teachers to utilize creativity more effectively. As Whitehead (1985) articulated, "creativity is the universal of universals characterizing ultimate matter of fact" (p. 21), suggesting that creative processes are not exceptional but fundamental to all existence. Likewise, Dewey's notion of experiential education could be viewed as an integrative way of grounding creativity in education through embodied practices that focus on the learning of students and their experience of that learning within a holistic approach to knowing (Thorburn & Stolz, 2023). Dewey (1934) emphasized that "life goes on in an environment; not merely in it but because of it, through interaction with it" (p. 19), highlighting the essential role of environmental engagement in meaningful learning and creative development.

At the same time, we acknowledge the complex heritage of contemporary views about and understandings of creativity. It is not our purpose to dispute theories and models of creativity. Rather, we aim to offer some guiding principles for making such theories and models more use-

ful and applicable by viewing them through the theoretical lenses of Whitehead and Dewey. Our goal is to amalgamate the disparate strands of creativity discourse for the purpose of applicability in education. By embracing Whitehead's insights alongside diverse perspectives about creativity that are offered in the field of creativity, we wish to infuse creativity research and its applications with the useability and flexibility needed to stay relevant in education, especially in a digital and AI-driven future.

To that end, we offer three core principles inspired by concepts taken from Whitehead and Dewey that have direct applicability to the work of educators, with the goal of unifying classroom practices for creativity. These principles are represented in Figure 1.

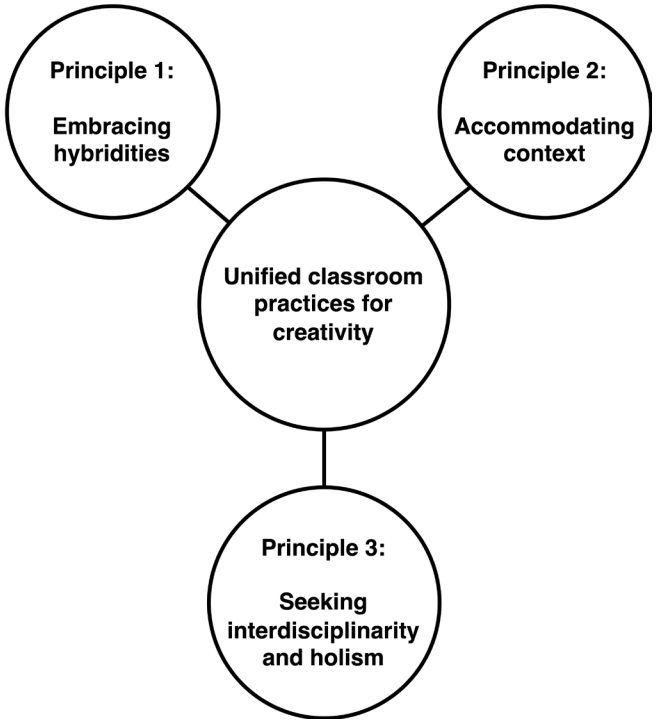

Figure 1. Three principles for unifying creativity in classrooms

Principle 1: Embracing hybridities

Creativity can be seen as embodying novel combinations resulting from the interplay of material and non-human elements (including a range of technologies and AI) with the personal qualities of human imagination, affectivity, cognition, and corporeality. This dynamic synergy of human and non-human elements can lead to the development of novel hybridities and divergences. These can emerge in classrooms out of risk-taking as students engage experientially with their learning.

Whitehead's (1985) understanding that "the many become one and are increased by one" (p. 21) provides theoretical grounding for this principle, as it recognizes that creative emergence occurs through the coming together of diverse elements in novel configurations. In educational

contexts, this means that creativity flourishes when students work with multiple modes of expression, various technological tools, and diverse materials that allow for unexpected combinations and emergent possibilities. Rather than viewing human creativity as separate from or opposed to technological capabilities, this principle encourages educators to design learning experiences that leverage the creative potential of human-technology partnerships, where artificial intelligence, digital tools, and traditional materials become co-participants in the creative process.

Principle 2: Accommodating context

Creativity is a complex process and product of the interactions between individuals, groups of people, organizations, and local environments and ecologies, so it is highly affected by context and systems (Csikszentmihalyi, 1997). It is fashioned by societal and communal forces that allow or constrain, and emerges in cultural, including non-Western (Glăveanu, 2015), contexts. Creativity as a complex process and product is also allowed or constrained by technological affordances, the dynamics and purposes of groups and organizations, the cultural context, and the capabilities of individuals.

Dewey's (1934) insight that "experience is a product, one might almost say bi-product, of continuous and cumulative interaction of an organic self with the world" (p. 43) brings needed attention to the contextual nature of all meaningful learning and creative activity. This principle recognizes that creativity cannot be divorced from the specific cultural, social, and material conditions in which it emerges. For educators, this means designing learning environments that honor students' diverse cultural backgrounds, acknowledge the influence of local community contexts, and provide multiple pathways for creative expression that resonate with different cultural ways of knowing. It also means understanding how institutional policies, available resources, and community expectations shape what kinds of creative work are possible and valued within specific educational settings.

Principle 3: Seeking Interdisciplinarity and holism

Creativity arises within the practices and paradigms of disciplinary traditions, but it might be viewed as both discipline specific and interdisciplinary (Moirano et al., 2020). The arts, for instance, differ in both the process and the outputs from science. At the same time, there is always common ground between different traditions and the creative practices within those traditions. To that end, we advocate for the seeking of an interdisciplinary and holistic approach that facilitates creative emergence and convergence across disciplinary areas within classrooms.

Whitehead's (1967) observation that "in the inescapable flux, there is something that abides; in the overwhelming permanence, there is an element that escapes into flux" (p. 338) points to the dynamic relationship between stability and change that characterizes interdisciplinary creative work. This principle encourages educators to design learning experiences that honor disciplinary expertise while creating opportunities for knowledge and methods from different fields to interact productively. Dewey (1934) similarly noted that "art is the living and concrete proof that man is

capable of restoring consciously, and thus on the plane of meaning, the union of sense, need, impulse and action" (p. 25), suggesting that creative work naturally integrates multiple dimensions of human experience. In practice, this means creating projects and investigations that require students to draw upon knowledge from multiple disciplines, use diverse methodologies, and recognize the interconnectedness of different forms of understanding.

By advocating for these three principles (represented in Figure 1), we seek to bridge the gaps in current creativity scholarship and foster a more cohesive and effective approach suitable for educational settings. This approach not only honors the multifaceted nature of creativity and the experiential learning of each student within educational settings but also positions creativity as transformative and able to flourish amidst the advancements and challenges presented by AI and digital technologies. These principles provide educators with concrete guidance for creating learning environments that support creative development while remaining grounded in the foundational insights of process philosophy and experiential learning theory.

A PRACTICAL THOUGHT EXPERIMENT

In the context of middle years education, the integration of Alfred North Whitehead's notion of concrescence and John Dewey's emphasis on experiential learning can enhance classroom practice by fostering an environment designed for creativity, risk-taking, productive failure, and iteration. We offer a practical thought experiment, called "Designing and Creating Sustainable Cities" that reflects these philosophical underpinnings and specifically the three principles illustrated in Figure 1. We conceive it to be an interdisciplinary, 10-week project that combines elements of science, technology, engineering, arts, and mathematics (STEAM) to solve real-world problems, utilizing a variety of disciplinary perspectives, including arts-based learning (Feldman, 2015; Mehta et al., 2022). We are not presenting this project as a model to emulate but as a possibility to illustrate how the principles might be applied discursively in the curriculum and for teaching and learning.

This project contains five phases:

Phase 1: Research and Exploration (2 weeks)

The project begins with year 8 students in groups investigating various sustainability topics, including energy efficiency, waste management, water conservation, and green energy initiatives (Bascopé & Reiss, 2021; Ozalevli, 2023). This phase utilizes digital tools and resources, enabling students to gather data and insights about global urban sustainability issues, with particular focus on local issues within a global setting. They analyze different sustainable cities worldwide to understand the integration of green technologies in urban environments and compare this with what is happening in their local city. This initial phase not only grounds their understanding in real-world contexts but also sparks curiosity and sets a foundation for innovative thinking. Students are asked

to present their initial understandings and findings in a creative written form (such as a short play, poem, or visual form). There is also an excursion to a local facility that engages with sustainability and is part of building their base of knowledge and engendering context.

Phase 2: Design and Prototyping (2 weeks)

Leveraging their research experience and thinking, groups begin designing and drawing their sustainable city designs, incorporating features such as green roofs, solar panels, and eco-friendly transportation systems towards new hybridities. They use online drawing and design apps to work on their designs and bring all the elements of sustainability together, employing generative AI to assist the development of the designs. This phase challenges students to apply engineering principles to solve practical design problems, like selecting sustainable materials and planning efficient transit routes. Mathematical calculations are employed to estimate the environmental impact of their designs, integrating quantitative analysis with creative problem-solving, as well as in measuring and estimating tasks. Each group shares their prototype designs in an oral presentation that should include a performing arts element, such as acting out a real-world scenario or creating a mime or physical theatre presentation that might include music (Amsen, 2019). This becomes a novel form of reflexivity.

Phase 3: Artistic Expression and Technical Integration (2 weeks)

In this phase, the role of the visual arts is prioritized. Students are encouraged to visualize their sustainable city not just as a set of functional spaces but also as an aesthetically pleasing environment that enhances quality of life and community. They explore architectural styles, color schemes, and landscaping through artistic sketches and digital design tools, considering how these elements contribute to the cultural identity of their city. This artistic endeavor enhances their technical designs, adding a layer of emotional and cultural resonance that fosters a deeper connection to the work.

Phase 4: Integration and Presentation (2 weeks)

Groups work towards developing a physical model of their city, utilizing their interdisciplinary knowledge and creative designs from previous phases. They use recycled materials, online, and digital software to create detailed scale models and simulations. This integrative and risk-taking process illustrates Whitehead's notion of concrescence, potentiality, and actuality, where diverse experiences, knowledge, and materiality converge into a unified educational outcome. The culmination of this phase is a presentation session where groups showcase their sustainable city projects, explaining the science, technology, engineering, arts, and mathematical principles behind their designs and their potential impacts.

Phase 5: Reflection and Iteration (2 weeks)

Following the presentations, the project moves into a reflective phase, where students assess their designs based on peer and teacher feedback. This stage emphasizes Dewey's experiential learning cycle, where reflection on what has been experienced and produced in the learning leads to refinement. Students critically analyze their work, identify strengths, and note areas for improvement from previous failures or aspects that have not worked well, applying their insights to iterate on their designs. This not only enhances their learning experience but also reinforces the concept that creativity is an evolving process requiring continuous improvement and adaptation.

Pedagogical reflection

By interleaving elements of STEAM, the "Designing and Creating Sustainable Cities" project transcends traditional educational paradigms. It actively involves students in addressing complex, real-world issues through a creative and integrative approach that prepares them for future academic and professional challenges. The project highlights the teacher's role as a designer and facilitator of a dynamic learning environment where theoretical knowledge is applied in practical, visually engaging, and culturally relevant contexts. This educational practice not only teaches about sustainability but also immerses students in the process of creating viable, innovative solutions to pressing global issues, and the transformative potential of combining STEAM disciplines. It also engenders values such as environmental stewardship. This practical thought experiment is not meant to be a new model or framework but embodies a possible approach that can be applied to many contexts and topics.

DISCUSSION AND IMPLICATIONS FOR RESEARCH, PRACTICE AND POLICY

Our proposed integration of Whitehead's and Dewey's philosophies, embodied in a set of three principles, offers a potential unification of theory and practice for fostering creativity in education. As we consider the implications of this approach for research, practice, and policy, we focus on several key areas. These are: grounding creativity in real-world ecologies and contexts, creating experiential environments for organic student creativity, building student creativity agency with the environment/tools, and viewing educators as designers of creative learning environments.

Grounding Creativity in Real-World Ecologies and Contexts

Real-world ecologies and contexts have a critical role to play in learning settings to bridge the gap between theoretical concepts and practical applications. Educational environments that simulate real-world complexities may give learners a more applied sense of their creative capacities (Griffith, 2021). This emerges in the complexity of real-world challenges, which lack a single correct solution path and require that learners confront open-ended possibilities and navigate novel arrange-

ments of circumstances and variables. For instance, in integrating sustainability projects, local community issues, and global challenges in a science-learning setting, students can apply theoretical knowledge to complex realities that demand their innovative thinking, risk-taking, and problem-solving skills.

In our practical thought experiment, "Designing and Creating Sustainable Cities," we note how students investigate sustainability topics and analyze global urban sustainability issues. This exemplifies how real-world contexts ground their understanding and might also spark curiosity and innovative thinking. This also aligns with Whitehead's concept of concrescence, where diverse experiences and resources are integrated into a coherent whole, and Dewey's emphasis on experiential learning, which encourages learning through active engagement and reflection.

When students find problems relevant and familiar, they are more likely to be invested in the learning process. This in turn heightens their sense of agency and willingness to be creative (Chiu et al., 2021). Our example project illustrates this by involving students as groups in local community issues, making learning more relevant and meaningful, and encouraging them to take ownership of their learning and apply their creative thinking to solve real-world problems.

Creating Experiential Environments for Organic Student Creativity

Creating experiential environments that support organic student creativity involves designing learning spaces that encourage exploration, experimentation, and iterative processes. Environments such as this support risk-taking and embrace failure as a learning opportunity (Kapur, 2015), because when students are tasked with challenges that require them to play with ideas or experiment with possibilities that may play out in different ways, they are not guaranteed a correct solution. For instance, in certain maker spaces and project-based learning initiatives, students may need to experiment with ideas, reflect on their experiences, and refine or iterate based on feedback. When exploring solutions and trialing ideas, some solutions or ideas may fail but then also provide clues about different options or paths.

The "Designing and Creating Sustainable Cities" project takes students through phases of design and prototyping, artistic expression, and reflection. Iterative processes like this can allow them to refine their ideas and approaches, fostering a culture that values creative processes and iterative learning that embraces failure. By engaging in activities such as designing sustainable city models and presenting their work, students internalize theoretical concepts by applying them in practical contexts, enhancing personal and academic success, reasoning abilities, confidence, resilience, motivation, engagement, critical thinking, and problem-solving skills (Jindal-Snape et al., 2013).

Building Student Creativity Agency with Environment/Tools

Providing students with the right environment and tools is crucial for building their creative agency. Incorporating technologies has the potential to enhance creative learning experiences, but only on condition that students themselves have a sense of their own agency (Vaughn, 2020). Technologies are fundamentally tools to think with—or from a sociocultural perspective, they help humans

extend their thinking outside of our minds and bodies, expanding our inherent capacities into (or with the help of) the material world (Henriksen et al., 2022). In that sense, technology and creativity can exist in a reciprocal relationship, where creativity leads to the creation of new tools, and through the use of technologies we can enhance our creativity. In the case of emerging technologies like generative AI, digital design tools, or collaborative platforms, there is significant potential to help people visualize complex concepts, collaborate with peers, and explore a wider range of possibilities (Sharples, 2023). There is also valid concern about instances where students could lean on such tools to do the thinking or creating for them. The goal for educators or other designers of educational experiences is to consider how tools can be used to maximize students' sense of creative agency. This requires considering how learning is designed to require students to tap into their own thinking, while allowing the tools to be a source of new information, resources, or an expansion of human potential, rather than doing the work for them.

In our thought experiment, students use online drawing and design apps, as well as generative AI to develop their sustainable city designs. The goal in this type of integration of technology is meant to facilitate personalized learning experiences, allowing students to work at their own pace and explore topics more deeply (Burnard et al., 2006). The use of digital tools also provides access to a wealth of resources and expertise that they can draw upon in the learning experience and fostering creativity.

Educators as Designers of Creative Learning Environments

Seeing educators as designers of creative learning environments suggest the intentional creation of integrated learning spaces with practices that foster creativity. This requires a shift from traditional teaching methods to more dynamic and interactive strategies and shifting from viewing teachers as enactors of content toward creators of experiences. Professional development programs focused on creativity may help educators see themselves as creative beings that can take risks through openness for the new—modelling risk and failure, exploring project-based learning, interdisciplinary teaching, and the integration of technology as practical strategies for fostering creativity in the classroom.

In the practice example project, the teacher acts as a designer and facilitator, guiding students through research, design, artistic expression, and reflection phases. By adopting a design-based approach, and a self-perception as a creative designer, educators may be more equipped to support creative thinking and problem-solving (Davies et al., 2013). This includes designing activities that encourage risk-taking, collaboration, and the exploration of new ideas, as well as creating a supportive atmosphere, where students feel safe to experiment and make mistakes so that new hybridities and forms emerge.

Research and Policy Implications

The integration of the three principles based on the work of Whitehead and Dewey toward fostering creativity in education opens several avenues for further research. More empirical work is

needed to investigate the impact of grounding learning experiences in real-world contexts and ecologies on students' creative thinking, problem-solving abilities, and engagement levels. Additionally, researchers could explore the effectiveness of experiential learning environments designed to support organic student creativity, including the role of failure as a learning opportunity and the iterative processes involved in project-based learning. Furthermore, the relationship between creative agency and the use of technology tools is likely to be a fruitful area to explore, especially in the context of emerging technologies and their potential to enhance or hinder students' creative abilities. Such research could inform best practices for leveraging technology in ways that maximize students' sense of creative agency.

At a policy level, the insights from these approaches to fostering creativity in education could be important to inform curriculum design and teacher training initiatives. Current approaches to educational policy in many or most parts of the world tend to be constraining to creativity (Henriksen et al., 2019). So, making a move to emphasize the importance of incorporating real-world contexts and challenges into curricula and encouraging interdisciplinary approaches or project-based learning could be considered innovative. While education also tends to penalize mistakes, policies aimed at supporting creativity would also need to support the development of experiential learning environments that promote risk-taking, collaboration, and iterative processes, acknowledging the value of failure as a learning opportunity. Professional development programs for educators could be designed to cultivate a mindset of educators as designers of creative learning experiences, equipping them with strategies for fostering creativity in the classroom.

CONCLUSION

The field of creativity research faces a crisis of coherence. Despite decades of scholarly attention across multiple disciplines, creativity studies remain frustratingly fragmented: a scattered landscape of competing theories, disconnected models, and isolated approaches that leave educators without clear guidance for fostering creativity in their classrooms. This theoretical fragmentation has real consequences: teachers struggle to translate creativity research into meaningful practice, students miss opportunities for creative development, and educational systems default to standardized approaches that actively suppress the very innovation they claim to value.

This conceptual article directly confronts this crisis by proposing a transformative solution: a unified educational approach to creativity grounded in the foundational philosophical insights of Alfred North Whitehead and John Dewey. Our theoretical contribution is both ambitious and necessary. We demonstrate how Whitehead's revolutionary concept of concrescence, which recognizes creativity as the fundamental force driving all material combinations and emergences, can be synthesized with Dewey's pragmatic emphasis on experiential learning to create a coherent framework that transcends disciplinary boundaries and unifies disparate strands of creativity research.

The significance of this integration cannot be overstated. Where others have offered piecemeal solutions or narrow models, we provide a comprehensive theoretical foundation that addresses creativity's inherent complexity, while remaining practically applicable. Our three core principles (embracing hybridities, accommodating context, and seeking interdisciplinarity and holism) represent more than abstract concepts; they constitute a practical philosophy that directly challenges the reductive, individualistic approaches that have long dominated creativity research. These principles recognize creativity as an emergent phenomenon arising from the dynamic interplay of human imagination, material resources, technological tools, cultural contexts, and disciplinary knowledge. This perspective is both theoretically sophisticated and pedagogically actionable.

Our practical thought experiment, "Designing and Creating Sustainable Cities," demonstrates the transformative potential of this unified approach. Rather than offering another educational activity, we showcase how philosophical depth can inform practical innovation, creating learning experiences that honor both the processual nature of creativity and the experiential foundations of meaningful learning. This exemplar reveals how educators can move beyond fragmented applications of creativity research toward designing coherent learning environments that foster genuine creative emergence.

The theoretical implications of our work extend far beyond education. By returning to creativity's philosophical origins while engaging with contemporary challenges, particularly the disruptive potential of artificial intelligence, we offer a framework robust enough to navigate an uncertain future. Our approach provides conceptual tools for understanding how human creativity can flourish alongside technological innovation rather than being displaced by it.

We acknowledge the limitations of this conceptual work, particularly the need for empirical validation of our principles across diverse educational contexts. However, these limitations should not diminish the urgency of our contribution. The field cannot afford to wait for perfect data while creativity education languishes under the weight of theoretical incoherence. Our principles provide a foundation for immediate practical application, while simultaneously opening productive avenues for rigorous empirical investigation.

The stakes of this work are high. In an era where creativity is simultaneously celebrated as essential and undermined by standardized educational practices, we offer more than incremental improvement: we provide a paradigm shift. Our integration of Whitehead and Dewey creates possibilities for educational transformation that honors both the philosophical depth of creativity and the practical needs of learners navigating an increasingly complex world.

Future research must build upon this foundation. It must investigate how these principles perform across cultural contexts, examine their scalability in diverse educational systems, and explore their potential for addressing the creative challenges posed by artificial intelligence. Yet, the path forward is clear: educators, researchers, and policymakers must embrace approaches that treat creativity not as an add-on to education but as its fundamental organizing principle.

This article represents a decisive intervention in creativity research: one that refuses to accept fragmentation as inevitable and instead charts a course toward theoretical coherence and practical

transformation. The unified approach we propose does not merely add to the existing literature; it provides the conceptual architecture necessary to rebuild creativity education for the challenges and possibilities of the twenty-first century. The question is not whether the field needs such integration, but whether we possess the courage to implement it.

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