



Common barriers in teaching for creativity in K-12 classrooms: A literature review

Annessia J. Bullard*, A Kadir Bahar

University of Georgia, Athens, Georgia, USA

ARTICLE INFO

Keywords:

Teaching for creativity barriers
Creative self-efficacy
Creativity beliefs

Creativity has been often cited as an essential skill to be nurtured among students in 21st-century classrooms because of its innovative contributions to individuals and society (Newton & Newton, 2014; UNESCO, 2006). Creativity stimulates a student's senses, generates previously unknown knowledge, and assists students in synthesizing information while adding meaning to their educational experience (DuPriest, 2017). Although most educators have endorsed that the development of students' creativity should be a fundamental educational objective of contemporary educational systems, many school teachers are confronted with barriers when it comes to teaching for creativity (Bahar et al., 2021; Maker, et al. 2021; Maker, et al. 2022).

Kounios and Beeman (2015) defined creativity as “the ability to reinterpret something by breaking it down into its elements and recombining these elements in a surprising way to achieve some goal” (p. 9). In other words, the concept of creativity includes core ideas such as creating something new, seeing old things in new ways, discovering new connections, and eliciting pleasurable surprises (Maley, 2003). According to Starke (2018), there are multiple definitions of creativity; for example, “some definitions focus on characteristics of individuals whose work is determined to be creative (What is a creative person like?), whereas others consider the work itself (What makes this creative?)” (p. 12). For a more general definition, creativity is the ability to think ‘outside the box’ to solve problems and/or generate novel ideas or products based on their appropriateness (Runco & Jaeger, 2012; Torrance & Shaughnessy, 1998).

Teaching for Creativity

Teaching for creativity necessitates a unique, personalized, and meaningful exchange of knowledge and skill that allows students to engage in the creative process (Hines et al., 2019; Rinkevich, 2011;

Torrance & Safter, 1990). Torrance and Safter (1990) advised that creativity required space to incubate and described the creative process of students as exploring, questioning, experimenting, manipulating, rearranging things, testing, modifying, listening, looking, feeling, and then thinking about it. Torrance et al. (1998) further explained that people prefer to learn creatively. Despite the preference and effectiveness of teaching for creativity, opportunities to engage in the creative process appear to be limited or nonexistent in the classroom. Maley and Bolitho (2015) informed:

It [creativity] is at the heart of learning but not at the heart of education. And, curiously, the more highly developed an educational context is, the less apparent incentive there is to be creative: teachers are often just required to fit into a predetermined framework; the less ‘developed’, or the more difficult the teaching circumstances seem to be, the greater the obvious incentive to be creative. (p. 435)

While teaching for creativity may appear to be yet another expectation to meet in the classroom, carefully weaving creativity throughout lessons stimulates deep learning and assists students in absorbing essential knowledge (Hines et al., 2019).

Creative skills and abilities are vital for primary and secondary students who will grow to be productive citizens and problem solvers and enter the workforce; arguments in favor of a focus on student empowerment and employability support the need to teach for creativity (Papaleontiou-Louca et al., 2014). Teaching for creativity cultivates soft skills such as time management, willingness to learn, teamwork spirit, , conflict resolution, and creative problem-solving (Majid et al., 2012). There are two creative generations. First generation creativity refers to individual behaviors and ideas, whereas second generation creativity (i.e., everyday creativity) refers to purposeful collaborative processes and products. Particularly, second generation creativity places creative endeavors in the processes of collaboration and ‘purposeful ac-

* Corresponding author.

E-mail address: ajbullard@uga.edu (A.J. Bullard).

tivity' that aims to develop an 'original' and 'appropriate' explanation to a situation or problem (McWilliam & Dawson, 2008). McWilliam and Dawson (2008) informed that second generation creativity is currently gaining prominence and is recognized as a critical driver in developing and sustaining an innovative economy. The activation of everyday creativity produces student empowerment and student-centeredness (Papaleontiou-Louca et al., 2014). However, despite the significance of second generation creativity, little has been done to make the necessary cultural shift and pedagogical shift in teaching for creativity across countries (McWilliam & Dawson, 2008).

Cultivating creative ability enables students to be more adaptable and flexible in a fast-paced and unpredictable global society, as well as increases their competence to work peacefully and efficiently across cultures and with others who think differently. In response to the question, "Can creativity be taught?," some researchers believe that students can be taught to think creatively and encouraged to value and practice their own creativity (Torrance, 1972; see also Crammond & Karnes, 2005). Creative action stems from having ample time to develop ideas, unstructured play, unpunished risk-taking, alertness to new associations, and interaction between like-minded peers or colleagues (Johnson, 2010). Thus, creativity in the classroom should be measured by "what the teacher makes possible for the student to do" (Stevick, 1980, p. 20).

Present Study

Creativity is not only a skill but also a habit and an attitude toward life (Sternberg, 2010). Given the development nature of creativity, it is not surprising that various researchers have advocated for increased emphasis on teaching for creativity in the classroom (Sternberg, 2010; Sternberg, 2015; Torrance & Safter, 1990; Torrance & Shaughnessy, 1998). Notwithstanding existing research on the needs and benefits of teaching for creativity, fostering students' creativity is rarely regarded as a learning objective (Sternberg, 2015). Based on our review of the literature, we identified the most common barriers to teaching for creativity in kindergarten through 12th grade classrooms (K-12). This study will help us understand why creativity is lacking in the classroom, despite its importance and developmental benefits. More specifically, this study asks what are the common barriers to teaching for creativity in K-12 classrooms.

Method

Article Selection Process

This research is a literature review of empirical studies on teaching for creativity. The search terms focused solely on *teaching for creativity* rather than *creative teaching* or *teaching creatively*. Teaching for creativity is the act of implementing processes throughout instructional lessons that require students to develop and activate their creative abilities (e.g., think critically, problem-solve, effectively communicate, and collaborate with others, and maintain an open-mind). In contrast, creative teaching pertains to how a teacher delivers a lesson in a novel and/or engaging manner. Simply put, creative teaching practices emphasize what the teacher does rather than what the student is expected to do in order to learn. In this literature review, we purposefully excluded articles that did not identify a potential barrier or emphasize the concept of teaching for creativity in K-12 classrooms. Following the selection process and phases as outlined below, a total of 10 empirical peer-reviewed journal articles met the study's criteria.

Phase One

In the initial phase of the review, an electronic literature search was conducted, utilizing database search engines such as Google Scholar, Education Research Complete, ERIC, PsycINFO, Child Development and

Adolescent Studies, and ScienceDirect. The publication years were restricted to 2006-2022 in order to obtain the most up-to-date data. The search results were limited to articles that included the following search words and phrases: barriers, obstacles, or challenges to teaching for creativity, *and* teaching for creativity. The original search parameters resulted in the recommendation of 1,914 journal articles. The results for scholarly peer-reviewed articles (N = 1,509) were reduced (N = 1,482) when adding academic journals to the search criteria. The first phase of the study yielded 1,482 articles.

Phase Two

In order to fit the study's objective, an article must have discussed a barrier(s) or teachers' resistance and/or struggles to teach for creativity in K-12 classrooms. Adding the search terms K-12 *and* classroom reduced the number of recommended articles to 75 and 11, respectively. Next, a list was compiled based on the article's title, overview/abstract, methodology, and findings. After reviewing each of the 11 publications, one article was removed since it was not an empirical study. 10 empirical studies met the objective for this investigation after the second and final phase of the search for literature. The selected literature was organized by similar themes indicating a barrier and why the barrier may occur.

Results

Following the selection of existing qualitative and quantitative research, we reviewed each study to identify common barriers to teaching for creativity. During our review, we listed all of the barriers identified by these studies. Finally, we divided these barriers into three major categories and analyzed the themes below.

Teacher's creative self-efficacy and beliefs

Teachers' personal beliefs about teaching and learning processes influence how they can promote a creative environment in the classroom (Nemeržitski & Heinla, 2020). Research has identified poor teacher creative self-efficacy as an essential and a common barrier to teaching for creativity (Huang et al., 2019; Katz-Buonincontro et al., 2020; Rubenstein et al., 2013). To shed light on this issue, Huang and his colleagues (2019) explored the relationship between teachers' creative role identity, creative self-efficacy, and attitudes toward the implementation of teaching for creativity by integrating role identity in Social Cognitive Theory (SCT). Their study sought to ascertain the impact of the self-concept dimension on teachers' attitudes toward the use of teaching for creativity. Huang et al. (2019) advised that "in the school context, although teachers may be creative in their daily lives, their innovative performance may not naturally lead to a willingness to implement teaching for creativity, and similarly, neither will the school climate" (p. 61). This suggests that, even if teachers were creative personally, they were less likely to have creative efficacy that stimulated and nourished creativity in their students if schools lacked a creative culture. Likewise, if teachers are unwilling to teach for creativity, schools will be unable to foster a culture of creativity. In terms of process and product-focused dimensions, teachers' willingness to implement teaching for creativity was heavily dependent on the process. The process of teaching for creativity included "confidence in engaging students, and communicating and interacting with them, along with connecting the learning content to the daily lives of students" (Huang et al., 2019, p. 62). On the contrary, confidence in producing creative outcomes may not influence positive attitudes or efficacy in teaching for creativity. If teachers believed that creativity meant producing a solid innovative outcome, they would most likely refrain from teaching for creativity.

Teachers' beliefs about the meaning of creativity were also identified as a common barrier to teaching for creativity. Katz-Buonincontro et al. (2020) explored teacher epistemic beliefs about

teaching for creativity. Epistemic was defined as “implicit beliefs about knowledge in certain areas that drive metacognition and cognition” (Katz-Buonincontro et al., 2020, p. 1). Expanding on the significance of belief, the authors asserted that beliefs informed thoughts and actions; thus, teachers’ epistemic beliefs referred to a specific concept (i.e., creativity) and drove their instructional practices (i.e., teaching for creativity). Katz-Buonincontro et al. used a qualitative approach, conducting semi-structured interviews with 16 pre-service and in-service teachers enrolled in graduate programs (Master’s and Doctor of Philosophy (Ph.D.) degrees) at an American university. Five themes emerged from their content analysis: (a) creativity for teaching success, (b) conflicting beliefs in creative teaching abilities, (c) diverse beliefs in student creative potential, (d) the importance of creativity for student learning, and (e) how creativity gives students the freedom to express ideas.

Katz-Buonincontro et al.’s (2020) findings were important to document the erroneous beliefs of teachers. For example, some teachers believed that creativity was innate in students and could not be taught or developed, and that creativity was more relevant to the arts (e.g., drawing, painting, dance, music, theater). Another finding was that the participating teachers “described creativity as cognition relating to the imagination, problem - solving, and idea-generating; however, they tended to align these processes to their own thinking and development of lesson plans, as opposed to developing students’ creative cognition” (Katz-Buonincontro et al., 2020, p. 10). As a result, if teachers believed creativity was limited to specific disciplines and irrelevant for other disciplines, such teachers would avoid teaching for creativity. What’s more, some of their interviews confirmed common misconceptions or a lack of differentiation between creative teaching practices and teaching for creativity. Understanding the distinction between the two concepts is pivotal for stimulating students’ creative abilities.

Furthermore, Rubenstein et al. (2013) surveyed approximately 650 teachers in the United States using the Teaching for Creativity Scales. To analyze teachers’ perceptions of teaching for creativity, the scales measured four constructs: (a) teacher self-efficacy, (b) environmental encouragement, (c) societal value, and (d) student potential. Based on these four constructs, the authors produced 50 items placed on a Likert scale with the highest value representing *strongly agree* and the lowest value representing *strongly disagree*. Counter to the findings of Huang et al. (2019) and Katz-Buonincontro et al. (2020), regarding teachers’ creative self-efficacy and beliefs in student creative potential, Rubenstein et al. found that:

Teachers felt that most students could grow in their creativity and that they, as teachers, were capable of developing student creativity. This demonstrated that these teachers did not believe that students were either creative or not, which previous research suggested was the biggest hindrance to creativity development. (p. 332)

Environmental constraints

To add to the common barriers of teachers’ creative self-efficacy and beliefs, our thorough analysis of the literature revealed environmental constraints as typical obstacles to teaching for creativity. For example, Rubenstein et al. (2013)’s second construct, environmental encouragement, had little to no correlation with the other subscales such as teacher self-efficacy, societal value, and student potential. This “finding supports the concerns voiced by many in our field regarding the detrimental nature of the standards movement on creativity development” (Rubenstein et al., 2013, p. 332). The lack of correlation between environmental encouragement and the three other constructs indicated a creativity gap — while teachers valued creativity, they were unable or not given the opportunity to provide environmental support to develop students’ creativity. Referencing the question, “what are barriers to teaching for creativity,” this study asserted the possibility that the application of standards within individual school districts may prevent teachers from focusing on creativity. To support their argument, Rubenstein et al. ’s explained that existing qualitative research suggested that

teachers experienced anxiety to meet curriculum objectives and therefore felt incapable to teach for creativity.

In a qualitative study, Aktas (2016) found that high-school mathematics teachers viewed standardized tests, curriculum limitations, and the education system as barriers to fostering creativity within their students. Aktas stated that minimal research had been conducted on mathematical creativity as it applied to thinking, learning, and instruction because mathematics was considered a course that tended to offer fewer opportunities for creativity. “In this context, Beghetto (2007) argued that creative thinking was neglected by teachers in courses such as mathematics, where acquiring algorithms was considered to be superior and creativity was regarded as a diversion” (Aktas, 2016, p. 43). Due to the lack of studies, Aktas explored seven Turkish high school teachers’ conceptions of creativity in mathematics by conducting semi-structured interviews. One of Aktas’ research questions was, “What do mathematics teachers believe are the barriers to creativity?”

Aktas (2016) discovered that all teachers, with the exception of those with 20- 25 years of experience, considered textbooks as barriers to fostering creativity skills. Teachers with 10 – 25 years of experience viewed the current education system, crowded classes, and standardized tests as barriers to fostering creativity. The sources of these barriers were classified as students, teachers, and contextual obstacles, with majority of the teachers mentioning contextual obstacles. The contextual obstacles were largely viewed as the current education system and standardized testing. The barriers in resources were cited as the inadequacy of textbooks, lack of time, and too many subjects to cover. Barriers caused by teachers were viewed as old habits, which is comparable to Cheung (2012) and Sternberg (2015), and barriers caused by students were exam anxiety and wrong major choices (e.g., students forced into classes by their parents).

Analogous to Aktas’s (2016) study, which investigated creativity in mathematics, Konstantidou and Zisi (2017) examined creativity in 60 physical education (PE) lessons. During PE lessons, the authors observed 30 PE teachers from primary schools in order to gauge their behaviors and actions in their classes to promote students’ “expression of creativity” (Konstantidou & Zisi, 2017, p. 423). The authors contend that “PE should be expected among the top subjects in schools for promoting students’ creative potential given the long history of research in creative movement” (p. 421). For several years, creative movement (kinesthetic responses) had been established and studied due to students’ ability to develop creative thinking during movement exploration and responding to motor problems (Konstantidou & Zisi, 2017). Therefore, the authors investigated teachers’ creativity-fostering behaviors and actions in physical education by utilizing the Creativity Fostering Teacher Behaviors (CFTB) checklist. The CFTB checklist recommended behaviors that teachers should exhibit in order to foster their students’ creativity. Konstantidou and Zisi used a non-participant naturalistic systematic observation to look for 18 behaviors and discovered that eight of these behaviors were most prevalent per lesson. Based on their observations, the authors found that the least frequently observed behavior was encouraging students to think in different directions even if some of their ideas did not work. This specific behavior was unseen in 58 of 60 lessons and had “an almost nonexistent mean frequency of appearance” (Konstantidou and Zisi, 2017, p. 432). Other less seen behaviors included “1) opportunities for students to share their strengths and weaknesses, 2) encourages students to take the frustration as part of the learning process, and 3) encourages students who experience failure to find other solutions” (Konstantidou & Zisi, 2017, p. 428).

Referencing previous research from Konstantinou et al. (2014), Konstantidou and Zisi (2017) rationalized that the barriers to fostering students’ PE creativity were emotional barriers. Emotional barriers could cause students to become frustrated and fear expressing their creativity. If teachers did not act to remove frustration from students once they appeared, then students were likely to avoid creative challenges and potential (Davis, 1999; as cited in Konstantinou & Zisi, 2017). Other barriers to teaching for creativity may include limitations and conflicts

when implementing teaching policies. This could be explained by teachers' perplexity about creative concepts and how to put them into practice. When reviewing lessons for upper elementary grades, the term creativity, and other related terms were excluded or used less frequently. The omission or limited use of these terms may imply that creativity was a low-priority objective for specific activities or that creativity was not a learning objective of any kind. PE teachers' lack of interest and/or motivation to foster creativity, as well as their limited knowledge of the subject and training on creativity, were also cited as barriers in the classroom. According to Konstanindou and Zisi, these limitations in fostering students' creativity were caused by a disconnect between creativity and the personalities and qualifications of PE teachers.

In elementary education, common barriers to teaching for creativity were identified as time constraints in lesson activities and teachers' concerns about managing classroom behavior. Comparable to [Katz-Buonincontro et al. \(2020\)](#), [Cheung \(2012\)](#) examined teachers' beliefs on fostering students' creativity. Particularly, the author focused on the connection between early childhood teachers' beliefs about effective creative practices and their actual instructional practices. The study described the following: (a) characteristics of a creative teacher, (b) environmental settings important for developing creativity, (c) teaching strategies used for developing creativity, and (d) criteria for judging creativity in children. Cheung administered individual structured interviews and classroom observations of 15 early childhood teachers from five early childhood settings in Hong Kong. The interview results revealed that the majority of the participants held beliefs about good creative practices that aligned with expert literature. However, the classroom observations disclosed inconsistencies between the teachers' beliefs expressed in the interviews and their teaching practices.

Based on the structured interviews, approximately 50% of the teachers stated that innovation, good thinking, and changeability were important creative characteristics, while 20% - 33% of the teachers considered good observation, expressiveness, and openness to be important creative characteristics. [Cheung \(2012\)](#) coded the learning environment as "learning activity (60%), creative climate (53%), physical environment (53%), sufficient resources (47%), sufficient time (40%) and sufficient space (20%)" (p. 46). When asked about teaching strategies that foster creativity, 67% of teachers recommended asking questions; 47% suggested encouraging self-expression and exchange of ideas; 20% - 30% mentioned feedback and simulation. Nonetheless, contradictions were observed.

[Cheung's \(2012\)](#) study found a relatively weak relationship between the teachers' beliefs about teaching for creativity and their instructional teaching methods. "For example, the observed lessons were mainly teacher-centered, with most teachers providing explanations and instructions and asking questions and eliciting answers" ([Cheung, 2012](#), p. 49). The teachers seemed to focus on factual knowledge and behavior management (i.e., getting students to be well-mannered). The author emphasized that the teachers were more concerned with "controlling the class" than fostering creativity. In this case, possible explanations for barriers to teaching for creativity in Hong Kong early childhood settings included 1) tight class schedules that required 30 minutes to complete an activity (time), 2) continued use of traditional teaching approaches rather than "innovative" approaches as indicated in interviews, and 3) greater satisfaction for order and flow (control).

Furthermore, [Kyritsi and Davis \(2021\)](#) evaluated the effectiveness of Scotland's 2004 launch of Curriculum for Excellence (CfE) over a four-month period to determine how the practical implementation of CfE fostered creativity in primary school-age students. The authors utilized field notes and interview transcripts from one Scottish primary school classroom with one teacher and 25 children aged 11-12, primarily using the teacher and limited data from seven students. The study revealed that children valued a balance of freedom and structure; however, structural barriers to creativity emerged from rigid teaching practices that reduced students' autonomy, dialogue, collaboration, and flexibility. Hence, some teacher-centered teaching practices were docu-

mented as barriers to teaching for creativity within the Scottish primary school classroom.

According to previous research, diversity is essential for expressing creativity; thus, practices that promote individualism create barriers to nurturing creativity ([Glaveanu et al., 2015](#); as cited in [Kyritsi & Davis, 2021](#)). [Kyritsi and Davis' \(2021\)](#) findings indicated that learning cultures, such as grouping students based on academic 'ability,' excluded specific students and promoted individualistic discourses. This grouping method allowed for unequal participation, resulting in a lack of risk-taking and a reduction in collective creative thinking. For example, the teacher instructed students to form groups based on their ability level. When Kyritsi and Davis interviewed students about group selection, they discovered that students chose the groups with the highest ability to avoid "helping" those with lower ability. The authors also observed students working in groups; they noticed the students avoiding risks and keeping their methods simple in order to finish the task easily and quickly.

New Teacher Training with Old Practices

There have been "countless pleas to teachers" and "hundreds and thousands of articles on how to teach children to think creatively," yet there has been very little teaching for creativity occurring in the classroom ([Sternberg, 2015](#), p. 115). [Sternberg \(2015\)](#) used his previous works and existing literature from experts in the field to shed light on the lack of teaching for creativity; the author identified three key issues: standardized testing, teacher training, and entrenchment. At no surprise, current standardized tests did not measure creativity. Sternberg argued that attempting to think creatively on standardized tests would likely harm a student's performance because multiple-choice tests provide little room for creativity. In this case, teachers were more likely to teach for the test than for creativity.

Also, in 2014, Sternberg and colleagues conducted a large-scale study on teaching for successful intelligence and teaching for creativity. [Sternberg et al. \(2014\)](#) discovered that "in small-scale implementations, teaching for creativity was successful;" however, on a large or up-scale implementation, there were marginal outcomes ([Sternberg, 2015](#), p. 116). This finding was unexpected and suggested that, within a program, if one had "tight control" over the implementations in the classroom, teachers were likely to teach for creativity and achieve positive results. In contrast, they were unable to monitor fidelity thoroughly within various schools involving thousands of students across the country.

Not to mention, [Sternberg \(2015\)](#) confirmed that teachers reverted to their normal teaching method (i.e., more familiar and comfortable) — "ways that they had seen as children and even seen in their training in schools of education" (p. 116). The observed regression to more familiar and comfortable teaching practices could be attributed to a lack of educational innovation (carrying on traditions from the past), new generation teachers being trained on older generational teaching practices, and assessment-driven instruction (teaching for the test). Lastly, Sternberg emphasized that entrenchment was the most powerful deterrent in teaching for creativity. Essentially, the author emphasized that if teachers "did not have to" or if there was no incentive to do so, they would be unlikely to change their instructional methods to include creativity.

[Kaplan \(2019\)](#) explored creativity in education as it pertained to teacher training and the application of creative theories in instructional design. The participants in Kaplan's study were enrolled in an online program at a California school of education and composed of teachers and teachers-in-training "of multiple ethnicities on intern and student teaching tracks in special education, single subject in varying subject areas, multiple subject credentials, and Teaching English as a Second Language (TESOL)" ([Kaplan, 2019](#), p. 141). The participants' courses were focused on critical thinking in teaching and learning, and they were exposed to a creativity theory and trained to apply it to their educational practices and lessons in order to foster learner creativity. Kaplan found that the course successfully motivated teacher candidates to examine and apply creativity theory to their classrooms. As a result, cre-

ative theories should be taught to teachers as part of their professional development in order to affect student growth, particularly creativity development. These findings supported Sternberg's (2015) contention that teacher education needed to evolve and rid itself of older generational teaching practices to effectively teach for creativity.

Equally important, Tran et al. (2017) acknowledged international research that called attention to the infrequency and challenges in teaching for creativity by investigating the effectiveness of teacher training in developing assessments for creativity. Tran et al. conducted their research in Hanoi, Vietnam, at a private upper secondary school and a public lower secondary school, utilizing the Assessment Criteria of a Lesson for Creativity (ACLCL), which was developed to improve teaching for creativity in Vietnamese schools. The findings of Tran et al. revealed that assessments that did not evaluate or measure creativity were a common barrier to teaching for creativity. The authors reiterated that to develop students' creativity, "teachers should teach and assess what and how students think creatively" (Tran et al., 2017, p. 12). The authors referenced Sternberg's (2012) advice for assessing students on how they create, discover, imagine, suppose, and predict; in conjunction with Torrance's (1979) four creative thinking indicators: fluency, flexibility, elaboration, and originality.

The concepts of Lucas, Claxton, and Spencer's (2013) five-sided model of creativity were also incorporated into the development of the ACLCL: inquisitive, imaginative, disciplined, cooperative, and persistent. The ACLCL was used to guide teachers in developing and implementing lesson plans, as well as to assess teaching for creativity development. Tran et al. (2017) used a treatment and a control group to assess the effectiveness of the ACLCL. The treatment group was taught how to use creative tools and the ACLCL, and they were given time to practice using them. They were also able to compare lesson plans, assess their lessons using the ACLCL, and engage in a discussion about how to improve lessons to meet ACLCL standards. Following their training, the treatment group created lesson plans using the lesson plan template and the ACLCL, and they were observed implementing practices aimed at teaching for creativity between March and April of 2016. When compared to the control group, the treatment group produced significantly higher student outcomes.

In all treatment lesson plans, teachers developed goals for creativity development, defined creative tools and strategies to employ, and proposed creative products that students would create. These elements were missing from the lesson plans of the control teachers. When treatment students were self-assessed, their imagination, creative thinking, and curiosity increased by nearly 20%, 14%, and 8%, respectively. The control group's creative development, on the other hand, remained constant and was lower than that of the treatment students (Tran et al., 2017). This study corroborated previous findings (e.g., Rubenstein et al., 2013; Sternberg, 2015; Kaplen, 2019) indicating the need to implement educational innovation in order to cultivate a creative culture within schools, integrate creativity into teacher training and education, and create assessments that measured creativity.

Discussion

Based on the findings of this study, the following three challenges to teaching for creativity were identified: (a) teacher creative self-efficacy and beliefs, (b) environmental constraints, and (c) new teacher training with old practices. These findings have significant implications for our understanding of how creativity is palpable within the educational system. For instance, beliefs shape our ideas and actions; as a result, teachers' epistemic beliefs are linked to creativity and guide their creative teaching methods (Rubenstein et al., 2013; Huang et al., 2019; Katz-Buonincontro et al., 2020). The research findings also indicate that teachers who believe that children's creativity occurs naturally and cannot be taught or fostered, and that creativity is better suited to the arts, are less likely to be motivated to teach for creativ-

ity. On the other hand, teachers who believe that students can cultivate and strengthen their creativity are more inclined to teach for creativity if their educational environment allows for it (Katz-Buonincontro et al., 2020). A deficit in creativity is revealed by a lack of interaction between environmental stimuli, such as time and/or a creative school environment. Teachers embrace creativity, but they are frequently unable to create a school environment that encourages students to develop their creativity.

Additionally, teachers frequently feel they are unable to teach for creativity because they are concerned about meeting curriculum objectives (Rubenstein et al., 2013; Aktas, 2016). Consequently, teachers are more likely to teach for the exam rather than for creativity when they are preoccupied with meeting curriculum objectives that do not promote creativity. Students are also subjected to the stress and strain that comes with test preparation. Students are often convinced that exam scores are more important than originality. Likewise, cultivating creativity may necessitate some organized chaos. To facilitate organized chaos in the classroom, students will require additional time to contemplate potential solutions to problems, communicate with others, and work through their emotions as they go through the trial and error process (e.g., disappointments or frustrations).

However, teachers who are more concerned with maintaining order in the classroom than with stimulating creativity may see organized chaos as a problem. Classroom time is limited, and teachers are usually pressed to move on to the next topic and/or class session. Teachers tend to fully manage the class rather than delegate some control to students in order to meet time constraints. While some teachers are unaffected by time constraints, others feel more productive when order and flow (control) are maintained throughout classes. Teacher-led classes, as opposed to student-led classes, are usually taught by teachers who use traditional teaching methods rather than teaching for creativity. This could be attributed to teachers continuing to employ antiquated teaching approaches that they were taught or observed as students (Cheung, 2012; Sternberg et al., 2014; Sternberg, 2015).

To better understand the outcomes of this study, Saebo et al. (2007) provided insights on common barriers to teaching for creativity. Saebo et al. focused on individuals being creative in a specific domain, which differs from, but expands on, Sternberg's (2015) three key arguments. "To be creative in a particular area an individual needs a substantial grounding in subject knowledge together with the confidence to understand how this knowledge can be used in various situations" (Saebo et al., 2007, p. 208). To clarify, creative individuals within a specific domain possess substantial factual knowledge (knowing what) as well as confidence in their knowledge (knowing how) and skills to demonstrate creativity. This brings us to the topic of creativity in education and the challenges that teachers may face when teaching for creativity. It will be difficult for a teacher who lacks domain knowledge to "be creative or to help students deepen their knowledge through creative activities in that domain" (Saebo et al., 2007, p. 214). Saebo et al. affirmed that "the challenge for schools and social institutions is to shift the focus of education onto the development of a population that is capable of thinking and taking new initiatives, not merely repeating what past generations have done" (p. 209).

Three possible solutions for preventing teachers from implementing traditional teaching approaches that lack teaching for creativity are: (a) teaching teachers to consider and/or apply creative theories to their pedagogy, (b) using helpful tools that reinforce creativity, such as creative checklists to self-evaluate teaching methods, and (c) shaping school culture around creativity. Studies conducted by Kaplan (2019), Rubenstein et al. (2013), Konstantinou and Zisi (2017), and Kyritsi and Davis (2021) found that applying theory to practice and using a checklist were effective resources in supporting teachers in teaching for creativity. Educational theories provide a framework for understanding student behavior, reasoning, and development (Ambrose et al., 2010; Harasim, 2017; Lefrançois, 2019; Schunk, 2020). By understanding how and why

Table 1
Themes & objectives of the reviewed literature.

Author(s)/Year	Objectives	Participants/Demographics
Aktas (2016)	To investigate Turkish high school teachers' views on mathematical inventiveness.	Seven high school mathematics teachers in Turkey.
Cheung (2012)	To examine the relationship between early childhood teachers' beliefs about effective creative practices and their actual instructional practice.	15 early childhood teachers from five early childhood settings in Hong Kong.
Huang et al. (2019)	To examine the relationship between teachers' creative role identity, creative self-efficacy, attitudes toward the implementation of teaching for creativity.	167 Chinese kindergarten teachers.
Kat-Buonincontro et al. (2020)	To discover and compare pre-service and in-service teachers' epistemic beliefs on teaching for creativity.	16 pre-service and in-service teachers enrolled in teacher education, Master and Ph.D. programs in an American university.
Kaplan (2019)	To explore the usefulness of creativity in educational planning for teacher preparation as a means to address the lack of schools that teach for creativity or train teachers to teach for creativity.	21 students enrolled in online critical thinking in teaching and learning courses at a California (United States) school of education over the course of several terms.
Konstantinidou & Zisi (2017)	To observe physical education teachers' teaching behaviors and actions to encourage students' creativity in class.	30 physical education teachers (PEds) from 27 primary schools in the region of Central Macedonia, North Greece.
Kyrtsi & Davis (2021)	To explore what cultural and structural issues influence childhood creativity.	One teacher and 25 children aged 11–12 in one Scottish primary school classroom.
Rubenstein et al. (2013)	To design an instrument (Teaching for Creativity Scale) that measures teachers' implicit beliefs that may impact their ability to teach for creativity.	650 teachers across the United States.
Sternberg et al. (2014); Sternberg (2015)	To examine the outcome of applying the Successful Intelligence Theory to instruction and assessment in grade four classrooms (i.e., mathematics, language arts, and science) (Sternberg et al. 2014).	7,702 4th grade students in the United States from 223 elementary school classrooms, 113 schools in 35 towns with 14 school districts located in nine states (i.e., Alabama, California, Connecticut, Massachusetts, Minnesota, Kansas, North Carolina, South Carolina, and West Virginia (Sternberg et al., 2014).
Tran et al. (2017)	To implement and evaluate the Assessment Criteria of a Lesson for Creativity (ACLIC) to assist instructors in planning, carrying out, and evaluating their instructional practices of teaching for creativity.	10th grade Vietnam classrooms (i.e., chemistry, history, language arts, mathematics) at an upper secondary school during the 2015 – 2016 academic year.

students think, learn, and behave in certain ways, teachers can more effectively design and implement class activities that not only engage students but also spark their creative potential.

Additionally, checklists enable teachers to focus on more creative activities while remaining confident when delegating tasks; as a result, checklists can ensure that teachers are aware of the educational goals and criteria for teaching for creativity. Teaching for creativity can also aid in building a school culture that values creativity and addresses many of the teachers' barriers in nurturing students' creativity. To shape a school culture centered on creativity, district and school leaders should consider the following: 1) revising class schedules to providemore time for the creative process, 2) including creativity and/or related terms in curriculum standards, 3) professional development on assessing students' creative thinking rather than relying solely on standard multiple choice-question assessments, 4) strategically selecting textbooks and/or calling for the need to create textbooks that implement creativity, and 5) encouraging and acknowledging positive and effective chaos as students engage in creativity.

Limitations

This literature review consists of a small sample size; therefore, more research is needed to expand and support the findings of this study. The majority of studies included in the review are qualitative, with only two quantitative studies, which means this review is unable to find substantial connections within quantitative research for this topic. Our review of literature only investigates common barriers to teaching for creativity within K-12 classrooms; thus, we do not evaluate what barriers may exist in higher education and how such barriers may compare and/or differ from barriers in K-12 education. Notwithstanding the relatively small sample, this work offers valuable insights into common barriers that teachers face in teaching for creativity. Although this study focuses on barriers to teaching for creativity, the findings have implications for potential frameworks to reduce or eliminate such barriers.

Implications

This study has raised important questions about the nature of creativity barriers within the classroom and how they may be addressed to better support teachers with teaching for creativity. However, some questions remain unanswered. For example, the literature review utilized qualitative and quantitative approaches that probed teachers' perspectives on teaching for creativity; hence, none of the studies mentioned the viewpoints of district and school administrators (i.e., instructional coaches, curriculum specialists, principals/vice principals, superintendents, etc.). While teachers can implement change within the classroom (e.g., student impact), district and school leaders have the authority to enact educational policies and practices that promote teacher success. To support teachers in teaching for creativity, we must also understand the role and perspectives of educational leaders, because teachers adhere to teaching protocols that are ordered from the highest rank and plan their lessons around meeting learning objectives as specified by their district's curriculum.

Therefore, further research on how district and school administrators perceive creativity and consider barriers to teaching for creativity would add more value to the findings. Qualitative research should be conducted to explore district and/or school administrators' perspectives on teaching for creativity, as well as how they describe barriers to supporting teachers in teaching for creativity. Other studies (qualitative, quantitative, or mixed methods) should be conducted to identify additional barriers that were not discussed, such as educational policies that influence teacher effectiveness, school funding allocation that limits teacher resources, and/or student resistance to the creative process.

The findings of this review can also be used to develop interventions aimed at fostering teacher self-creative efficacy and aiding administrators with effective strategies and policies that enable teachers to effectively nurture creativity in their students. Due to the success of Kaplan (2019) and Tran et al. (2017), interventions could incorporate strategies and resources from their studies. Pre-service teachers may benefit from reading creativity theories as preparation for planning and

Table 2
Findings & recommendations of the reviewed literature.

Author(s)/Year	Methodology	Findings	Recommendations
Aktas (2016)	Ethnographic qualitative study using semi-structured interviews.	Teachers cited a number of barriers to creativity, but they did not include themselves. These barriers included a rigorous and demanding curriculum, low-level students, education institutions, standardized tests, time limitations, crowded classes, and teachers' old habits.	Future research should include classroom observations to examine any discrepancies between what teachers say and do in the classroom. Further research should also be conducted with a larger population using qualitative or mixed research methods to examine the topic from a different and broader perspective.
Cheung (2012)	Qualitative study using data from individual semi-structured interviews and classroom observations.	Early childhood teachers' practices were not greatly affected by beliefs, but mainly by lack of time and experience.	Need for more creative education and proper support for teachers to translate policy into actual practice, and future research to investigate reasons that lead teachers to teach in a manner that is inconsistent with their beliefs.
Huang et al. (2019)	Quantitative study using structural equation modeling with bootstrapping estimation.	Within schools, lack of personal creative experiences and culture for creativity hindered teachers' creative efficacy to motivate and nurture students' creativity.	Personal creative experiences, school implementation of innovative climate, and intervention projects or training programs on creativity.
Kat-Buonincontro et al. (2020)	Qualitative study using semi-structured interviews.	Five themes with divergent epistemic beliefs were identified: 1) belief that "success in teaching" is using creative approaches, 2) discordant beliefs in creative teaching abilities, 3) diverse beliefs in students' creative potential, 4) general belief that there is importance in creativity for enhancing student learning, 5) belief that teaching requires for students to have freedom.	Discussions in the classroom and in-service mentoring can be used to resolve conflicting epistemic beliefs.
Kaplan (2019)	Qualitative study assessing comprehension and implementation of creativity theory by analyzing documents (i.e., lessons and projects).	Reading theories on creativity prompted teacher education candidates to reference and apply theories in creative ways to develop creative lesson designs and final projects.	Future studies to assign the experience differentially with a control group to make a causal claim about course efficacy and investigate how the teacher constructed designs influence learning in the classroom.
Konstantinidou & Zisi (2017)	A non-participant naturalistic systematic observation utilizing an observational checklist, the Creativity Fostering Teacher Behaviors (CFTB). Study used a quantitative approach, which calculated a total score of ticks for each observational item, but also composed of qualitative characteristics.	Barriers to teaching for creativity included a lack of academic education, training, and continuous professional development. The curriculum itself may also limit physical education teachers from teaching for creativity.	Educational institutions, allied organizations, and instructors themselves must implement a variety of policies and initiatives to promote teaching for creativity.
Kyritsi & Davis, 2021	Qualitative study using field notes and interview transcripts from a case study.	When children were expected to do well and concentrated on their own advancement, structural practices of differentiation could obstruct their ability to be creative.	Recommendations included encouraging students to take responsibility of their learning, methods that value diversity, equity, and collaboration, and autonomy and risk-taking.
Rubenstein et al. (2013)	Quantitative study using exploratory and confirmatory factor analysis, data collected from surveys taken by the participating teachers.	Although teachers believed that creativity was valuable, they lacked environmental support to teach for creativity; district standards deterred fostering creativity, and teachers experienced anxiety to meet curriculum objectives.	The instrument (Teaching for Creativity Scale) should be used to evaluate efficacy and interventions that influence teachers' beliefs on creativity. Future research that designs a test/ retest to examine the reliability of the Creativity Scales should also be conducted over time.
Sternberg et al. (2014); Sternberg (2015)	Quantitative approach using descriptive statistics of pre-test and post-test performance scores (Sternberg et al., 2014).	Sternberg (2015) identified origins of the problem with teaching for creativity as 1) teaching for creativity is not the latest fad, 2) overreliance of standardized testing, 3) based on Sternberg et al. (2014) findings (as highlighted in Sternberg (2015), teachers regress to teaching in more familiar and comfortable ways (i.e., taught as they were taught as children), and 4) teachers' unwillingness to change their teaching strategies and methods unless they must do so.	Reduce emphasis on standardized testing, change the way we teach future teachers in schools of education, and determine what is old and what is entrenched. (Sternberg et al., 2014; Sternberg, 2015).

(continued on next page)

Table 2 (continued)

Author(s)/Year	Methodology	Findings	Recommendations
Tran et. al (2017)	Mixed method approach utilizing thematic analysis of data collected from interviews with teachers and students, and non-parametric statistics to rank the treatment lessons and lesson implementation.	A frequent barrier to teaching for creativity was teachers' lack of knowledge of creative processes and pedagogies. However, the Assessment Criteria of a Lesson for Creativity (ACLCL) helped to advance teaching for creativity by assisting teachers in Vietnamese secondary schools to prepare for and implement teaching for creativity, such as providing feedback on teaching for achievement and instructing teachers on how to use the ACLCL.	School leaders should conduct competency-based assessments on creativity and continuous professional development utilizing the ACLCL to foster students' imagination, curiosity and creative thinking.

applying practices to teach for creativity. Since Sternberg (2015) asserted that teachers are prone to reverting to more familiar and comfortable methods of instruction, integrating creativity in initial training could address this issue. Based on Tran et al.'s (2017) findings, the Assessment Criteria of a Lesson for Creativity (ACLCL) effectively supported teachers in preparing for, implementing, and self-assessing teaching for creativity. The ACLCL or a similar tool could be a valuable resource and, as such, should be included in pre-service teacher training as well as continuous professional development for in-service teachers Tables 1, 2.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

- Aktas, M. C. (2016). Turkish high school teachers' conceptions of creativity in mathematics. *Journal of Education and Training Studies*, 4(2), 42–52. [10.11114/jets.v4i2.1123](https://doi.org/10.11114/jets.v4i2.1123).
- Ambrose, S. A., Bridges, M. W., DiPietro, M., Lovett, M. C., & Norman, M. K. (2010). *How learning works: Seven research-based principles for smart teaching*. John Wiley & Sons.
- Bahar, A. K., Maker, C. J., & Scherbakova, A. (2021). The role of teachers' implementation of the Real Engagement in Active Problem Solving (REAPS) model in developing creative problem solving in mathematics. *Australasian Journal of Gifted Education*, 30(2), 26–39. <https://search.informit.org/doi/abs/10.3316/informit.134990209201977>.
- Beghetto, R. A. (2007). Does creativity have a place in classroom discussions? Prospective teachers' response preferences. *Thinking skills and creativity*, 2(1), 1–9. <https://doi.org/10.1016/j.tsc.2006.09.002>.
- Cheung, R. H. P. (2012). Teaching for creativity: Examining the beliefs of early childhood teachers and their influence on teaching practices. *Australasian Journal of Early Childhood*, 37(3), 43–52. [10.1177/183693911203700307](https://doi.org/10.1177/183693911203700307).
- Cramond, B., & Karnes, F. A. (2005). *Fostering creativity in gifted students*. Prufrock Press Inc.
- Davis, G. A. (1999). Barriers to creativity and creative attitudes. *Encyclopedia of creativity*, 1, 165–174.
- DuPriest, D. (2017). Creativity in the classroom. *National Education Association*. <https://www.nea.org/professional-excellence/student-engagement/tools-tips/creativity-classroom>.
- Harasim, L. (2017). *Learning theory and online technologies*. Routledge.
- Hines, M. E., Catalana, S. M., & Anderson, B. N. (2019). When learning sinks in: using the incubation model of teaching to guide students through the creative thinking process. *Gifted Child Today*, 42(1), 36–45. [10.1177/1076217518804858](https://doi.org/10.1177/1076217518804858).
- Huang, X., Chi-Kin Lee, J., & Yang, X. (2019). What really counts? Investigating the effects of creative role identity and self-efficacy on teachers' attitudes towards the implementation of teaching for creativity. *Teaching and Teacher Education*, 84, 57–65. [10.1016/j.tate.2019.04.017](https://doi.org/10.1016/j.tate.2019.04.017).
- Johnson, S. (2010). *Where Good Ideas Come From*. Allen Lane/Penguin.
- Kaplan, D. (2019). Creativity in education: Teaching for creativity development. *Psychology*, 10, 140–147. [10.4236/psych.2019.102012](https://doi.org/10.4236/psych.2019.102012).
- Katz-Buonincontro, J., Perignat, E., & Hass, R. W. (2020). Conflicted epistemic about teaching for creativity. *Thinking Skills and Creativity*, 36. [10.1016/j.tsc.2020.100651](https://doi.org/10.1016/j.tsc.2020.100651).
- Konstantinidou, E. P., & Zisi, V. Z. (2017). Do physical educators promote students' creativity? an observational analysis study. *The Physical Educator*, 74(3). [10.18666/TPE-2017-V74-I3-7407](https://doi.org/10.18666/TPE-2017-V74-I3-7407).
- Kounios, J., & Beeman, M. (2015). *The eureka factor: Aha moments, creative insight, and the brain*. Random House.
- Kyritsi, K., & Davis, J. M. (2021). Creativity in primary schools: An analysis of a teacher's attempt to foster childhood creativity within the context of the Scottish Curriculum for Excellence. *Improving Schools*, 24(1), 47–61. <https://doi.org/10.1177/1365480220968332>.
- Lefrancois, G. R. (2019). *Theories of human learning*. Cambridge University Press.
- Lucas, B., Claxton, G., & Spencer, E. (2013). Progression in student creativity in school: First steps towards new forms of formative assessments. OECD Education Working Papers: 86. OECD Publishing <http://dx.doi.org/10.1787/5k4dp59msdsk-en>.
- Majid, S., Liming, Z., Tong, S., & Raihana, S. (2012). Importance of soft skills for education and career success. *International Journal for Cross-Disciplinary Subjects in Education (IJCDSE)*, 2(2), 1036–1042. [10.20533/ijcdse.2042.6364.2012.0147](https://doi.org/10.20533/ijcdse.2042.6364.2012.0147).
- Maker, C. J., Zimmerman, R., Bahar, A. K., & In-Albon, C. (2021). The influence of real engagement in active problem solving on deep learning: An important component of exceptional talent in the 21st century context. *Australasian Journal of Gifted Education*, 30(2), 40–63. [10.3316/informit.135008842173235](https://doi.org/10.3316/informit.135008842173235).
- Maker, C. J., Bahar, K., Alfaiz, F. S., & Pease, R. (2022). Developing and assessing creative scientific talent that is transformational through Real Engagement in Active Problem Solving (REAPS). *Australasian Journal of Gifted Education*, 31(1), 5–21. <https://search.informit.org/doi/10.3316/informit.376827543162155>.
- Maley, A., & Bolitho, R. (2015). Creativity. *ELT Journal*, 69(4), 434–436. [10.1093/elt/ccv036](https://doi.org/10.1093/elt/ccv036).
- Maley, A. (2003). 'Creative approaches to writing materials. In B. Tomlinson (Ed.), *Developing Materials for Language Teaching* (ed.). Continuum.
- McWilliam, E., & Dawson, S. (2008). Teaching for creativity: towards sustainable and replicable pedagogical practice. *Higher Education*, 56, 633–643. [10.1007/s10734-008-9115-7](https://doi.org/10.1007/s10734-008-9115-7).
- Nemerzitski, S., & Heinla, E. (2020). Teachers' creative self-Efficacy, self-esteem, and creative teaching in Estonia: A framework for understanding teachers' creativity-supportive behavior. *Creativity. Theories - Research - Applications*, 7(1), 183–207. [10.2478/cetra-2020-0011](https://doi.org/10.2478/cetra-2020-0011).
- Newton, L. D., & Newton, D. P. (2014). Creativity in 21st-century education. *Prospects*, 44, 575–589. [10.1007/s11125-014-9322-1](https://doi.org/10.1007/s11125-014-9322-1).
- Papaleontiou-Louca, E., Varnava-Marouchou, D., Mihai, S., & Konis, E. (2014). Teaching for creativity in universities. *Journal of Education and Human Development*, 3(4), 131–154. [http://doi.org/10.15640/jehd.v3n4a13](https://doi.org/10.15640/jehd.v3n4a13).
- Rinkevich, J. (2011). Creative teaching: Why it matters and where to begin. *The Clearing House: Journal of Educational Strategies, Issues and Ideas*, 84(5), 219–223. [http://doi.org/10.1080/00098655.2011.575416](https://doi.org/10.1080/00098655.2011.575416).
- Runco, M. A., & Jaeger, G. J. (2012). The standard definition of creativity. *Creativity research journal*, 24(1), 92–96. [10.1080/10400419.2012.650092](https://doi.org/10.1080/10400419.2012.650092).
- Rubenstein, L. D., McCoach, D. B., & Siegle, D. (2013). Teaching for creativity scales: An instrument to examine teachers' perceptions of factors that allow for the teaching of creativity. *Creativity Research Journal*, 25(3), 324–334. [10.1080/10400419.2013.813807](https://doi.org/10.1080/10400419.2013.813807).
- Saebø, A. B., McCammon, L. A., & O'Farrell, L. (2007). Creative Teaching - Teaching Creativity. *Caribbean Quarterly*, 53(1–2). [10.1080/00086495.2007.11672318](https://doi.org/10.1080/00086495.2007.11672318).
- Schunk, D. H. (2020). *Learning theories: An educational perspective (8th ed.)*. Pearson Education.
- Starko, A. J. (2018). *Creativity in the classroom (6th)*. Routledge.
- Sternberg, R. J. (2012). The assessment of creativity: An investment-based approach. *Creativity research journal*, 24(1), 3–12. [10.1080/10400419.2012.652925](https://doi.org/10.1080/10400419.2012.652925).
- Sternberg, R. J. (2015). Teaching for creativity: The sounds of silence. *Psychology of Aesthetics, Creativity, and the Arts*, 9(2), 115–117. [10.1037/aca0000007](https://doi.org/10.1037/aca0000007).
- Sternberg, R. J., Jarvin, L., Birney, D. P., Naples, A., Stemler, S. E., Newman, T., & Grigorenko, E. L. (2014). Testing the theory of successful intelligence in teaching grade 4 language arts, mathematics, and science. *Journal of Educational Psychology*, 106(3), 881. [10.1037/a0035833](https://doi.org/10.1037/a0035833).
- Sternberg, R. J. (2010). Teaching for creativity. In R. A. Beghetto, & J. C. Kaufman (Eds.), *Nurturing creativity in the classroom* (pp. 394–414). Cambridge University Press. [10.1017/CBO9780511781629.020](https://doi.org/10.1017/CBO9780511781629.020).
- Stevick, E. W. (1980). *Teaching languages: A way and ways*. Newbury House.
- Torrance, E. P. (1972). Can We Teach Children to Think Creatively? [Paper Presentation] April 5. Chicago, Illinois: American Educational Research Association.
- Torrance, E. P., & Safter, T. H. (1990). The Incubation model of teaching: Getting beyond the aha! Bearly.

- Torrance, E. P. (1979). *The search for satori & creativity*. Creative Education Foundation.
- Torrance, E. P., & Shaughnessy, M. F. (1998). An interview with e. paul torrance: About creativity. *Educational Psychology Review*, 10(4), 441–452. <http://www.jstor.org/stable/23359472>.
- Tran, T. L., Hø, T. N., Mackenzie, S. V., & Le, L. K. (2017). Developing assessment criteria of a lesson for creativity to promote teaching for creativity. *Thinking Skills and Creativity*, 25, 10–26. [10.1016/j.tsc.2017.05.006](https://doi.org/10.1016/j.tsc.2017.05.006).
- UNESCO [United Nations Educational, Scientific and Cultural Organization]. (2006). *World Conference on Arts Education “Building Creative Capacities for the 21st Century”*. Lisbon, Portugal: Lisbon: UNESCO 6-9 March 2006 Working Document.
- Glaveanu, V. P., & Tanggaard, L. (2015). Widening our understanding of creative pedagogy: A northsouth dialogue. *Education 3-13*, 43(4), 360–370. [10.1080/03004279.2015.1020634](https://doi.org/10.1080/03004279.2015.1020634).