Outside the Box: Promoting Creative Problem-Solving from the Classroom to the Boardroom

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Abstract. Can creativity be taught? Multiple sources attest that the business community values creativity in potential new hires, but a signature pedagogy of teaching for creativity in business classes has not yet emerged. To contribute to a body of evidence-based practice, this study assessed the impact of several in-class activities that were deployed among undergraduate business students to see if these enhanced their creative problem-solving abilities, as assessed by pre- and post-intervention measures. The results were moderately encouraging and suggest domain-specific teaching and learning strategies. Further, the results offer encouragement to all instructors, irrespective of any prior experience with creativity-enhancing efforts.

Keywords: creativity; creative problem-solving; creative thinking; business management

How many uses can you think of for a stapler? According to journalist William Poundstone (2003), such questions have become increasingly commonplace for organizations that place high value on creativity. Further, he suggests that successful applicants are capable of producing upwards of 300 or more responses. This number may sound daunting, but it reflects a broader trend toward recognizing creativity as a desired and desirable quality to have in the contemporary marketplace (Epstein et al., 2013; Mareque et al., 2019). In the 2016 National Association of Colleges and Employers (NACE) employer survey ($n = 201$), for example, 23.6% of respondents indicated that creativity was a desired trait for college graduates, ranking just below strategic thinking and just above tactfulness. For those future students wishing to gain this competitive edge, it would seem that they would need to seek out ways to become more creative.

Review of Literature

Beyond exploring the limits of a stapler, though, it can be challenging to determine what exactly are the desired skills or attributes associated with creativity. A central debate in creativity studies is the extent to which it can be considered a personal attribute and therefore, by extension, a fixed trait (Feist, 1998; Mumford, 2003; Mumford et al., 2012), or whether it is an ability that can be fostered or developed. Because of the prevalence of the former view, creativity (in and of itself) had been largely absent from classroom practice outside of the creative arts (Fasko, 2001). Recent research across a number of disciplines has revealed, however, that creative thinking is a skill that can be developed and strengthened over time (Fekula, 2011;

Perry & Karpova, 2017). In other words, while creativity may be something you either have or you do not, evidence suggests that creative thinking can be taught.

Additionally, there seems to be a growing consensus that it should be taught. Sir Ken Robinson, perhaps one of the most influential public figures in education, frequently calls the modern educational system to task for not only failing to foster creativity but also for being complicit in its active suppression (Resnick & Robinson, 2017. Sir Ken Robinson is not alone. Social science researchers, such as Richard Florida (2014), have identified creative thinking as a highly desired trait in the current and future labor force, a value that seems to widely shared by practitioners. A recent analysis of millions of online job postings identified creativity as a critical "human skill" (Markow et al., 2018; Markow et al., 2019). A 2019 LinkedIn study identified creativity as the top trait desired by companies who post positions on its site (Petrone, 2019).

The importance of creativity begs the question of where and how creative thinking should be integrated into the college curriculum (Edwards et al., 2006). The terminological switch from creativity to creative thinking may facilitate a constructive approach to creativity, but it does not free us from our definitional challenges, making it unclear just exactly what creative thinking looks like. Early theorists emphasized divergent or lateral thinking as indicative of creative abilities; while more recent scholarship has emphasized creative thinking as a multi-faceted process that works both in contrast to and in tandem with critical thinking (Runco & Akar, 2012; Sawyer, 2014; Sternberg, 2006). Design thinking, a moniker which has received a great of public attention lately, is a prominent variation (Matthews & Wrigley, 2017). Much of the emphasis on the pedagogy of creative thinking has focused on divergent/lateral thinking, or fostering the ability of participants (whether college students or corporate employees) to brainstorm (also known as ideate) and generate as many new ideas as possible. The ability to generate new ideas in a systematic fashion has found resonance in a number of disciplinary fields, including computer programming, creative writing, graphic design, and marketing (McCorkle et al., 2007; McIntyre et al., 2003).

In marketing, especially, creativity is often contrasted with innovation, which differs largely in its application to business contexts and its emphasis on the development of new products or services that have market impact. Leaders in organizational development seek to find solutions for sustaining innovation across the culture of a business, particularly to combat the marked and persistent tendency for firms and their individual employees to become less flexible, risk-oriented, and, yes, creative over time. As a result, creative thinking is now being taught in courses on or related to entrepreneurship, including non-disciplinary or transdisciplinary courses like first-year seminars (Ghafar, 2020; McMullan & Kenworthy, 2015; Solomon et al., 2008), as innovation tends to resonate with contemporary business models of higher education.

Although the practice is growing, comparatively few studies have been conducted specifically on teaching for creativity in higher education (Sternburg, 2015). The literature tends to be dominated by discussions of measurement (for which

consensus is closer but has yet to be reached) rather than pedagogy. Other than student self-report instruments, most robust studies have continued to use two of the long-standing, transdisciplinary measures of creative thinking, the adult version of the Torrance Test of Creative Thinking (TTCT) (Almeida et al., 2008; Rababah, 2018), which uses drawing exercises, or variations of the Alternative Uses tests, which focus on divergent thinking (George & Wiley, 2019; Kwon et al., 2017; Nix et al., 2014) for pre- and post-studies of various teaching-for-creativity strategies. More recent tests integrate both convergent and divergent creative thinking skills, including the evaluation of concept maps, but the approaches are otherwise conceptually similar (Perry & Karpova, 2017; Snyder et al., 2019; Urban, 2005).

To date, a pattern has emerged in which creativity or creative thinking are taught in pockets of higher education, but little attention has been paid to how creative thinking might be integrated into disciplinary-specific approaches to teaching and learning. The practical reasons for this are highly varied (Craft, 2005), ranging from perhaps unjustified associations with children's play (so not for adult college students or serious disciplines) (Paek & Sumners, 2019) to more significant challenges of classroom assessment. One frequently evoked explanation is that instructors frequently assume that they must be both creative thinkers and experts on creativity in order to bring these ideas into the classroom. To address these assumptions, Jeffery and Craft (2004) draw distinctions between teaching creatively, teaching creativity, and teaching for creativity. This latter is intended to focus on strategies to facilitate creative thinking, especially when embedded in a disciplinary context.

As a field, business management is well suited as a candidate for the integration of teaching for creative thinking (Sunley et al., 2019). Not only is the field related to both entrepreneurship and marketing, two areas where strategies for new product development have received a great of attention, but the curriculum of business management emphasizes problem-solving. Recent shifts in the theoretical foundations of decision sciences away from rational-choice models (Nutt, 1984) has left conceptual space for the creative problem-solving to rise to the fore (Ford & Gioia, 2000; Marques, 2019). And, in turn, creative decision-making has been linked by researchers to the development of broader organizational cultures that support and sustain innovation (Amabile et al., 1996; Kwon et al., 2017; Obholzer & Miller, 2018; Williams, 2001).

For these reasons, there has been an increasing emphasis on teaching creativity in business management classes, including a 2010 report from the Association to Advance Collegiate Schools of Business (AAS&B), a major accrediting body, highlighting the gaps and calling for reforms. That said, much of the pedagogical research literature to date has focused on case studies or practice reports, indicating that innovative practices may be going on, but there is a clear need for more systematic research (Driver, 2001; Kerr & Lloyd, 2008; Schlee & Harich, 2014; Wongpinunwatana, 2019; Wynder, 2004). The present study seeks to contribute to the development of a body of evidence-based practice in teaching for creativity within the context of colleges of businesses.

Overall, the need for creativity in managerial decision-making has become increasingly evident, both in practice and in the research literature (Basadur et al., 2014; Bilton, 2007; Earl & Potts, 2016; Ejimabo, 2015; Helfat & Martin, 2015; Proctor, 2014). It has been under-emphasized, however, in the pedagogical literature (Schmidt-Wilke, 2011) and exploratory research has demonstrated that business students are lagging behind other disciplines in their exposure to thinking "outside the box" (McIntyre et al., 2003; Supiano, 2020; Wang et al., 2010). This study seeks to address that gap by measuring the efficacy of a pilot program focused on teaching for creativity in the business management classroom.

Methodology

The Context

Tennessee Tech University is a STEM-focused doctoral institution (high research, or R2) located in a micropolitan area within the southeastern United States. The total student body is approximately 10,000 students, inclusive of both undergraduate and graduate levels. The pilot program itself was facilitated in the College of Business, an academic hallmark of Tennessee Tech University. Over the span of two semesters, facilitators visited undergraduate business management courses, at both the introductory and advanced levels, to provide targeted interventions designed to promote creative problem-solving. During the first semester, the pilot program was facilitated with one section of an upper division course on decision-making for managers. During the second semester, the pilot program was facilitated with two sections of an introduction to business management course required for all business majors and minors. The article refers to these as Intervention Groups 1, 2, and 3, respectively.

The Hypothesis

The null hypothesis (H0) of the study is that creative problem-solving cannot be taught to students in higher education. The alternate hypothesis (H1) is that, using targeted interventions, creative problem-solving can be taught to students in higher education (see Table 1). In particular, it can be taught to undergraduate business majors. Critical *t* values were determined for use in the hypotheses.

Table 1

Null hypotheses and alternate hypotheses based on intervention group

Intervention Group 1	Intervention Group 2	Intervention Group 3
$H_0 : t \leq 1.78 , p > 0.05$	$H_0 : t \leq 1.70 , p > 0.05$	$H_0 : t \leq 1.71 , p > 0.05$
$H_1 : t > 1.78 , p < 0.05$	$H_1 : t > 1.70 , p < 0.05$	$H_1 : t > 1.71 , p < 0.05$

The Interventions

Prior to facilitating the pilot program in the selected business management courses, the research team received approval from the Institutional Review Board (IRB) for Tennessee Tech University. The pilot program began by obtaining informed consent from the students, who were asked to complete a pre-test and a post-test as bookends for a set of targeted interventions to take place during regular class time. Only those students enrolled and present in the class were able to participate. After informed consent was obtained, a non-instructor administered the pre-tests. Those who choose not to participate remained in the classroom during the short duration of the assessment administration, but their presence was indistinguishable from those who had completed the test.

Soon thereafter, the interventions were facilitated with the participants. The research team intentionally selected these particular interventions due to their acceptability within teaching and learning contexts for business programs (Gundry et al., 2014; Oluwade & Oluwade, 2015). It should be noted, however, that each of these approaches have been the subject of criticism as facilitators of creative thinking. Despite these known shortcomings, the researchers deemed the benefits as outweighing potential drawbacks. Further, the researchers chose to provide multiple interventions (as listed below) rather than rely on multiple iterations of a single approach, both to enhance engagement and mitigate the limitations of any single approach.

Example 1: Design Thinking

The first example intervention focused on design thinking, an approach centered around the human perspective; design thinking seeks to mesh together what people need, what is possible with technology, and what is required for business success (Brown, 2009). The design thinking process consists of five phases: (1) empathize, (2) define, (3) ideate, (4) prototype, and (5) test. For the intervention, participants were tasked with designing a campaign to attract more majors to the college.

Example 2: SCAMPER

The second example intervention focused on SCAMPER. Developed by Robert Eberle (1971), SCAMPER is an acronym for a creative problem-solving strategy that supports atypical solutions to problems as well as generating new ideas for products or concepts. SCAMPER involves seven potential methods for innovation: (1) substitute, (2) combine, (3) add, (4) modify, (5) put to another use, (6) eliminate, (7) rearrange. For the intervention, participants were tasked with running through SCAMPER using a toilet paper roll.

Example 3: Six Thinking Hats

The third example intervention focused on Six Thinking Hats. This is an exercise that asks people to view a problem or decision from different perspectives than

their usual disposition (Kaya, 2013; Vernon & Hocking, 2014). Six Thinking Hats assigns a different perspective based on color: (1) white for facts, (2) red for emotion, (3) yellow for benefit, (4) green for ideas, (5) blue for planning, and (6) black for judgement. For the intervention, the participants were tasked with deploying Six Thinking Hats to address a business case related to hiring practices.

The Measurement

The participants in the pilot program completed an assessment called Guilford's Alternate Uses (Guilford et al., 1978; Guilford, 1967) in a pre-test/post-test design. Originally distributed as Unusual Uses (Wilson et al., 1954), Guilford's revamped version asks the participants to list up to six uses for a common object beyond the given use. Examples include a key (used to open a lock), a watch (used for telling time), and a chair (used for sitting). Guilford's Alternate Uses comes with three components: Form B, Form C, and Scoring Key. Both Form B and Form C are divided into two parts with three objects each. For the pilot program, Form B was used as the pre-test and Form C was used as the post-test. Participants were given two minutes to complete each part, which means a total of four minutes for the pre-test and four minutes for the post-test.

Findings

Upon completion of each assessment, two scorers not affiliated with the courses independently assessed the responses for each participant using the Scoring Key. The total acceptable responses from the scorers were inputted into Excel in order to compute the mean for each participant, which were then used to compute the descriptive statistics for each intervention group (see Table 2).

Table 2

Descriptive statistics for intervention groups based on alternate uses scores

Intervention group	Pre-test			Post-test		
	n	$\bar{x}$	*SD*	*n*	$\bar{x}$	*SD*
1	15	14.33	8.65	13	18.85	8.63
2	37	9.28	4.20	32	11.94	4.09
3	28	10.21	4.63	27	13.70	4.92

After the descriptive statistics for all three intervention groups were computed, it was then time to determine if there were significant differences between the pre-test and the post-test for each intervention group. In order to test each hypothesis, the research team decided to deploy a one-sample *t* test for each intervention group using SPSS. While a paired *t* test might typically be used for hypothesis testing in a pre-test/post-test design, the scores could not be matched in the case of the pilot program. As such, it was necessary to use one sample *t* tests for

hypothesis testing (York, 2017). The research team used the previously computed means ($\bar{x}$) of the pre-test scores as the threshold score for the comparison of the post-test scores for each intervention group (see Table 3).

Table 3

Means, one sample t tests, and effect sizes for all three intervention groups

Intervention group	Pre-Test $\bar{x}$	Post-Test $\bar{x}$	Difference	t	p	g
1	14.33	18.85	4.52	1.78	0.05	0.52
2	9.28	11.94	2.66	1.70	0.04	0.64
3	10.21	13.70	3.49	1.71	0.04	0.73

*$p < 0.05$

The post-test mean for Intervention Group 1 is 18.85, which was compared to the pre-test mean of 14.33 for Intervention Group 1 with a one-sample t test. The results indicate support for the null hypothesis ($t \leq 1.78$, $p > 0.05$). The effect size (g) is 0.52, which is considered a medium effect size. The post-test mean for Intervention Group 2 is 11.94, which was compared to the pre-test mean of 9.28 for Intervention Group 2 with a one-sample t test. The results indicate that the null hypothesis ($t \leq 1.70$, $p > 0.05$) should be rejected in support of the alternate hypothesis ($t > 1.70$, $p < 0.05$). The effect size (g) is 0.64, which is considered a medium effect size. The post-test mean for Intervention Group 3 is 13.70, which was compared to the pre-test mean of 10.21 for Intervention Group 3 with a one-sample t test. The results indicate that the null hypothesis ($t \leq 1.71$, $p > 0.05$) should be rejected in support of the alternate hypothesis ($t > 1.71$, $p < 0.05$). The effect size (g) is 0.73, which is considered a medium effect size. For each of the effect sizes, the research team elected to utilize Hedges' g to account for differentials in the sample sizes (n) of the pre-tests and the post-tests (Hedges & Olkin, 1985).

Following this initial analysis, the research team decided to conduct an additional stage of analysis using a more focused sample from the original to gain further insight into creative problem-solving. It consisted of four variables as categories of creative problem-solving: (1) fluency, (2) originality, (3) flexibility, and (4) elaboration (Guilford, 1967). Fluency is the sum of responses for each item. Originality is a comparison between the responses given by participants in the sample in which responses that only 5% gave receives 1 point and that only 1% gave receives 2 points. Flexibility is the different categories across the responses for each item. Elaboration is the degree of detail provided for each use on an item. The means, p values, and effect sizes were calculated for each variable to determine if there were significant differences between the pre-test ($\bar{x} = 36$) and the post-test ($n = 40$) (see Table 4).

Table 4

Means, significance, and effect sizes for each variable in focused sample

Variable	Pre-Test $\bar{x}$	SD	Post-Test $\bar{x}$	SD	p	g
Fluency	9.89	4.32	12.54	4.89	0.007	0.81
Originality	1.61	1.79	1.72	1.86	0.49	0.06
Flexibility	8.58	3.24	10.05	3.75	0.03	0.4
Elaboration	2.31	2.54	2.64	1.69	0.24	0.15

*$p < 0.05$

As with the initial analysis, the research team deployed a one-sample t test for each of the variables to determine if there were significant differences. The findings indicate that the variables Fluency ($p = 0.007$) and Flexibility ($p = 0.03$) significantly increased from the pre-test to the post-test. The effect size (g) for Fluency is 0.81, which is considered a large effect size. The effect size (g) for Flexibility is 0.4, which is considered a small effect size. These results suggest that students were not only able to significantly increase their ability to identify more uses for the common objects indicated in the test, but also to generate more categories of usage.

The most common categories of usage across all objects presented included decoration, weapon, game/entertainment, and measurement. The findings indicate that the variables Originality ($p = 0.49$) and Elaboration ($p = 0.24$) did not significantly increase from the pre-test to the post-test. The effect sizes for Originality and Elaboration are nearly non-existent. These results suggest that students did not come up with a significantly higher number of unique use cases for the objects in the second test, nor did they provide more descriptors of those uses. The research team used Hedges' g to determine effect sizes due to differentials in the sample sizes (n) of the pre-tests and the post-tests (Hedges & Olkin, 1985).

Summary of Findings

Both analyses demonstrate that creative problem-solving can be fostered in the classroom through targeted interventions. There were significant differences between the pre-test and the post-test for two of the three intervention groups in the first analysis, which speaks to the variation among the students for creative problem-solving. There were significant differences between the pre-test and the post-test for two of the four variables (fluency and flexibility) in the second analysis, which highlights that some aspects of creative problem-solving were better promoted through the targeted interventions. Nevertheless, it is clear that creative problem-solving can be taught in the business classroom.

Discussion

These findings are the result of a pilot study conducted at a single university and should be treated as suggestive rather than definitive or representative. That being

said, they do suggest that creative thinking may take on distinctive characteristics in the context of business management. Creativity researchers have long noted tensions inherent in the desire to embed creativity research in domain or field-specific contexts (e.g., business management) versus the desire to study creative thinking as a broad, transdisciplinary lens. Until recently, the latter has predominated, but the field has shifted towards a more developmental understanding of creative problem-solving, moving through ideation and toward implementation, a process which often necessitates more domain-specific expertise (Amabile, 2013; An & Runco, 2016; Montag-Smit & Maertz, 2017). In other words, business managers may need to be able to generate new solutions, but those solutions also need to be actionable within the context of a given firm or industry; and both components are part of creative thinking as a process (Peterson et al., 2013).

The constraint of implementation may explain why the students in our study tended to raise their ability to generate new categories (flexibility) rather than fully new ideas (originality). In defining creative thinking for institutional assessment, the American Association of Colleges & Universities (AAC&U) included categories for taking risks and innovative thinking, which relate to originality; they also provide categories for solving problems and embracing contradictions, which more closely relate to flexibility (McConnell et al., 2019; Rodriguez & Fekula, 2019). Solving problems refers to the implementation phase of an idea. Embracing contradictions is an inherently integrative task in which multiple stakeholders and perspectives are taken into account when selecting the solution, a skill that is highly valued in contemporary business decision-makers and a critical component of the corporate social responsibility (CSR) model (Harjoto & Laksmana, 2018; Rezaee, 2016).

Although CSR has become far more mainstream in recent years, multiple studies suggest that not all business students are sold on its relationship to business. This perception may be a lingering sentiment from previous decades when business and the environment were more frequently at odds with one another. Nor should it be assumed that business students are sold on the value of creativity. At each iteration, there were students who challenged the creativity exercises done in class, and, in one memorable case, a student walked into class, saw the materials laid out, and promptly walked out, muttering that he had better things to do with his time. The more effective guest facilitators did not presume that students understood the value of creative thinking. Rather, they made the case for why creativity matters in the modern workplace. Further, they embedded the creativity exercises into real-world case studies of business decisions. The design thinking exercise, for example, had students work as design firms hired by the college to promote enrollment and asked them to present their findings to a college administrator.

The interventions faced additional metacognitive resistance. At each iteration, for example, multiple students indicated that they were simply not creative, possibly reflecting evidence of a persistent fixed mindset. This experience affirms recent insights from creativity research that posited the existence of a creativity mindset or a mental framework that enhances the process at multiple stages (Hargrove &

Nietfeld, 2015; Tierney & Farmer, 2002). The more successful facilitators navigated this resistance in two ways. First, by sharing research indicating that creativity can be learned; second, via the application of scaffolded exercises focused on building both capacity and confidence. With multiple interventions, the students did appear to become more accustomed to creative thinking over time, but the instructor and researchers did note the onset of diminishing returns. The findings indicate more robust results with the courses that integrated fewer, but more targeted, interventions. While we did not measure the impact of specific teaching strategies, our findings prompt us to join others who are calling for the development of evidence-based, discipline-specific pedagogies (Murdock, 2003; Weick, 2003).

Those pedagogies need to be approachable for an individual faculty member. There are corporate programs, for example, that provide intensive training in creative problem-solving (Puccio et al., 2006; Scott et al., 2004). But these require expert trainers as well as shared context to implement. In this study, the instructor lacked confidence in her own ability to facilitate creative thinking, so she chose instead to rely on the expertise of a series of experts who were both willing and available to work with her students. This necessitated considerable time devoted to scheduling and other logistical considerations, but it also brought in multiple perspectives. As her exposure increased, the instructor noted that her confidence has risen and she has been able to integrate more small-scale creative interventions on her own. This affirms scholarship noting that teaching creatively and teaching for creativity often go hand in hand (Jeffrey & Craft, 2010). Our experience suggests that the successful implementation of shared pedagogies for creative thinking will likely need to be accompanied by appropriate faculty development programs as well.

This question of appropriate pedagogical strategies further begs the question of how we are able to assess the degree to which these are effective. The assessment of creativity has leaped from a relatively moribund field of study to one of considerable attention—two of its major assessment tools, the Torrance Test and the Guilford Alternative Uses Test (used for this study), are both over fifty years old. This is especially true in the context of higher education, in which leaders are calling for holistic ways to measure creative problem solving for both enrollment and graduation purposes, necessitating considerations of scale, but also authenticity, which precludes self-reported measures, such as the National Survey on Student Engagement (NSSE). At the same time, disciplinary societies are exploring the development of instruments and/or rubrics that take into account the nature of creativity that takes places within their domain contexts. Exploratory research on the use of case studies as assessments for colleges of business appears promising, but our study serves as a cautionary tale for those who would seek to generalize not just the nature of creative thinking, but also its desired outcomes.

While such assessment instruments do not yet exist, the challenge of their creation has generated productive conversations about the complex and often open-ended nature of the creative thinking process and how it interacts with the social, economic, disciplinary, psychological, spatial, and technological layers of the learning experiences that take place in the modern college classroom. Perhaps it could be said that we need to continue to think outside the box about teaching for

creativity, both within and across disciplines, and determine how we can do so in a way that is inclusive, effective, and empowering for both the students and the instructor.

Conflicts of Interest

The authors declare that there are no conflicts of interest regarding the publication of this article.

Acknowledgments

References

Amabile, T. M. (2013). Componential theory of creativity. In E. H. Kessler (Ed.), *Encyclopedia of management theory* (pp. 134–139). Sage.

Amabile, T. M., Conti, R., Coon, H., Lazenby, J., & Herron, M. (1996). Assessing the work environment for creativity. *Academy of Management Journal, 39*, 1154–1184. https://doi.org/10.5465/256995

Almeida L. S., Prieto Prieto, L., Ferrando, M., Oliveira, E., & Ferrándiz, C. (2008). Torrance Test of Creative Thinking: The question of its construct validity. *Thinking Skills and Creativity, 3*, 53–58. https://doi.org/10.1016/j.tsc.2008.03.003

An, D. & Runco, M. A. (2016). General and domain-specific contributions to creative ideation and creative performance. *Europe's Journal of Psychology, 12*(4), 523–532. https://doi.org/10.5964/ejop.v12i4.1132

Aoun, J. E. (2017). *Robot-proof: higher education in the age of artificial intelligence*. MIT Press.

Association to Advance Collegiate Schools of Business (AACSB). (2010). *Business schools on an innovation mission*. https://www.aacsb.edu/~/media/AACSB/Publications/research-reports/business-schools-on-an-innovation-mission.ashx

Basadur, M., Gelade, G., & Basadur, T. (2014). Creative problem-solving process styles, cognitive work demands, and organizational adaptability. *The Journal of Applied Behavioral Science, 50*(1), 80–115. https://doi.org/10.1177/0021886313508433

Bilton, C. (2007). *Management and creativity: From creative industries to creative management*. Blackwell.

Brown, T. (2009) *Change by design: How design thinking transforms organizations and inspires innovation*. Harper Collins.

Craft, A. (2005). *Creativity in schools: Tensions and dilemmas*. Routledge.

Driver, M. (2001). Fostering creativity in business education: Developing creative classroom environments to provide students with critical workplace competencies. *Journal of Education for Business*, *77*(1), 28–33. https://doi.org/10.1080/08832320109599667

Earl, P. E., & Potts, J. (2016). The management of creative vision and the economics of creative cycles. *Managerial and Decision Economics*, *37*(7), 474–484. https://doi.org/10.1002/mde.2733

Eberle, R. (1971). *Scamper: Games for imagination development*. D.O.K. Publishers.

Edwards, M., McGoldrick, C., Oliver, M. (2006). Creativity and curricula in higher education: Academics' perspectives. In Jackson, N., Oliver, M., Shaw, M., Wisdom, J. (Eds.), *Developing creativity in higher education: An imaginative curriculum* (pp. 59–73). Routledge.

Ejimabo, N. O. (2015). The influence of decision making in organizational leadership and management activities. *Journal of Entrepreneurship and Organization Management*, *4*(2), 1–13. doi:10.4172/2169-026X.1000138

Epstein, R., Kaminaka, K., Phan, V., & Uda, R. (2013). How is creativity best managed? Some empirical and theoretical guidelines. *Creativity and Innovation Management*, 22(4), 359–374. https://doi.org/10.1111/caim.12042

Fasko, D. (2001). Education and creativity. *Creativity Research Journal*, *13*(3–4), 317–327. https://doi.org/10.1207/S15326934CRJ1334_09

Feist, G. J. (1998). A meta-analysis of personality in scientific and artistic creativity. *Personality and Social Psychology Review*, *2*, 290–309. https://doi.org/10.1207/s15327957pspr0204_5

Fekula, M. J. (2011). Managerial creativity, critical thinking, and emotional intelligence: convergence in course design. *Business Education Innovation Journal*, 3(2), 92–101. http://www.beijournal.com/images/V3N2_text.pdf

Florida, R. (2014). *The rise of the creative class––revisited, revised and expanded*. Basic Books.

Ford, C. M., & Gioia, D. A. (2000). Factors influencing creativity in the domain of managerial decision making. *Journal of Management, 26*, 705–732. https://doi.org/10.1177/014920630002600406

George, T., & Wiley, J. (2019). Fixation, flexibility, and forgetting during alternate uses tasks. *Psychology of Aesthetics, Creativity, and the Arts, 13*(3), 305–313. https://doi.org/10.1037/aca0000173

Ghafar, A. (2020). Convergence between 21st century skills and entrepreneurship education in higher education institutes. *International Journal of Higher Education*, *9*(1), 218–229. https://doi.org/10.5430/ijhe.v9n1p218

Guilford, J. P. (1967). Creativity: Yesterday, today, and tomorrow. *Journal of Creative Behavior, 1*, 3–14. https://doi.org/10.1002/j.2162-6057.1967.tb00002.x

Guilford, J. P., Christensen, P. R., Merrifield, P. R., & Wilson, R. C. (1978). *Alternate uses: Manual of instructions and interpretations*. Sheridan Psychological Services.

Gundry, L. K., Ofstein, L. F., & Kickul, J. R. (2014). Seeing around corners: How creativity skills in entrepreneurship education influence innovation in business. *The International Journal of Management Education*, *12*(3), 529–538. https://doi.org/10.1016/j.ijme.2014.03.002

Hargrove, R. A., & Nietfeld, J. L. (2015). The impact of metacognitive instruction on creative problem solving. *The Journal of Experimental Education*, *83*(3), 291–318. https://doi.org/10.1080/00220973.2013.876604

Harjoto, M., & Laksmana, I. (2018). The impact of corporate social responsibility on risk taking and firm value. *Journal of Business Ethics*, *151*(2), 353–373. https://doi.org/10.1007/s10551-016-3202-y

Hedges L. V., & Olkin, I. (1985). *Statistical methods for meta-analysis*. Academic Press.

Helfat, C., & Martin, J. (2015). Dynamic managerial capabilities: A perspective on the relationship between managers, creativity and innovation. In C. E. Shalley, M. A. Hitt, & J. Zhou (Eds.), *The Oxford handbook of creativity, innovation and entrepreneurship* (pp. 421–433). Oxford University Press.

Jeffrey, B., & Craft, A. (2010). Teaching creatively and teaching for creativity: distinctions and relationships. *Educational Studies*, *30*(1), 77–87. https://doi.org/10.1080/0305569032000159750

Kaya, M. F. (2013). The effect of six thinking hats on student success in teaching subjects related to sustainable development in geography classes. *Educational Sciences: Theory and Practice*, *13*(2), 1134–1139.

http://oldsite.estp.com.tr/pdf/en/08c6cee249cc2a3ea9e17cd16b6c84bayaeng.pdf

Kerr, Ch., & Lloyd, C. (2008). Pedagogical learnings for management education: developing creativity and innovation. *Journal of Management and Organization*, *14*(5), 486–503. https://doi.org/10.5172/jmo.837.14.5.486

Kwon, J., Bromback, L., & Kudrowitz, B. (2017). Divergent thinking ability + interest = creative ideas: Exploring the relationships between cognitive creativity assessments and product design idea generation. *Proceedings of the ASME 2017 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference. Volume 7: 29th International Conference on Design Theory and Methodology.* Cleveland, Ohio, USA. August 6–9, 2017. V007T06A002. ASME. https://doi.org/10.1115/DETC2017-67261

Kwon, M., De Prada, E., & Pino-Juste, M. (2019). Creativity among business and tourism management university students: determining sociodemographic factors. *Creativity Studies*, *12*(2), 258–279. https://doi.org/10.3846/cs.2019.6925

Markow, W., Hughes, D., & Bundy, A. (2018). The new foundational skills of the digital economy: Developing the professionals of the future. *Business-Higher Education Forum*. https://www.burning-glass.com/wp-content/uploads/New_Foundational_Skills.pdf

Markow, W., Hughes, D., & Bundy, A. (2019). Future skills, future cities: New foundational skills in smart cities. *Business-Higher Education Forum*. https://files.eric.ed.gov/fulltext/ED596449.pdf

MacDonald, A., Clarke, A., & Huang, L. (2019). Multi-stakeholder partnerships for sustainability: designing decision-making processes for partnership capacity. *Journal of Business Ethics*, *160*(2), 409–426. https://doi.org/10.1007/s10551-018-3885-3

Marques, J. (2019). Creativity and morality in business education: Toward a trans-disciplinary approach. *The International Journal of Management Education*, *17*(1), 15–25. https://doi.org/10.1016/j.ijme.2018.11.001

Matthews, J., & Wrigley, C. (2017). Design and design thinking in business and management higher education. *Journal of Learning Design*, *10*(1), 41–54. https://files.eric.ed.gov/fulltext/EJ1127723.a

McConnell, K. D., Horan, E. M., Zimmerman, B., & Rhodes, T. L. (2019). We have a rubric for that: The VALUE approach to assessment. Association of American Colleges and Universities. https://www.aacu.org/publications-research/publications/we-have-rubric-value-approach-assessment

McCorkle, D. E., Payan, J. M., Reardon, J., & Kling, N. D. (2007). Perceptions and reality: Creativity in the marketing classroom. *Journal of Marketing Education*, *29*(3), 254–261. https://doi.org/10.1177/0273475307306892

McIntyre, F. S., Hite, R. E., & Rickard, M. K. (2003). Individual characteristics and creativity in the marketing classroom: Exploratory insights. *Journal of Marketing Education*, *25*(2), 143–149. https://doi.org/10.1177/0273475303254014

McMullan, W. E., & Kenworthy, T. P. (2015). *Creativity and entrepreneurial performance: A general scientific theory*. Springer.

Montag-Smit, T., & Maertz, C. P. (2017). Searching outside the box in creative problem solving: The role of creative thinking skills and domain knowledge. *Journal of Business Research*, *81*, 1–10. https://doi.org/10.1016/j.jbusres.2017.07.021

Mumford, M. D. (2003). Where have we been, where are we going? Taking stock in creativity research. *Creativity Research Journal*, *15*(2–3), 107–120. https://doi.org/10.1080/10400419.2003.9651403

Mumford, M. D., Medeiros, K. E., & Partlow, P. J. (2012). Creative thinking: Processes, strategies and knowledge. *Journal of Creative Behavior*, *46*, 30–47. https://doi.org/10.1002/jocb.003

Murdock, M. C. (2003). The effects of teaching programmes intended to stimulate creativity: A disciplinary view. *Scandinavian Journal of Educational Research*, *47*(3), 339–357. https://doi.org/10.1080/00313830308597

National Association of Colleges and Employers. (2016). *Job outlook: The attributes employers want to see on new college graduates' resumes.* http://www.naceweb.org/career-development/trends-and-predictions/job-outlook-2016-attributes-employers-want-to-see-on-new-college-graduates-resumes/

Nix, A., Arlitt, R., Immel, S., Lemke, M., & Stone, R. (2008). Investigating divergent thinking in creativity exercises through Alternative Uses Tests. *Proceedings of the ASME 2014 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*. https://doi.org/10.1115/DETC2014-35335

Nutt, P. C. (1984). Types of organizational decision processes. *Administrative Science Quarterly*, *29*, 414–550. https://doi.org/10.2307/2393033

Obholzer, A., & Miller, S. (2018). Leadership, followership, and facilitating the creative workplace. In C. Huffington, W. Halton, D. Armstrong, & J. Pooley (Eds.), *Working below the surface* (pp. 33–48). Routledge.

Oluwade, D. O., & Oluwade, B. (2015). An assessment of the role of creativity in business studies: Its implication to business management. *Journal of Emerging Trends in Economics and Management Systems*, *6*(1), 68–76. https://hdl.handle.net/10520/EJC168388

Paek, S. H., & Sumners, S. E. (2019). The indirect effect of teachers' creative mindsets on teaching creativity. *The Journal of Creative Behavior*, *53*(3), 298–311. https://doi.org/10.1002/jocb.180

Perry, A., & Karpova, E. (2017). Efficacy of teaching creative thinking skills: A comparison of multiple creativity assessments. *Thinking Skills and Creativity*, *24*, 118–126. https://doi.org/10.1016/j.tsc.2017.02.017

Peterson, D. R., Barrett, J. D., Hester, K. S., Robledo, I. C., Hougen, D. F., Day, E. A., & Mumford, M. D. (2013). Teaching people to manage constraints: Effects on creative problem-solving. *Creativity Research Journal*, *25*(3), 335–347. https://doi.org/10.1080/10400419.2013.813809

Petrone, P. (2019, January 1). *Why creativity is the most important skill in the world*. LinkedIn Learning Blog. https://learning.linkedin.com/blog/top-skills/why-creativity-is-the-most-important-skill-in-the-world.

Poundstone, W. (2003). *How would you move Mount Fuji?: Microsoft's cult of the puzzle––How the world's smartest companies select the most creative thinkers*. Little, Brown and Company.

Proctor, T. (2014). *Creative problem solving for managers: Developing skills for decision making and innovation*. Routledge.

Puccio, G. J., Firestien, R. L., Coyle, C., & Masucci, C. (2006). A review of the effectiveness of CPS training: A focus on workplace issues. *Creativity and Innovation Management*, *15*(1), 19–33. https://doi.org/10.1111/j.1467-8691.2006.00366.x

Rababah, L. (2018). An adapted version of Torrance Test of Creative Thinking (TTCT) in EFL/ESL writing: A rubric scoring and a review of studies. *International Journal of English and Education, 7*(2), 128–136. http://www.ijee.org/yahoo_site_admin/assets/docs/9luqman.9883442.pdf

Resnick, M., & Robinson, K. (2017). *Lifelong kindergarten: Cultivating creativity through projects, passion, peers, and play*. MIT Press.

Rezaee, Z. (2016). Business sustainability research: A theoretical and integrated perspective. *Journal of Accounting Literature*, *36*, 48–64. https://doi.org/10.1016/j.acclit.2016.05.003

Rodriguez, L. C., & Fekula, M. J. (2019). The convergence of AAC&U value rubrics, assessment, and experiential learning. *Business Education Innovation*

Journal, *11*(1), 208–213.
http://www.beijournal.com/images/V11N1_draft_.pdf

Runco, M. A., & Acar, S. (2012). Divergent thinking as an indicator of creative potential. *Creativity Research Journal*, 24(1), 66–75. https://doi.org/10.1080/10400419.2012.652929

Sawyer, K. (2012). *Explaining creativity: The science of human innovation*. Oxford University Press.

Schlee, R. P., & Harich, K. R. (2014). Teaching creativity to business students: How well are we doing? *Journal of Education for Business*, *89*(3), 133–141. https://doi.org/10.1080/08832323.2013.781987

Scott, G., Leritz, L. E., & Mumford, M. D. (2004). The effectiveness of creativity training: A quantitative review. *Creativity Research Journal*, *16*, 361–388. https://doi.org/10.1080/10400410409534549

Schmidt-Wilk, J. (2011). Fostering management students' creativity. *Journal of Management Education*, *35*(6), 775–778. https://doi.org/10.1177/1052562911427126

Snyder, H. T., Hammond, J. A., Grohman, M. G., & Katz-Buonincontro, J. (2019). Creativity measurement in undergraduate students from 1984–2013: A systematic review. *Psychology of Aesthetics, Creativity, and the Arts*, *13*(2), 133–143. https://psycnet.apa.org/record/2019-20312-002

Solomon, G., Hamidi, D. Y., Wennberg, K., & Berglund, H. (2008). Creativity in entrepreneurship education. *Journal of Small Business and Enterprise Development*, *15*(2), 304–320. https://doi.org/10.1108/14626000810871691

Sternberg, R. J. (2006) The nature of creativity. *Creativity Research Journal*, 18(1), 87–98. http://dx.doi.org/10.1207/s15326934crj1801_10

Sternberg, R. J. (2015). Teaching for creativity: The sounds of silence. *Psychology of Aesthetics, Creativity, and the Arts*, *9*(2), 115–117. https://psycnet.apa.org/record/2015-14747-001

Sunley, R., Harding, L., & Jones, J. (2019). Realising creativity in management education: Putting student energy into action. *The International Journal of Management Education*, *17*(2), 172–181. https://doi.org/10.1016/j.ijme.2019.02.007

Supiano, B. (2020). *The Creativity Challenge*. Chronicle of Higher Education Report. https://store.chronicle.com/products/the-creativity-challenge

Tierney, P., & Farmer, S. M. (2002). Creative self-efficacy: Its potential antecedents and relationship to creative performance. *Academy of Management Journal*, *45*(6), 1137–1148. https://doi.org/10.2307/3069429s

Urban, K. K. (2005). Assessing creativity: The Test for Creative Thinking-Drawing Production (TCT-DP). *International Education Journal*, *6*(2), 272–280. https://files.eric.ed.gov/fulltext/EJ854980.pdf

Vernon, D., & Hocking, I. (2014). Thinking hats and good men: Structured techniques in a problem construction task. *Thinking Skills and Creativity*, *14*, 41–46. https://doi.org/10.1016/j.tsc.2014.07.001

Wang, S., Zhang, X., & Martocchio, J. (2010). Thinking outside of the box when the box is missing: Role ambiguity and its linkage to creativity. *Creativity Research Journal, 23*(3), 211–221. https://doi.org/10.1080/10400419.2011.595661

Weick, C. (2003). Out of context: Using metaphor to encourage creative thinking in strategic management courses. *Journal of Management Education*, *27*(3), https://doi.org/10.1177/1052562903027003004

Williams, S. (2001). Increasing employees' creativity by training their managers. *Industrial and Commercial Training*, *33*(2), 63–68. https://doi.org/10.1108/00197850110385642

Wongpinunwatana, N. (2019). Enhancing students' creative thinking skills through the process of teaching business research. *Journal of Management Policy and Practice*, *20*(2), 135–142. https://doi.org/10.33423/jmpp.v20i2.2100

Wynder, M. (2004). Facilitating creativity in management accounting: a computerized business simulation. *Accounting Education*, *13*(2), 231–250. https://doi.org/10.1080/0963928041000167639

York, R. O. (2017). *Statistics for Human Service Evaluation*. Sage.