

BUILDING DIVERGENT THINKING SKILLS AMONG GRADUATE STUDENTS

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ABSTRACT

Academics and practitioners alike recognize the value of creativity in the marketplace. Because creative skills are so important, it is incumbent upon us to develop these skills among all of our students, but perhaps especially among our Master's students. This paper describes one approach to developing the creative talents of Master's students. After describing the basic philosophy and structure of the course, data is presented that speaks to the effectiveness of the approach.

INTRODUCTION

The American Management Association recently conducted a survey in which they asked 500 CEOs "What must one do to survive in the 21st century" and the overwhelming answer was "Practice creativity and innovation" (Kropp 2006). *Business Week* has declared that the "Knowledge Economy" is being supplanted by the "Creative Economy" in which creativity and innovation must become the "new core competency" of U.S. businesses in the increasingly competitive global market (McCorkle, Payan, Kling, & Reardon 2007). If creativity is to be a core competency, it is incumbent upon business schools, then, to include classes meant to develop the ability to think creatively as part of their curricula. In a review of creativity courses Xu and colleagues found creativity courses in business programs at Columbia, INSEAD, Harvard, Indiana, London Business School, Stanford, Berkeley and Michigan, among others (Xu, McDonnell, & Nash 2005). Since the Marketing function is typically seen as the most "creative" of the business discipline it is appropriate for marketing faculty to take a leading role in developing this skill among business students.

In a Fall 2009 class titled "Enhancing Creativity" we took one approach to developing this skill among graduate students enrolled in programs leading to an MBA, MS – Marketing or MS – Accounting. We describe this approach and attempt to assess its effectiveness.

WHAT IS "CREATIVITY"?

Generally speaking, creativity can be seen as developing concepts that are new and useful (Smith 2005). A useful first exercise in this class was to have the students develop a working definition of creativity. "New" and "useful," however, is generally the conclusion students come to when grappling with this definition, and can serve as a good starting point for a class on creativity.

Divergent and Convergent Thinking

Generating new and useful ideas can be characterized as a process of alternating between *convergent* and *divergent* thought processes (Tassoul and Buijs 2007). Convergent thinking is "oriented toward deriving the single best (or correct) and answer to a clearly defined question" (Cropley 2006, p. 391). Divergent thinking "involves producing multiple or alternative answers from available information. It requires making unexpected combinations, recognizing links among remote associates, transforming information into unexpected forms, and the like." (Cropley 2006, p. 391). Both of these types of processes are necessary for creativity to develop. Divergent thinking is used to generate alternatives, while convergent thinking is used to choose the "best" alternative. The divergent process can be thought of as more closely related to the "new" aspect of creativity, while the convergent process can be thought of as more closely related to the "useful" aspect of creativity.

Most degree programs in higher education, focus more on the convergent phase. Finding the "right" answer, cracking the case, and increasing knowledge are the primary goals. Exploring alternatives, brainstorming and new solutions are pushed to the background. Many classes become competitive in nature, where students focus on poking holes in each others' ideas to get their own ideas to the forefront.

Because most, if not all, of the classes in the MBA curriculum emphasize convergent ("right answer") thinking, to enhance student creativity as a whole, this class emphasized divergent ("many answers")

thinking. This is not to say that we ignored convergence and the importance of usefulness. MBA students would scarcely allow us to forget that aspect completely! The knowledge generated by convergent thinking becomes the input to the conceptual combinations that occur in the divergent phase (Cropley 2006; Lubart 2000-2001). “Disciplinary Knowledge” is a key aspect of Titus’ (2007) “Creative Breakthrough Model” (along with Cognitive Flexibility, Task Motivation and Serendipity). All four of these aspects were discussed in this class. The Cognitive Flexibility factor, however, was emphasized. In addition, Titus’ (2007) model posits the importance of uncertainty – that there is no assurance of producing creativity. The class also focused on the importance of, acceptance of, and ultimately the embracing of that uncertainty.

Rather than ignoring the importance of convergent thinking, we explored methods of generating novel combinations of concepts, all the while keeping in mind that to be truly creative, these combinations must also be useful. We concentrated on enhancing the divergent thought process, while continually reminding ourselves of the importance of the convergent phase of the creative process.

LEARNING GOALS AND OBJECTIVES

The overall learning goal for this class, as stated on the syllabus, was “. . . to develop students’ inherent creativity and show how that creativity can be applied to business situations.” A complete list of the learning objectives is available from the authors. The following are three examples of learning objectives taken from the syllabus:

- Identify current theoretical and applied models of creativity.
- Ability to utilize several exercises to enhance creativity.
- Enjoy the creative process.

An underlying goal of the class was to convince MBA students that they are, in fact, creative, and that their creative skills can be enhanced. Interestingly, we have found through several in class activities in which students are asked to self-identify as creative or uncreative, that many business students, undergraduate and graduate, marketing majors and from other disciplines, do not believe that they are creative. Accordingly, the “Course Philosophy” as stated on the syllabus was “The single overriding guiding principle of this class is: *You are creative. Everyone is creative. Creativity is a muscle, and everyone owns that muscle. But, like any muscle, it must be exercised, or it atrophies.*

The more you exercise it, the stronger it gets. In this class we will exercise your creativity muscle.”

Setting Student Expectations

This was an unusual class in an MBA curriculum. As such, it was very important to manage student expectations. One aspect of developing creativity is the ability to “Silence the Voice of Judgment” (Ray 2000). The Voice of Judgment is the inner voice that whispers things like “Everyone will think that’s dumb.” Overcoming this anxiety over judgment involves establishing trust, among the students, and between the students and the professor.

Assuring the students that there were no wrong, or right, answers in the class, and reiterating that message often was vital. Because grading is an inherently judgmental exercise that relies on differentiating between wrong and right answers, the grading structure of the class was not standard. Students were presented with a “Grading Checklist” at the beginning of the semester. This checklist outlined all the tasks that a student must complete to get a certain grade. For example, to achieve an “A” the student had to provide evidence of meeting 12 expectations, including reviews of relevant literature, with a strictly enforced timeline. These assignments were graded on a pass/fail basis to alleviate one source of judgment anxiety: grading.

Similarly, in class, the professor tried to keep discussions positive, and refrained from pronouncing anything “right” or “wrong.” This was a struggle, as the *professor’s* education and experience also concentrated on convergent right and wrong answers. We also struggled to keep discussions from degenerating into an “All answers are equally good” quagmire, but rather kept it at an “All answers are good input for further discussion” level.

Class Structure

The class combined a practical, exercise based approach with a more theoretical understanding of the creative process. In class and at home exercises were meant to (a) build trust, (b) stretch the “creativity muscle” and (c) drive home some of the concepts and models of creativity discussed in the readings. These exercises were gleaned from the world of improv theater (e.g., Keefe 2003; Koppett 2001; and the website www.improvencyclopedia.org; see also Aylesworth 2008 for a discussion of using improv techniques in the classroom), as well as from several books on the topic of creativity and creativity training (e.g., Michalko 2001; von Oech 2008).

For example, one class is devoted to understanding barriers to creativity, defined as “blocks, internal or external, that either inhibit creative thinking and inspiration or else prevent innovative ideas from being accepted and implemented” (Davis 1999, p. 165). One such barrier is Learning and Habit: We get into one way of doing something or one way of thinking about something and stick with that way. The exercise used to “break” this barrier was entitled “Switching Sexes” and was adapted from Michalko’s 2001 book *Cracking Creativity*. In it students are asked to imagine themselves as the sex opposite of what they usually identify as, and are given several scenarios meant to help them do so (e.g., “Walking down the street and running into a friend of the same sex you are imagining yourself as.”) After several minutes, students are given a problem to develop solutions for and instructed to do so as if they were a member of the opposite sex. In the exercise debrief, discussion centers around how they approached the problem differently and whether this perspective helped them see it in a new (and useful) way.

Just as creativity within a certain domain requires knowledge of that domain, building creativity in general requires knowledge of how creativity works. To attain this knowledge, students were assigned several readings from academic journals and books about creativity and the creative process. Class periods consisted of discussions of relevant articles and their meaning.. Several case discussions demonstrated the applicability of the discussions and exercises. For example, Amabile and Litovsky’s (2008) case “Creativity under the Gun at Litmus Corporation” was used to demonstrate some of the principles of creativity under time pressure.

Students were required to complete a final project. Part of enhancing creativity is being able to deal with ambiguity, and the final project addressed this need. It consisted of one direction: “Show me your creativity.” We provided *some* more detail but ultimately the project had to contain a “creative product” that was described as follows: “This can be anything at all, and I’m not even going to give you examples. There are just two requirements: it must be new, and it must be “useful.” You can hand me something physical, or describe something intangible.” It also required an essay that addressed the product’s originality and usefulness, and a reflection on the process used to develop it. The final part of the project was a presentation to the class. Student projects ranged from predictable items like new business ideas, improved operational plans, and advertising campaigns, to less traditional

items like paintings, photography, and video travelogues.

ASSESSING RESULTS

To assess how well the course enhanced students’ divergent thinking ability, Guilford’s Alternative Uses Task (Guilford 1968; see also, for example, Runco & Mraz 1992; Runco, Dow, & Smith 2006; Snyder, Mitchell, Bossomaier, & Pallier 2004) was given to the students on the first and last day of class. In this task respondents are asked to “List as many _____” (details below) as they can in three minutes. The task does not measure creativity in general, but rather simply assesses the ability to develop novel ideas (i.e., it ignores the “useful” aspect of creativity).

Four different “tasks” were used as measures:

1. Please list as many uses for NEWSPAPERS as you can.
2. Please list as many things that have WHEELS as you can.
3. Please list as many things that are SQUARE as you can.
4. Please list as many uses for PINE CONES as you can.

One group of students was asked to complete the Newspapers and Wheels tasks on the first day of class, and the Squares and Pine Cones task on the final day of class. The other group was asked to complete the Squares and Pine Cones task first, then the Newspapers and Wheels task on the final day.

These tests are scored to assess three facets of divergent thinking: fluency (the overall number of responses given by the subject), flexibility (the number of different themes or categories produced by the subject) and originality (the number of unique or unusual ideas); (Runco & Mraz 1992). Note that Originality is confounded with Fluency (e.g., the higher the overall fluency, the easier it is to score originality points), so we use an alternative, corrected originality, the ratio of originality to fluency. Responses were coded and each student was given a score for each measure.

These scores were created for each student after each administration of the task. Then a change score was created, in which the respondents’ pre-test scores on fluency, flexibility and originality were subtracted from the post-test scores. Finally, a corrected originality change score was also calculated. Initial results are presented in Table 1.

TABLE 1: OVERALL CHANGE IN SCORES

	Mean Change	Standard Deviation	t-value (df=22)	p
Fluency	10.26	11.79	4.175	0.000
Flexibility	4.52	5.61	3.867	0.000
Originality	21.30	21.12	4.828	0.000
Corr.Orig.	0.20	0.47	2.112	0.023

These scores, while encouraging, co-mingle the results from the two groups (i.e., those that did newspapers and wheels first and those that did squares and pine cones first). To determine if these different stimuli had an effect on the results, this analysis was conducted for each group separately. Table 2 presents these results.

Splitting the data into two groups results in small sample sizes. But it appears that much of the results were driven by the second group, who started with the squares and pine cone tasks. Thus, we cannot rule out the possibility that this stimulus has an inherently greater “potential for creativity” than the other one. However, it remains apparent that at least half the class performed significantly better on the divergent thinking task after taking the class. Data analysis remains ongoing to unravel these effects and to point to additional experiments which can help determine particular results. For instance, an interesting control measure would be to carry out the same experiment on another graduate class in which creativity and divergent thinking were not key syllabus elements. This would help to reveal how much of the difference was due to a ‘practice effect’ from doing the experiment twice.

TABLE 2: CHANGE IN SCORES FOR EACH GROUP

**(Group 1: Newspapers and Wheels first;
Group 2: Squares and Pine Cones First)**

Group 1 (n=12)	Mean Change	Standard Deviation	t-test (df=11)	p (2- tailed)
Fluency	3.92	8.71	1.557	0.148
Flexibility	0.92	3.75	0.846	0.415
Originality	7.33	10.51	2.417	0.034
Corr. Orig.	0.013	0.38	0.114	0.912
Group 2 (n=11)	Mean Change	Standard Deviation	t-test (df=10)	p (2- tailed)
Fluency	17.18	11.00	5.177	0.000
Flexibility	8.45	4.59	6.108	0.000
Originality	36.55	19.34	6.269	0.000
Corr. Orig.	0.397	0.44	2.999	0.013

DISCUSSION AND CONCLUSIONS

If business faculty specifically marketing faculty, are to instill creativity and develop creative skills in our Masters students, we must be willing to try creative methods of doing so. This paper describes one attempt: a class that combined readings and discussions about the nature of creativity and the creative process, with exercises and cases meant to develop and apply creative skills. Further, this class sought to enhance *divergent* thinking skills, which is really only one half of the creative process. While the other half, convergent skills, was discussed at length, we felt that since most MBA classes already emphasize a convergent perspective, it was more important for this class to emphasize the divergent perspective. The data, while preliminary, tend to support the class’s success at achieving at least one of the learning goals: Enhancing the ability to “think outside the box” by making novel connections between different concepts, ideas and things.

These encouraging results are based on only one class – a very small sample size. Additionally, we measured creativity using one simple method – a method that only measures one aspect of a complex phenomenon. Thus, these results should be considered preliminary. As we continue to offer this class, we will continue to refine the measurement techniques, as well as the class itself, and hopefully gain a better understanding of how what we do in the classroom affects our students’ creative ability.

Post class anonymous feedback was encouraging. Some examples are:

- “It was one of the most different classes I’ve ever taken, but it has made me be able to look at things differently in work, school and everyday life situations.”
- “Loved the class! Really had fun with it and learned a lot in the process.”
- “It was fun and really creative, not like other classes.”
- “I enjoyed the exercises and term project – the exercises demonstrated many concepts and the

term project was useful and assisted in driving home creativity.”

- “The class as a whole was great – very interesting topics and you kept the class interesting and thought provoking.”

In developing the class, we practiced what we hoped to preach. We took risks, as that is part of being creative, and being willing to fail is integral to making something that is truly new and useful. We think the risk paid off.

References available on request